ECONOMIC SCIENCE FOR RURAL DEVELOPMENT

Proceedings of the
International Scientific Conference

Resources and Education

№ 25
Jelgava
2011

TIME SCHEDULE OF THE CONFERENCE

Preparation: October 2010 – April 2011
Process: 28-29 April 2011

Latvia University of Agriculture, 2011
Academy of Management in Lodz, 2011
Balvi District Partnership, 2011
Daugavpils University, 2011
Estonian Agricultural Registers and Information Board, 2011
Estonian University of Life Sciences, 2011
Fulda University of Applied Sciences, 2011
Latvian Academy of Agricultural and Forestry Sciences, 2011
Latvian State Forest Research Institute "Silava", 2011
Latvian State Institute of Agrarian Economics, 2011
Latvijas Mobilais Telefons, 2011
Lithuanian University of Agriculture, 2011
Ministry of Education and Science of the Republic of Latvia, 2011
Research Institute of Agriculture Machinery, Latvia University of Agriculture, 2011
Research Institute of Biotechnology and Veterinary Medicine "Sigra", 2011
Riga International School of Economics and Business Administration, 2011
Riga Technical University, 2011
Rural Support Service, 2011
School of Business Administration Turība, 2011
Seinäjoki University of Applied Sciences, 2011
University College of Economics and Culture, 2011
University of Helsinki, 2011
University of Latvia, 2011
University of Life Sciences in Lublin, 2011
University of Ljubljana, 2011
Vidzeme University of Applied Sciences, 2011
Vytautas Magnus University, 2011
Warsaw University of Life Sciences, 2011
West Pomeranian University of Technology in Szczecin, 2011
West University of Timişoara, 2011

ISSN 1691-3078
ISBN 978-9984-9997-6-0

Abstracted / Indexed: ISI Web of Knowledge,AGRIS, EBSCO
http://thomsonreuters.com/products_services/science/science_products/a-z/conf_proceedings_citation_index/
http://www.llu.lv/ef/konferences.htm
www.fao.org/agris/
http://search.ebscohost.com/login.aspx?authtype=ip,uid&profile=ehost&defaultdb=lbh

Programme Committee of International Scientific Conference

Professor **Baiba Rivža**	President of the Academy of Agricultural and Forestry Sciences of Latvia; academician of Latvian Academy of Sciences; foreign member of Academy of Agricultural Sciences of Russia; foreign member of the Academy Geargophily (Italy), foreign member of the Royal Swedish Academy of Agriculture and Forestry, **Latvia**
Professor **Antoni Mickiewicz**	Head of the Department of Agrarian Business of the West Pomeranian University of Technology in Szczecin, **Poland**
Professor **Vilija Aleknevičienė**	Faculty of Economics and Management, Lithuanian Agricultural University, **Lithuania**
Professor **Irina Pilvere**	Dean of the Faculty of Economics of Latvia University of Agriculture, **Latvia**
Professor **Ingrīda Jakušonoka**	Head of the Department of Accounting and Finance of the Faculty of Economics of Latvia University of Agriculture, **Latvia**
Associate professor **Gunita Mazūre**	Department of Accounting and Finance of the Faculty of Economics of Latvia University of Agriculture, **Latvia**
Professor **Barbara Freytag-Leyer**	Department of Home Economics, Fulda University of Applied Sciences, **Germany**
Professor **Edi Defrancesco**	Department of Land and Agroforestry Systems Faculty of Agriculture, University of Padova, **Italy**
Professor **Jacques Viaene**	**Faculty of Bioscience Engineering, Department of Agricultural Economics, University of Ghent**, Belgium
Professor **Bo Öhlmer**	Department of Economics of the Swedish University of Agricultural Sciences, Uppsala, **Sweden**
Professor **Arild Sæther**	Faculty of Economics and Social Sciences of the University of Agder, Kristiansand, **Norway**
Associate professor **Bruna Maria Zolin**	Department of Economic Sciences, University of Venice, **Italy**
Associate professor **Ferhat Baskan Ozgen**	**Faculty of Economics and Administrative Sciences, University of Adnan Menderes,** Turkey

The chief facilitator and project leader – associate professor **Gunita Mazūre**

Editorial Board

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Reviewers

Every article included into the Proceedings was subjected to a scientific, including international review.

All reviewers were anonymous for the authors of the articles.

The following **85** reviewers from scientific and academic institutions of **8** countries (Estonia, Finland, Germany, Latvia, Lithuania, Poland, Romania, and Slovenia) have written **176** reviews.

Vilija Aleknevičienė	Dr.oec., prof. (Lithuanian University of Agriculture, Lithuania)
Irina Arhipova	Dr.sc.ing., prof. (Latvia University of Agriculture, Latvia)
Anita Auziņa	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Voldemārs Bariss	Dr.phil., assoc. prof. (Latvia University of Agriculture, Latvia)
Veronika Bikse	Dr.oec., prof. emeritus (University of Latvia, Latvia)
Ligita Bite	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Veronika Buģina	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Daina Celma	Dr.oec., assoc. prof. (Liepāja University, Latvia)
Alina Danilowska	Dr.hab., prof. (Warsaw University of Life Sciences, Poland)
Džineta Dimante	Dr.oec., assist. prof. (University of Latvia, Latvia)
Aina Dobele	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Nina Drejerska	Dr.oec., lecturer (Warsaw University of Life Sciences, Poland)
Aija Eglīte	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Jānis Eglītis	Dr.oec., assoc. prof., (Daugavpils University, Latvia)
Ainārs Galiņš	Dr.sc.ing., assoc. prof. (Latvia University of Agriculture, Latvia)
Audrius Gargasas	Dr.oec., assoc. prof. (Lithuanian University of Agriculture, Lithuania)
Ineta Geipele	Dr.oec., prof. (Riga Technical University, Latvia)
Egils Ginters	Dr.sc.ing., prof. (Vidzeme University of Applied Sciences, Latvia)
Jarosław Gołębiewski	PhD, assist. prof. (Warsaw University of Life Sciences, Poland)
Inguna Gulbe	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Žaneta Ilmete	Dr.oec., prof. (University of Latvia, Latvia)
Ingrīda Jakušonoka	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Anda Jankava	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Jan Jarre	Dr. rer.pol., prof. (Münster University of Applied Sciences, Germany)
Helma Jirgena	Dr.oec., director (Latvian Academy of Sciences, Latvia)
Ināra Jurgena	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Gaida Kalniņa	Dr.oec., sworn auditor ("Gaidas Kalniņas audits" Ltd, Latvia)
Grazyna Karmowska	PhD, prof. (West Pomeranian Technological University in Szczecin, Poland)
Staņislavs Keišs	Dr.oec., assoc. prof. (University College of Economics and Culture, Latvia)
Bogdan Klepacki	Dr.hab., prof. (Warsaw University of Life Sciences, Poland)
Verena Koch	PhD, assoc. prof. (University of Ljubljana, Slovenia)
Ināra Helēna Konošonoka	Dr.sc.ing., leading researcher, (Research Institute of Biotechnology and Veterinary Medicine "Sigra", Latvia)
Vulfs Kozlinskis	Dr.hab.oec., prof. (Latvia University of Agriculture, Latvia)
Jüri Krusealle	PhD, assoc. prof. (Estonian University of Life Sciences, Estonia)
Jānis Ķusis	Dr. hist., assoc. prof. (Latvia University of Agriculture, Latvia)
Inguna Leibus	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Evija Liepa	Dr.math., assoc. prof. (Baltic International Academy, Latvia)
Agita Līviņa	Dr.oec., assoc. prof. (Vidzeme University of Applied Sciences, Latvia)
Mariusz Maciejczak	PhD, assist. prof. (Warsaw University of Life Sciences, Poland)
Pekka Makinen	PhD, prof. (University of Helsinki, Finland)
Gunita Mazūre	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Ligita Melece	Dr.oec., head of dep. (Latvian State Institute of Agrarian Economics, Latvia)
Modris Mengots	PhD, assist. prof. (Latvia University of Agriculture, Latvia)
Vladimir Menshikov	Dr.sc.soc., prof. (Daugavpils University, Latvia)
Līga Mihejeva	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Aina Muška	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)

Aleksejs Nipers	Dr.oec., researcher (Riga International School of Economics and Business Administration, Latvia)
Velta Paršova	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Līga Paura	Dr. agr., assoc. prof. (Latvia University of Agriculture, Latvia)
Modrīte Pelše	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Irina Pilvere	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Tamara Poklar Vatovec	PhD, assoc. prof. (University of Primorska, Slovenia)
Dina Popluga	Dr.oec. researcher (Latvian State Institute of Agrarian Economics, Latvia)
Artūrs Prauliņš	Dr.oec., assoc. prof. (Tallinn Technical University Estonia)
Agnese Radžele-Šulce	Dr.oec., lecturer (Latvia University of Agriculture, Latvia)
Līga Ramute	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Viktorija Raņķevica	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)
Baiba Rivža	Dr.hab.oec., prof. (Latvia University of Agriculture, Latvia)
Pēteris Rivža	Dr.habil.sc.ing., prof. (Latvia University of Agriculture, Latvia)
Jüri Roots	PhD, senior specialist (Estonian University of Life Sciences, Estonia)
Sarmīte Rozentāle	Dr.oec., assoc. prof. (Vidzeme University of Applied Sciences, Latvia)
Ādolfs Ruciņš	Dr.sc.ing., leading researcher (Agency of Latvia University of Agriculture, Research Institute of Agricultural Machinery, Latvia)
Svetlana Saksonova	Dr.oec., assoc. prof. (University of Latvia, Latvia)
Florin Alin Sava	PhD, assoc. prof (West University of Timişoara, Romania)
Alla Serjogina	Dr.oec., assist. prof. (Transport and Telecommunication Institute, Latvia)
Linda Siliņa	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Timo Sipiläinen	PhD, lecturer (University of Helsinki, Finland)
Tomasz Siudek	PhD, assist. prof. (Warsaw Agricultural university, Poland)
Teodor Skotarczak	PhD, prof. (West Pomeranian Technological University in Szczecin, Poland)
Biruta Sloka	Dr.oec., prof. (University of Latvia, Latvia)
Linas Stabingis	PhD, assoc. prof. (Lithuanian University of Agriculture, Lithuania)
Evelīna Špakoviča	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Jānis Štrauhmanis	Dr.habil.hist., prof. (Riga Technical University, Latvia)
Voldemārs Strīķis	Dr.h.c., prof. (Latvia University of Agriculture, Latvia)
Tatjana Tambovceva	Dr.oec., assoc. prof. (Riga Technical University, Latvia)
Ilze Upīte	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Dace Vīksne	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Anastasija Vilciņa	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Īrija Vītola	Dr.oec., prof. (Latvia University of Agriculture, Latvia)
Ludwik Wicki	Dr.oec., assist. prof. (Warsaw University of Life Sciences, Poland)
Matti Ylätalo	Dr.oec., prof. (University of Helsinki, Finland)
Aldona Zawojska	PhD, assist. prof. (Warsaw University of Life Sciences, Poland)
Elvīra Zelgalve	Dr.oec., prof. (University of Latvia, Latvia)
Anda Zvaigzne	Dr.oec., assist. prof. (Latvia University of Agriculture, Latvia)
Andra Zvirbule-Bērziņa	Dr.oec., assoc. prof. (Latvia University of Agriculture, Latvia)

Foreword

Every year the Faculty of Economics, Latvia University of Agriculture holds the international scientific conference "Economic Science for Rural Development" and publishes internationally reviewed papers of scientific researches, which are presented at the conference. **This year the conference is organised for the 12th year running and all the papers are published in English.** Selected papers from the Proceedings are included into *ISI Web of Knowledge* database and the Faculty of Economics has applied also to Scopus database for including the Proceedings into this database.

Researchers from various European countries representing not only the science of economics in the diversity of its sub-branches have contributed to the conference this year; they have expanded their studies engaging colleagues from social and other sciences, thus confirming inter-disciplinary and multi-dimensional development of the contemporary science. The conference is dedicated to topical themes of rural development; hence, the research results are published in three successive volumes (No. 24, 25, and 26). The first volume of scientific conference proceedings was published in 2000.

Professors, doctors of science, associate professors, assistant professors, PhD students, and other researchers from the following higher education, research institutions, and professional organisations participate at the International Scientific Conference held on April 28-29, 2011 and present their results of scientific researches:

Latvia University of Agriculture
Academy of Management in Lodz
Balvi District Partnership
Daugavpils University
Estonian Agricultural Registers and Information Board
Estonian University of Life Sciences
Fulda University of Applied Sciences
Latvian Academy of Agricultural and Forestry Sciences
Latvian State Forest Research Institute "Silava"
Latvian State Institute of Agrarian Economics
Latvijas Mobilais Telefons
Lithuanian University of Agriculture
Ministry of Education and Science of the Republic of Latvia
Research Institute of Agriculture Machinery, Latvia University of Agriculture
Research Institute of Biotechnology and Veterinary Medicine "Sigra"
Riga International School of Economics and Business Administration
Riga Technical University
Rural Support Service
School of Business Administration Turība
Seinäjoki University of Applied Sciences
University College of Economics and Culture
University of Helsinki
University of Latvia
University of Life Sciences in Lublin
University of Ljubljana
Vidzeme University of Applied Sciences
Vytautas Magnus University
Warsaw University of Life Sciences
West Pomeranian University of Technology in Szczecin
West University of Timişoara

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

The following topical themes have been chosen for the conference:

- **Primary and secondary agricultural production and cooperation;**
- **Integrated and sustainable development;**
- **Finance and taxes;**
- **Education and rural science;**
- **Resources and sustainable consumption;**
- **Home economics.**

The comprehensive reviewing of submitted scientific articles has been performed on international and inter-university level to ensure that only high-level scientific and methodological research results, meeting the requirements of international standards, are presented at the conference.
Every submitted manuscript has been reviewed by one reviewer from the author's native country or university, while the other reviewer came from another country or university. The third reviewer was chosen in the case of conflicting reviews. All reviewers were anonymous for the authors of the articles. Every author received the reviewers' objections or recommendations. After receiving the improved (final) version of the manuscript and the author's comments, the Editorial Board of the conference evaluated each article.
All the papers of the international scientific conference "Economic Science for Rural Development" are arranged into the three following thematic volumes:

No. 24 Production and Taxes
Primary and Secondary Production and Cooperation
Finance and Taxes

No. 25 Resources and Education
Resources and sustainable consumption
Education and rural science

No. 26 Sustainability
Integrated and Sustainable Development

The publishing of the Proceedings before the conference will promote exchange of opinions, discussions, and collaboration of economic scientists on the international level. The research results included into the Proceedings are available worldwide to any stakeholder.

The abstracts of the conference proceedings provided in English are submitted to the international databases:

Web of Knowledge, which is a unified platform, that integrates all data and search terms. It provides access to the world's leading citation databases, including powerful cited reference searching, the Analyse Tool, over 100 years of comprehensive backfile and citation data. *Web of Knowledge* also delivers access to conference proceedings, patents, websites, and chemical structures, compounds and reactions. While other databases simply aggregate data, *Web of Science* information is carefully evaluated and selected. This time-tested approach helps conserve an institution's resources and researchers' time by delivering access to the most relevant resources. *Web of Science* offers a true cited reference index, which is still the best tool for discovery and the only method of retrieving accurate citation counts.

AGRIS - International Information System for the Agricultural Sciences and Technology set up by the Food and Agriculture Organisation of the United Nations (FAO UN), and especially to the databases containing full research texts set up by the academic higher education institutions.

EBSCO Academic Search Complete is the world's most valuable and comprehensive scholarly, multi-disciplinary full-text database with more than 8,500 full-text periodicals, including more than 7,300 peer-reviewed journals.

CABI PUBLISHING CAB ABSTRACTS database. *CAB Abstracts* gives researchers instant access to over 6.3 million records from 1973 onwards, with over 300,000 abstracts added each year. Its coverage of the applied life sciences includes agriculture, environment, veterinary sciences, applied economics, food science, and nutrition. **CAB Abstracts** is a comprehensive bibliographic database that covers worldwide literature from all areas of agriculture and related applied and life sciences. Published by CAB International, a division of CAB International, CABA is the world's most comprehensive database in its field containing 5 million entries of which 95% are supported by abstracts. Starting from 2009, part of entries is available as full-text periodicals.

The Conference Committee and editorial Board are open to comments and recommendations for the development of future conference proceedings and organisation of international scientific conferences.

We would like to thank all the authors, reviewers, members of the Programme Committee and the Editorial Board as well as supporting staff for their contribution organising the conference.

On behalf of the conference organisers
Gunita Mazūre
Associate professor of Faculty of Economics
Latvia University of Agriculture

Contents

1. Resources and sustainable consumption		13
Armands Auziņš, Jānis Vanags	Key Social Economic Aspects of Sustainable Land Management in the Baltic Countries	15
Vivita Baumane	Soil Quality Assessment Impact on the Real Property Cadastral Value	24
Iluta Bērziņa, Tamāra Grizāne	Economic Impact of Tourism in Ķemeri National Park	31
Ligita Bite, Gunita Mazūre, Kristaps Makovskis	Possibilities to Use Latvia Wood Resources for Heat Energy Production	38
Artis Broņka, Andra Zvirbule-Bērziņa	Contribution Aspect of Renewable Energy Resource Usage in the Context of Latvia's Sustainable Development	48
Sanda Čingule-Vinogradova, Ilze Latviete	Allocation of the EU Structural Funds – Promotion of Strategic Development of Territories in Latvia	58
Skaidrīte Dzene, Aija Eglīte	Importance of Global and Local Policies to Foster Sustainable Consumption and Production	67
Tamāra Grizane, Iluta Bērziņa	Heritage Parks in the North Vidzeme: Resource and Usage	75
Joerg Hampshire, Barbara Freytag Leyer	Importance of Nutrition Labelling and Claims on Food among Elderly People	81
Staņislavs Keišs, Arkādijs Grišins	Innovation Opportunities of Export – Oriented Latvia's Forestry and Wood Processing Industry	89
Daiga Kunkulberga, Valdis Segliņš	Consumer Assessment on Whole Grain Products in Latvia	101
Solvita Laiviņa, Aija Eglīte	Impact of Taxes on the Budget of Latvia's Households	108
Francka Lovšin Kozina	Teaching Money Management in the Context of Sustainable Development	118
Ligita Melece	Sustainable Food: Issues of Food Security in Latvia	124
Anita Rācene	Availability Assessment of Physician Practices in Latvia	135
Aldona Zawojska	Policy Challenges in Reducing Age Imbalances in the EU Agriculture	144

2. Education and Rural Science		153
Irina Arhipova	Latvian Roadmap of National Level Research Centres	155
Aina Briģe	Structure of Latvia's Higher Education Studies in the European Qualification Framework	161
Lāsma Dobele, Eduards Grigorjevs	Analysis of Organisation Management Influencing Factors in Micro-enterprise	172
Juris Gudēvics	Representation of Deputies in Municipalities after the Local Government Elections	181
Ingrīda Jakušonoka, Anatolijs Prohorovs	Innovative Business Development and Financing	190
Stojan Kostanjevec, Živa Zupan, Verena Koch	Nutrition Science for Retired Rural Population in Slovenia	198
Maiga Krūzmētra, Baiba Rivža, Sandija Rivža	Role of Social Factors Generating Business Environment	206
Marta Meženiece, Baiba Rivža	Basic Aspects of Legal Factor within the National Innovation System in Latvia	214
Zane Mistre, Ilva Rudusa, Anda Zvaigzne	Evaluation of the Supply of Erythrocytes for Transfusion to Regional Medical Institutions in Latvia	222
Daiva Rimkuvienė, Janina Kaminskienė, Eligijus Laurinavičius	Teaching Mathematics at the Faculty of Economics and Management	231
Baiba Rivža, Gunta Grīnberga-Zālīte	Assessing Gaps in Rural Advisory and Training Services' Quality	238
Mona Vintilă, Cosmin Goian, Daliana Istrat	Comparative Analysis of Stress in Women from Rural and Urban Areas	245

1. Resources and sustainable consumption

Key Social Economic Aspects of Sustainable Land Management in the Baltic Countries

Armands Auziņš, MSc.oec., MSc.ing., PhD student, assistant professor
Faculty of Engineering Economics and Management, Riga Technical University
Jānis Vanags, Dr.oec., associate professor
Faculty of Engineering Economics and Management, Riga Technical University

Abstract. The paper explores primarily social economic aspects of sustainable land management that vary among the Baltic countries. Land and associated to it valuable resources form the basis for any land use, land development and land protection activities, and thus – provide social economic benefits. The study is related to supervision of enforcement of the regulatory enactments that should be suitable to both the particular social economic distinctions and traditions. Political, ecological and technological aspects also influence sustainable land management, but in this study emphasises the social economic aspects. Various research methods are employed in the study: statistical, historical and logical approach, comparative analysis and synthesis methods are selected in the research. Finally, findings of the study show comparable key social economic indicators as well as prerequisites and proposals for sustainable land management activities within the framework of the Baltic countries. The cross–border discussions lead to applications of comparative advantage theory.
Key words: sustainable land management, social economic development, ecological footprint, criteria, indicators.

Introduction

Land is characterised as a physical object in space with set value and attributed specific rights in land management. Land can be seen as most significant matter for both the transactions in real property market with social, economic, ecologic and cultural value (ownership rights), and the specific purpose of land use (land-use rights).

Land management is concerned with long-term activities for efficient use and protection of *land resources*. Land management is not dependent on the position of either an individual or organisation, but on their mutual interaction for the achievement of land use goals in an appropriate territory. In the framework of land management, the legal regulations and organisational structures (institutions) for land use administration are established according to the set social economic and environmental development goals within a country. Thus, land management shapes as interactive co-operational process of many participating parties (Auziņš A., 2009).

The concept of sustainable land management (SLM) was discussed in different conferences and publications. A professor from Technical University of Munich Holger Magel argued and stressed topicality and challenges of sustainable land development and management in relation to society needs in Nairobi's conference, 2001 (Magel H., 2001). Food and Agriculture Organisation of the United Nations emphasises reduction of land degradation and promotion of optimal land use as well as defines principles of sustainable land management (UNFAO, 2008). In publication of the World Bank about agriculture and rural development (World Bank, 2006) SLM is characterised as knowledge-based process which simultaneously has to ensure: the needs of growing population, diminishing of land degradation, and preservation of revive ability of the land resources. The World Bank has also contributed to the establishment of main indicators for assessment and supervision of rural development (World Bank, 1997). Framework for evaluation of sustainable land management (FESLM) is developed for the assessment of operation and efficiency increase of farm-stead system on the basis of integrated approach (Smyth A.J., Dumanski J., 1993).

Social economic criteria and indicators are one of the most frequently surveyed in order to get a notion about the level of development in a territory, and execute a comparative analysis. Selected sets of indicators and included indicators serve for the purpose to evaluate social economic environment and identify – how equitable the appropriate policy is; what social

economic aspects explain it; and how much the particular processes are influenced. Thus, it is possible to specify the trade-off of both pillars included into 'Brundtland model' (United Nations, 1987). For instance, a government for the purpose to balance both the governmental revenues and expenditures decides to diminish budget deficit to 3% of GDP and achieve the economic growth – 4.5% in 2012. Accordingly, it is considered to promote lower rates for governmental bonds and lower interest rates for investments that will enhance the trustiness of inhabitants and investors to the state on the whole, and result to the predictability of social economic development.

This study focuses on social economic aspects of sustainable land development exploring three Baltic countries – Estonia, Latvia, and Lithuania. The research *hypothesis*: assessment of key social economic aspects in relation to valuable land resources lead to comparative analysis of the selected countries and foresee its future development trends and challenges. Thus, the *aim* of the study is to make analytical and comparative assessment of both the social economic indicators and the stocks of significant land resources in the context of sustainable land management in the Baltic countries. The following *tasks* are addressed to achieve the set aim: 1) assessment of both the conceptual considerations of sustainable land management and effect of ecological footprint; 2) identification and assessment of changes of valuable land resources and main social economic indicators; and 3) making proposals for future sustainable land management on the basis of cross border comparative analysis.

Analytical assessments are burdened due to the limitations of comparable data in the national account systems and official databases. The problems aroused, because the particular data were determined using different methodologies by the countries, and the descriptions of the methodologies were available abstract.

Statistical, historical and logical approach, comparative analysis and synthesis methods are employed in the research.

Results and discussion

1. Assessment of sustainable land management

Working group, which developed FESLM, has identified land quality indicators as 'biophysical component' for evaluation of sustainable land management (Smyth A.J., Dumanski J., 1993). The report states that land quality indicators (LQI) are a key requirement for sustainable land management. These indicators are developed under the guidance of the World Bank. The LQI programme addresses the dual objectives of environmental monitoring and sector performance monitoring for managed ecosystems (agriculture, forestry, conservation, and environmental management). It is being developed for application at national and regional scales, but it is also part of a larger, global effort on improved natural resources management (Pieri C. *et al.*, 1995). However, Dumanski and Pieri state in LQI programme that a core set of land quality indicators is available to describe the state of biophysical resource, but similar progress has not been made for the economic and social indicators (Dumanski J., Pieri C., 1998).

As the results of former investigations in this area evidently indicate, this approach is binding and considerable for the evaluation of SLM. FESLM approach is related to the identification of evaluation factors and development of criteria, and based on understanding of cause and effect for the purpose to determine the likely status of different evaluation factors in the future. This approach provides definition of specific indicators and thresholds. Indicators are concerned with environmental attributes that measure or reflect environmental status or condition of change, but thresholds – levels of environmental indicators beyond which a system undergoes significant change, in other words, points at which stimuli provoke significant response. FESLM approach provides two 'levels' – action (local framework) and master (reference framework). Thus, the first refers to a procedure for evaluating the sustainability of a specific kind of land use, in a specific location, over a specific period of time; using the pathway, aims, approaches, and actions identified in the master framework expressed in terms of selected indicators, criteria, and thresholds. It follows that the second refers to sustainability evaluations of land management package expressed in general terms and not tied to any specific land use goal (Smyth A.J., Dumanski J., 1993).

However, for the purpose to make comparisons with the official indicators of the countries, one has to take into consideration the accessibility to data administration systems and availability of actual data within the systems. Along with quantitative indicators the qualitative indicators also exist which are not unambiguously comparable without additional study. Furthermore, besides resulting indicators, the indicators of influence (impact) should be identified for a more complete analysis.

Investigating and analysing different definitions and statements regarding sustainable development and SLM as well as taking into account both the land resources (soils, stands, waters) and the infrastructure needed for its efficient management (amelioration systems, roads, utilities, dams, and other building structures), *sustainable land management* can be defined as managerial system, including the land and infrastructure needed for its use as unified creative resource, which is used according to the set sustainable development criteria within the country for constant provision of changing needs of the bodies, balancing both the using of land resources and preserving its revive ability in an appropriate territory.

Thus, including systems approach in the concept of SLM and underlining the balanced using of land resources, the SLM system can be described according to its main goals: productivity, security, protection, social economic acceptability, and viability (revive ability) of land resources.

In different countries the social economic indicators and its groups are applicable to stated territory – either total in the country, region, or municipality. Indicators are settled into the national account systems and other data administration systems, and serve as basis for an option of key comparable indicators. It is possible to evaluate the SLM system, analysing these indicators. Three Baltic countries – Estonia, Latvia and Lithuania are the part of Europe, and territorially located in the central part of the Baltic Sea region. The progress of cultural history and heritage has been similar in these countries. However, the social economic development and the aspects of SLM are worth assessing, because they may be seen as substantial preconditions for future integration in the EU and Baltic Sea region.

2. The effect of ecological footprint

Development of society creates externalities that influence the environment in integrated way. This influence may be seen as *ecological footprint* (EF). EF reflects the biologically productive landed and sea area needed for the provision of resources that on average are used by one global inhabitant when acquiring necessary goods and services. Global hectare is a measure unit of EF. This unit is calculated taking into account the utilised resources during a year and productive areas of lands and waters needed for production of these resources (Vanags J. *et al.*, 2010).

Table 1

Assessment of EF in the Baltic countries

Territory	EF global ha/inhab.	Overplus global ha/inhab.	EFA_k
Estonia	7.9	1.1	0.1
Latvia	5.6	1.4	0.3
Lithuania	4.7	-0.3	-0.1
World	2.7	- 0.9	- 0.3
Europe*	4.7	-1.8	-0.4

*Source: authors' calculations based on Living Planet Report 2010; data source from 2007 (Living Planet Report, 2010); *data on 35 countries selected in Europe; EFA_k – adequacy coefficient of EF*

Assessment of EF and its comparison in the Baltic countries can be seen as global aspect of sustainable development. It is impossible to solve the sustainable development problems in one or several countries because of influence of global aspects. However, it is a cause of deem that the results of sustainable development policy can be evaluated taking into consideration the EF of each country – the accessible land resources and necessity of their use for the production of commodities and services during a determined period of time.

Table 1 shows the assessment of EF in the Baltic countries. 'Overplus' indicates the area of fertile land and water which is either left over or lacks in the current country to provide resources for the production of products and services to be consumed by the inhabitants of a particular country. The indicators included in Table 1 show that EF among the Baltic countries is larger than overall in the world. The consumption of inhabitants of Latvia is in the size of 5.6 global ha large EF. Moreover, biocapacity of Latvia gives opportunity to its inhabitants consume 30% more products and services without borrowing resources from other countries. In two other countries, Estonia and Lithuania the situation regarding this aspect is worse. Total biocapacity in Lithuania is by 0.3 behind the EF, measuring in global ha per inhabitant.

At the same time, comparing the level of inhabitants' well-being in selected countries, the difference is relatively insignificant. Thus, the Gross Domestic Product (GDP) in current prices per capita in 2009 is EUR 10 300 in Estonia; EUR 8 200 in Latvia; and EUR 8 000 in Lithuania (European Commission, *Eurostat* database, 2010). However, it can be concluded that, if the difference in sizes of EF of comparable countries is larger than the difference in GDP per capita, than the country which has these indicators larger uses larger amount of resources to produce each unit of GDP. Observing EF and well-being of other countries of the world, the differences can be seen even more significant.

3. New aggregative index of the Baltic Sea countries

Swedbank Baltic Sea Index (Swedbank, 2010) can be seen as new aggregated indicator in the countries of the Baltic Sea region. The index characterises a social economic setting, including attractiveness of foreign investments and competitiveness of the country.

The results of the study on 2009 indicate that: Estonia with the population of 1.3 million and 1.8% of the average GDP growth during the last 5 years score relatively high on the index – 7.3; Latvia with the population of 2.3 million, and 2.1% of the average GDP growth during the last 5 years score on the index – 6.3; Lithuania with the population of 3.4 million and 2.7% of the average GDP growth during the last 5 years score on the index – 6.5. Thus, foreign trade, governance and education score well, while there is room for improvement in labour market policies in Estonia. In particular, Latvia ranks relatively high in the categories Education and Logistics, while lagging in the areas of Tax policy and Financial markets, yet labour market indicators are low, while education performs well in Lithuania. The Nordic countries – Sweden, Norway, Finland, and Denmark score the highest in the Baltic Sea region on the index and are, at 8.5-8.8, among the 15 most competitive countries in the world (Swedbank, 2010). The average index for the region is 7 (out of a possible 10).

4. Changes of the most important land resources

Tables 2 and 3 show the changes observed in both the agricultural and forest areas in the Baltic countries. The areas are selected by land-use categories and contain a percentage of registered areas of the countries.

Table 2

Changes of the agricultural land area in the Baltic countries

Country	Division of agricultural area by years						2009 to 2000	2009 to 2005
	2000		2005		2009			
	1000 ha	%	1000 ha	%	1000 ha	%	%	%
Estonia	875.80	19.4	882.30	19.5	931.80	20.6	6.39	5.61
Latvia	2487.93	38.5	2462.08	38.1	2429.77	37.6	-2.34	-1.31
Lithuania	3488.70	53.4	3472.13	53.2	3463.57	53.0	-0.72	-0.25

Source: authors' calculations based on Land Report of the Republic of Latvia (State Land Service of Latvia, 2010); Land Fund of the Republic of Lithuania (National Land Service of Lithuania, 2010); Statistical Year Book of Estonia, 2001; 2010 (Statistics Estonia, 2010)

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 3

Changes of the forest land area in the Baltic countries

Country	Division of forest area by years						2009 to 2000	2009 to 2005
	2000		2005		2009			
	1000 ha	%	1000 ha	%	1000 ha	%	%	%
Estonia	*2243	49.6	*2284	50.5	2288.49	50.6	2.03	0.20
Latvia	2865.15	44.4	2916.77	45.2	2955.49	45.8	3.15	1.33
Lithuania	1998.40	30.6	2100.34	32.2	2125.77	32.6	6.37	1.21

*Source: authors' calculations based on Land Report of the Republic of Latvia (State Land Service of Latvia, 2010); Land Fund of the Republic of Lithuania (National Land Service of Lithuania, 2010); * FAO, Global Forest Resources Assessment 2005 (UNFAO, 2010); Estonian Environmental Indicators 2009 (Estonian Environmental Information Centre, 2010)*

During the last decade the agricultural land area has increased in Estonia and decreased in Latvia and Lithuania, but the forest land area has gradually increased in all three Baltic countries, and covers a remarkable share.

Table 1 and Table 2 reflect the quantitative changes of valuable land resources during the time period of 2000 – 2009, and its area share in percentage.

5. Assessment of the main social economic indicators

The results of analysis of this publication are substantiated with assessment and calculations of the major indicators of the Baltic countries. The analysis contains data characterising social economic development in the years 2000, 2005, and 2009 which are included into the national account systems and accessible in both the national official databases and the European official database – *Eurostat*. Respective indicators are applied to the territorial/area unit and number of inhabitants, and summarised in tables and *Appendix* of this publication.

The accuracy level of data indicated in euros and national currency may differ due to conversions made on the basis of the consolidated data. Data on foreign investments have been converted into euros based on the official exchange rate at the end of the period. The estimation of foreign direct investments has been changed in Lithuania since Quarter 1, 2005 (Statistics Lithuania, 2010). Changes in the estimation have influenced break in time series. Data of total foreign investments are not included into the official statistics of Lithuania for the corresponding time period. Therefore, the overview of foreign investments is limited. Thus the research includes only data on foreign direct investments (FDI) for the purpose of international comparisons.

Direct investments characterise the long-term relationships between direct investors and enterprises of direct investment. Comparing data of three Baltic countries, it can be stated that Estonia has the most amount of FDI stock. Thus, the amount of received FDI gained at 20.6% of GDP in 2005. However, statistics shows that the amount of received investments of this kind has shrunk in all Baltic countries in 2009, but a remarkable amount of FDI stock has even been withdrawn from Estonia (*Appendix*).

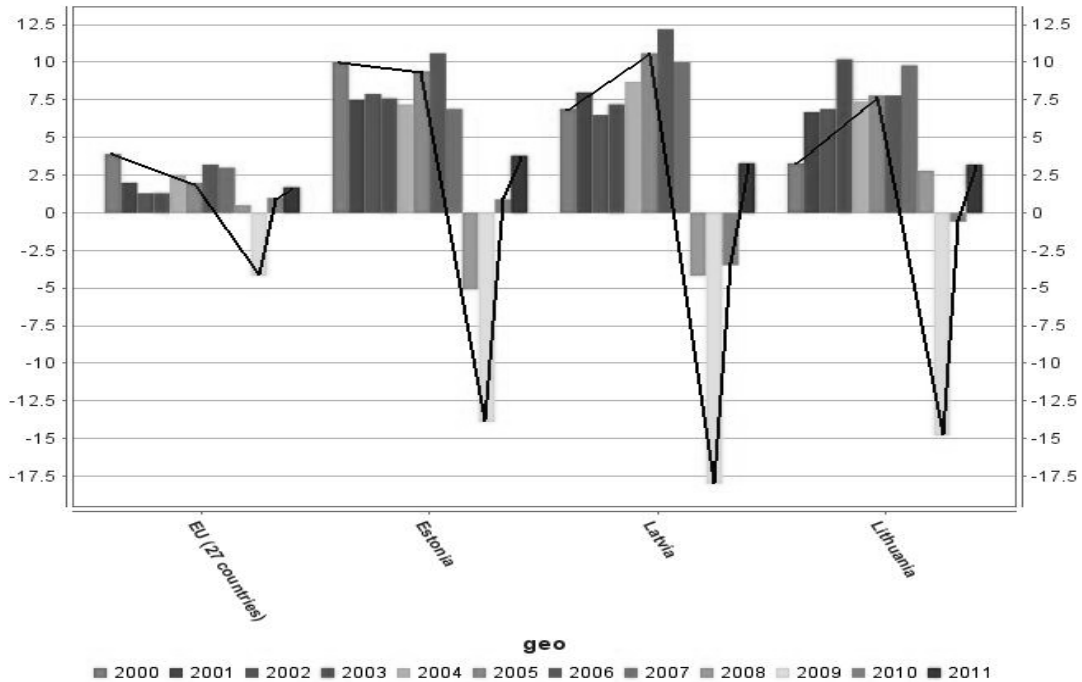
GDP, a measure of the economic activity, defined as the value of all goods and services produced less the value of any goods or services used in their creation. Estonia has the smallest number of inhabitants and the smallest area of the country among three Baltic countries. Though, GDP per capita in current prices is the highest in Estonia.

The structure of value added (VA) by economic activity is identified exploring statistics of GDP by production approach. This structure among other economic activities shows gross VA of agriculture, hunting and forestry.

The VA of agriculture, hunting and forestry in current prices related to agricultural and forest area unit in Estonia is about 20% higher than in Latvia in 2000 and 2005; while about 10% less than in Latvia in 2009. Lithuania has the biggest number of inhabitants and the largest area of the country among the Baltic countries. The GDP volume at prices of the

previous year is higher in Lithuania. Moreover, the GDP volume at prices of the previous year related to the country area unit in Lithuania is about 30% higher than in Latvia and Estonia; while VA of agriculture, hunting and forestry in current prices related to agricultural and forest area unit in Lithuania shows considerably higher figure than in Estonia and double as much than in Latvia. It can be concluded that Lithuania is a more agrarian country than the other Baltic countries. Therefore, the implementation of rural development programmes and land consolidation activities to promote efficient rural infrastructure becomes more topical. Although all three Baltic countries have a considerable amount of agricultural and forest lands, and the associated resources are seen as valuable and significant that influence the development of national economies, their proportion in the national structure of VA decreases gradually considering the time period from 2000 to 2009 – from 4.5% to 2.3% (-2.2%) in Estonia, from 4.3% to 3.0% (-1.3%) in Latvia, and from 6.3% to 4.2% (-2.1%) in Lithuania.

This analytic assessment of social economic aspects of SLM includes the major indicators which let make cross-border comparisons, exercising available data in the national account systems and official databases. Availability of appropriate data is a prerequisite for including other indicators in the study. Examining indicators, which are included in different databases, it can be concluded that they are determined using different methodologies, and the descriptions of methodologies are available abstract. For instance, the employment rate according to data of the national agency – the State Employment Agency and data included in *Eurostat* database varied by 3% for the equal time period in Latvia in 2009. Accessible and comparable data, which were provided according to the unified methodology, would allow expand the study on indicators that characterise the influence of social economic factors, incl. territorial development and development of specific economic sectors, environment and infrastructure, access to credits, productivity of land resources, development of innovative technologies, availability of renewable energy resources etc. Similarly, the unemployment rate, governmental expenditures, national debt and inflation/deflation during the social economic crisis to a great extent show the capacity and possibilities of the governments to overcome the global crisis.



Source: authors' construction based on the data selected in Eurostat database (European Commission, 2010)

Fig.1. **GDP volume growth rate, % change of the previous year**

For instance, timely support of a government and promotion of employment during the crisis can be seen as notable prerequisites to tide over the critical problems and contribute to

further growth. However, this publication does not stress on indicators that characterise the crisis being, but it reflects the major comparable indicators of economic development which influence the social economic environment of land management as well as its sustainability.

The calculation of the annual GDP volume growth rate is intended to allow comparisons of the dynamics of economic development both over time and between economies of different size. For measuring the GDP growth rate in terms of volumes, the GDP in current prices is valued in prices of the previous year, and thus the computed volume changes are imposed on the level of a reference year – a chain-linked series. Accordingly, price movements will not inflate the growth rate. The graph in Figure 1 shows the GDP volume growth rate – percentage change of the previous year. Black lines accordingly show data of the years 2000, 2005, and 2009. The years 2010 and 2011 reflect the forecasted data.

Following both the nature and direction of the black line in Figure 1, the forecasts of Latvia's future development seems the most optimistic among the Baltic countries, because *the most rapid* economic decline is planned to convert into *the most sustained* increase. Although the production volumes and export indices have tangibly increased, GDP growth was: 2.9% in Lithuania; 2.0% in Estonia; and 0.1% in Latvia in Quarter 2, 2010 according to the estimations of *Eurostat*. Thus, the development according to this indicator relatively can be characterised as 'plunge' in Lithuania, 'slowly' in Estonia, while 'weakly' in Latvia.

Along with the GDP growth, it would be reasonable also to compare governmental expenditures, budget deficit, and total debt for a foreseeable time period that characterised the preconditions of promotion of social economic situation and GDP growth. Both the unreasonable amount of loans and inefficient increase of governmental expenditures can facilitate the decrease of limited national land resources in the future.

Conclusions

1. In the course of this study the suggestion is made that data of the national account systems and other official statistical data should be included into the national data systems according to a unified methodology and uniform indicators as well as appropriate data accessibility has to be ensured in *Eurostat* database for making unambiguous comparisons of interstate data, incl. uniform currency. Otherwise, the expression has to be practised from *Swedbank's* study regarding to 'not bearing the responsibility of the study results' that in itself does not solve any problem. Furthermore, the precondition for accession to an alliance of the countries should be provision of the data compatibility of national accounts.
2. Selected groups of indicators and embraced indicators serve as basis for the evaluation of social economic environment and identification of progress of proper policy as well as ascertain – how equitable the policy is; what social economic aspects explains it; and what influence to specific processes is made. Analysing the data included in *Appendix* of this study, in general it can be concluded that comparatively the level of social economic development meets the results of *Swedbank Baltic Sea Analysis* in three Baltic countries.
3. Since the stocks of major resources of forests and agricultural lands are relatively stable during the time period of 2000 – 2009, the assessment of EF can be seen as constant for the mentioned time period in the Baltic countries. Assuming this consideration and evaluating GDP data, it can be concluded that for the production of each unit of GDP, there has been used greater amount of resources in Estonia than in Latvia and Lithuania, because difference of both the EF and GDP per capita is relatively higher.
4. The proportion of VA of agriculture, hunting and forestry in the structure of national economies of the Baltic countries is relatively small – currently 2.3% - 4.2% that are apart from wood and wood products, wholesale, retail trade, and services. However, considering the long-term land management goals and rural area development trends in the Baltic countries, it can be concluded that agricultural and forest resources make significant potential for solving ecological and nature protection objectives promoting traditional living and livelihood in rural areas.
5. In the future the following notion is topical: how consumption of the resources could be rationalised – more saved up than consumed for the purpose of progress and development due to gradual decrease of population and development trends of global market promoting

either little increase or retain in the level of the previous period or even decrease of produced VA instead of its rapid annual growth, as it was recognised during the recent years.

6. Also further collaboration of the Baltic countries has an essential importance for ensuring SLM. Although the economic activities explained by social economic indicators are comparatively distinctive; however, the historical development and neighbourly relations as well as the location and development possibilities within the Baltic Sea region are conjunctive. Furthermore, the territories of these countries are covered with considerable amount of forests and agricultural lands which in the political-economic and ecological context can be seen as advantage for future sustainable development and usage of land resources.

Bibliography

1. Auziņš, A. (2009). Zemes pārvaldības institūcijas (Land Management Institutions). Riga: RTU. *Geomatics* No.11, Volume 6, pp. 53-68.
2. Bank of Estonia. Statistical indicators, official database. Retrieved: http://www.eestipank.info/pub/en/dokumendid/statistika/maksebilanss/statistika/statistika.html?ok=1. Accessed: 20 September 2010.
3. Central Statistical Bureau of Latvia. Official statistical database. Retrieved: http://www.csb.gov.lv/csp/content/?lng=en&cat=355. Accessed: 6 September 2010.
4. Dumanski, J., Pieri, C. (1998). Land Quality Indicators (LQI) Program: Research plan. 'Land Quality Indicators – Satellite Symposium'. 16th World Congress of Soil Science, Montpellier, France.
5. Estonian Environmental Information Centre. (2010). Estonian Environmental Indicators 2009. Tallinn. Retrieved: http://www.keskkonnainfo.ee/publications/4273_PDF.pdf. Accessed: 19 August 2010.
6. European Commission. *Eurostat* statistical database of EU countries. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics. Accessed: 6 September 2010.
7. Living Planet Report 2010. Retrieved: www.footprintnetwork.org/images/uploads/2010_NFA. Accessed: 12 November 2010.
8. Magel, H. (2001). Sustainable Land Development and Land Management in Urban and Rural Areas – about Surveyors' Contribution to Building Better World, Report in International Conference on Spatial Information for Sustainable Development, Nairobi, 2–5 October 2001. Retrieved: http://www.fig.net/pub/proceedings/nairobi/magel-PS1-1.pdf>. Accessed: 7 July 2010.
9. National Land Service of Lithuania. (2010). Land Fund of the Republic of Lithuania. Retrieved: http://www.nzt.lt/index.php?id=221. Accessed: 19 August 2010.
10. Pieri, C., Dumanski, J., Hamblin, A.S., Young, A. (1995). Land Quality Indicators. World Bank Discussion Paper, No 315. World Bank, Washington, D.C.
11. Smyth, A. J., Dumanski, J. (1993). FESLM: An International Framework for Evaluation of Sustainable Land Development. World Soil Resources Report. Rome, UN FAO.
12. State Land Service of Latvia. (2010). Land Report of the Republic of Latvia. Retrieved: http://www.vzd.gov.lv/sakums/publikacijas-un-statistika/citas-publikacijas/?id=315. Accessed: 19 August 2010.
13. Statistics Estonia. (2010). Statistical Year Book of Estonia. 2001; 2010. Tallinn. Retrieved: http://www.stat.ee/. Accessed: 19 August 2010.
14. Statistics Estonia. Statistical Office of Estonia database. Retrieved:http://pub.stat.ee/px-web.2001/I_Databas/Economy/databasetree.asp. Accessed: 20 September 2010.
15. Statistics Lithuania. Official statistical database. Retrieved: http://db1.stat.gov.lt/statbank/SelectTable/Omrade0.asp?PLanguage=1. Accessed: 20 September 2010.
16. Swedbank. (2010). Baltic Sea Report. Swedbank Baltic Sea Analysis, No.24. Retrieved: http://www.swedbank.lv/lib/en/BSR_Report_2010_EN.pdf. Accessed: 7 July, 2010.
17. UNFAO. (2008). Sustainable Land Management. UNFAO official site. Retrieved: http://www.fao.org/docrep/010/ai559e/ai559e00.HTM. Accessed: 7 July 2010.
18. UNFAO. (2010). FRA 2005 categories. Forest area statistics. FAOSTAT database http://www.fao.org/forestry/country/32185/en/est/. Accessed: 19 August 2010.
19. United Nations. (1987). Report of the World Commission on Environment and Development. General Assembly Resolution 42/187, 11. Retrieved: http://www.un.org/documents/ga/res/42/ares42-187.htm. Accessed: 12 April 2007.
20. United Nations. (1987). Report of the World Commission on Environment and Development: Our Common Future, Oxford: Oxford University Press.
21. Vanags, J., Geipele, I., Mote, G. (2010). Sustainable Development: The New Approach Inquiry. Proceedings of the 6th International Scientific Conference "Business and Management 2010". Vilnius Gediminas Technical University, pp. 518-528.
22. World Bank. (1997). Rural Development: From Vision to Action: A Sector Strategy. Environmentally Sustainable Development Studies and Monographs. No 12. Washington, D.C.
23. World Bank. (2006). Sustainable Land Management. Challenges, Opportunities, and Trade-offs. Washington, D.C.

Appendix

Major comparable indicators of the Baltic countries in the corresponding course of time

Indicator \ Year	2000	2005	2009
ESTONIA			
Economic activity (source of data: European Commission, *Eurostat*, 2010)			
GDP in current prices (EUR/capita)	4 500	8 300	10 300
GDP volume (mill. of EUR) in prices of the previous year	5 892.9	10 598.7	13 868.0
GDP per capita in Purchasing Power Standards (EU-27 countries=100); *break in series	45	62*	62
Foreign direct investment (source of data used for calculations: Statistics Estonia; Bank of Estonia, 2010)			
Stock (mill. of EUR) at the end of year	2 843.0	9 560.5	11 283.2
Stock per capita, EUR	2 031.4	7 102.4	8 418.4
Received per year (mill. of EUR)	389.0	2 186.2	- 587.2
Received per capita, EUR	278.0	1 624.1	-
Received, % of GDP	6.6	20.6	-
Value added (VA) on area			
GDP volume in prices of the previous year related to country area unit (EUR/ha)	1 303	2 343	3 066
VA of agriculture, hunting and forestry in current prices related to agricultural and forest area unit (EUR/ha)	79.6	104.4	86.6
LATVIA			
Economic activity (source of data: European Commission, *Eurostat*, 2010)			
GDP in current prices (EUR/capita)	3 600	5 700	8 200
GDP volume (mill. of EUR) in prices of the previous year	7 279.7	12 300.6	18 910.1
GDP per capita in Purchasing Power Standards (EU-27 countries=100); *break in series	37	49*	49
Foreign direct investment (source of data used for calculations: Central Statistical Bureau of Latvia, 2010)			
Stock (mill. of EUR) at the end of year	2 240.9	4 159.0	8 158.5
Stock per capita, EUR	947.8	1 812.5	3 628.6
Received per year (mill. of EUR)	439.4	567.9	51.6
Received per capita, EUR	185.2	246.9	22.9
Received, % of GDP	5.3	4.4	0.3
Value added (VA) on area			
GDP volume in prices of the previous year related to country area unit (EUR/ha)	1 127	1 904	2 928
VA of agriculture, hunting and forestry at current prices related to agricultural and forest area unit (EUR/ha)	59.0	81.7	93.9
LITHUANIA			
Economic activity (source of data: European Commission, *Eurostat*, 2010)			
GDP in current prices (EUR/capita)	3 500	6 100	8 000
GDP volume (mill. of EUR) in prices of the previous year	10 626.4	19 574.8	27 442.2
GDP per capita in Purchasing Power Standards (EU-27 countries=100); *break in series	39	53*	53
Foreign direct investment (source of data used for calculations: Statistics Lithuania, 2010)			
Stock (mill. of EUR) at the end of year; *break in series	2 509.2	6 920.7*	9 638.8
Stock per capita, EUR	719.7	2 033.7	2 895.3
Received per year (mill. of EUR)	291.6	2 231.0	489.3
Received per capita, EUR	83.6	655.5	147.0
Received, % of GDP	2.7	11.4	1.8
Value added (VA) on area			
GDP volume in prices of the previous year related to country area unit (EUR/ha)	1 627	2 998	4 202
VA of agriculture, hunting and forestry in current prices related to agricultural and forest area unit (EUR/ha)	126.2	163.1	180.7

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Soil Quality Assessment Impact on the Real Property Cadastral Value

Vivita Baumane, Mg.oec., PhD student
Faculty of Economics, Latvia University of Agriculture

Abstract. Land quality assessment is one of the most important characteristics that affects the real estate cadastral value, which is used as the base value for the rural cadastral evaluation. The study evaluated soil quality assessment in the parishes of Latvia. The study deals with the analysis of the agricultural land area and the evaluation of the county real property expert survey results. The study has led to the conclusion that the soil quality assessment is important data for the determination of cadastral value. The main conclusion of the study is that the country needs a complex of state measures to update the soil quality assessment resulting from the development of real property cadastral value.
Key words: real property, agriculture land, soil quality assessment, cadastral value, base of cadastral value.

Introduction

With Latvia's gaining independence, the country began a rapid political, social, and economic restructuring based on private property as well as the decentralised market-oriented farming system. The restructuring resulted in the adoption of a resolution "On the Agrarian Reform in the Republic of Latvia" (Par agrāro reformu.., 1990) on 13 June 1990 on as well as the adoption of the law "On Land Reform in Rural Areas of the Republic of Latvia" (Par zemes reformu ..., 1990) on 21 November 1990. Cadastral valuation in Latvia, since its independence, began with the land valuation of the land reform provision. Therefore, the pre-developed, scientifically based land-quality assessment system, which included all agricultural land in the assessment of individual village councils and districts, was maintained. The law "On Land Privatisation in Rural Areas" also included the fact that the evaluation of land should be based on:

- land evaluation points;
- weighting of holding the position;
- one land evaluation point to the value of 70 kg of rye in conformity with the price of rye at the moment of the transfer of land;
- growing tree stand assessment.

It was decided to support the new agricultural land cadastral evaluation methods considering the land reform and the number of new landowners as well as assessing land-use projects and soil mapping results developed in the Soviet time. The methods included the application of the soil fertility evaluation developed in 1957-1959, the essentials of the 20th century inventories, experience, and the proposals developed during the second round of improvements to the methodology (Boruks, 1991; Boruks, 2004).

Soil quality assessment of all land users was defined based on each type of land use and climatic conditions. Their impact on crop yields and total crop production estimates included the change of natural conditions. The actual land evaluation was carried out using a survey of certain land uses in the field and survey plans and maps of soils, and agrochemical survey maps and descriptions of soils created in the Soviet period. Land appraisers found soil properties, marked the boundaries, and set the land valuation tables and assessment of the points - the soil quality assessment. Real property cadastral valuation methodology is continuously updated, but the soil quality assessment is a key factor in determining the rural cadastral value of base indicators (Nekustamā īpašuma valsts…, 2005; Kadastrālās vērtēšanas noteikumi, 2006).

The study hypothesis: soil quality assessment of the agricultural land has a significant impact on the property values. Consequently, the study aims to evaluate the necessity for updating the agricultural land quality assessment and its impact on the cadastral value. The study addressed the following tasks:

- to evaluate the real estate cadastral value through determining characteristics and analysis of agricultural land;
- to evaluate the average parish soil quality assessment;
- to analyse local expert survey;
- to provide conclusions and recommendations.

Scientific literature, laws, the data of the State Land Service are used in this research.

Monographic method, questionnaires method, and descriptive statistics analysis method is used in the particular research.

Results and discussion

It is necessary to obtain and maintain the cadastral data in the cadastral information system for any property of a certain cadastral value. One is a qualitative assessment of land used for the base value of the rural cadastral evaluation.

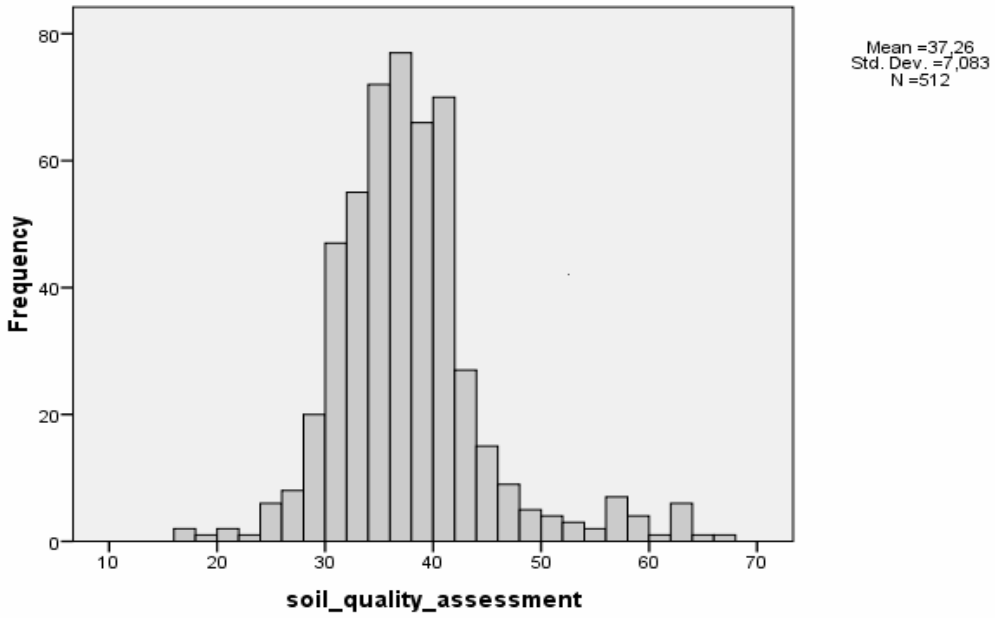
The indicators of the base cadastral values for rural land shall be:

- the base value for the utilised agricultural land soil for each quality group of the utilised agricultural area;
- the base value for afforested land for each quality group of afforested land.

Utilised agricultural area depending on the quality assessment in points of the utilised agricultural area by the regulatory productivity (one land value point – 70 kg of rye units) shall be divided into six quality groups (Kadastrālās vērtēšanas noteikumi, 2006; Baumane, 2009):
Quality group I– less than 20 points;
Quality group II– from 20 to 30 points;
Quality group III– from 31 to 40 points;
Quality group IV– from 41 to 50 points;
Quality group V– from 51 to 60 points; and
Quality group VI– more than 60 points.

The following main factors affecting the value shall be assessed in respect to the rural land (Baumane, 2010): land quality, content of the use types of land, area, location, building effect, and encumbrances.

Analysing 512 territorial units for the average quality assessment of the agricultural land soil, a trend showed that mainly soil quality assessment ranges between 30 and 41 points (Figure 1).



Source: author's survey by means of SPSS

Fig.1. **Distribution of soil quality assessment**

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

The lowest assessment is in Kolka and Engure parishes - only 17 points, and in Lapmežciems parish - 19 points, encompassing the unimproved agricultural land of no practical use, thus, they are included in Quality group I. In contrast, the highest rating - 67 points is in Svitene parish and 65 points - Sesava parish, which are included in Quality group VI. The average assessment of soil quality in Latvia is 37 points, corresponding to Quality group III.

However, soils in Latvia have not been studied on the state level for 20 years, and these estimates are based on the 1989 – 1991 year materials of soil mapping. Currently, each unit of land is fixed by the weighted average of the agricultural land quality assessment in points, and it is registered in the Cadastral Information System at each property.

Today, there is no a single land policy in Latvia. Only a few laws regulate soil protection, and there is no institution, which deals with soil protection aspects.

In 2006, the Soil Protection Thematic Strategy was approved for the European Commission. Hence, the EC has prepared a draft Framework Directive on Soil Protection. The EC has currently no common rules, which ensure the protection of soil, and the political agreement of the Member States have not reached as part of the opinion that the Directive is not necessary, since everything is sufficiently regulated on the national level. While in Latvia, since its independence, the soil conservation has been neglected, and it was acknowledged that the directive could serve as guidelines in this area. In 2007, the Ministry of Agriculture set up a steering group of the measure - soil maps and databases, digitalisation and updating. In 2008, the Cabinet approved the national policy framework, which was aimed at drafting an informative report on the land degradation. The framework included the issue of land re-cultivation / renewal of possible economic instruments; developing of a methodology for determining soil quality assessment; establishing of a land information system based on the current geo-spatial information in order to obtain complete and current information on any land unit and its processes.

There is a theoretical basis and prerequisites for improving the situation in Latvia; however, there are still soil maps in use that contain outdated information. In addition, the currently used soil classification differs significantly from the international classification of soils, including the classification developed by the Food and Agriculture Organisation (FAO). Therefore, it is necessary to prepare the soil map, which corresponds to the FAO standards. Soil mapping is also necessary to obtain systematic information on the state of the soil to determine areas of soil degradation risk, to calculate the carbon balance, to plan business, and to provide fertilisers and plant protection products used wisely to certain less-favoured areas, so that the real estate would establish an objective and cadastral value.

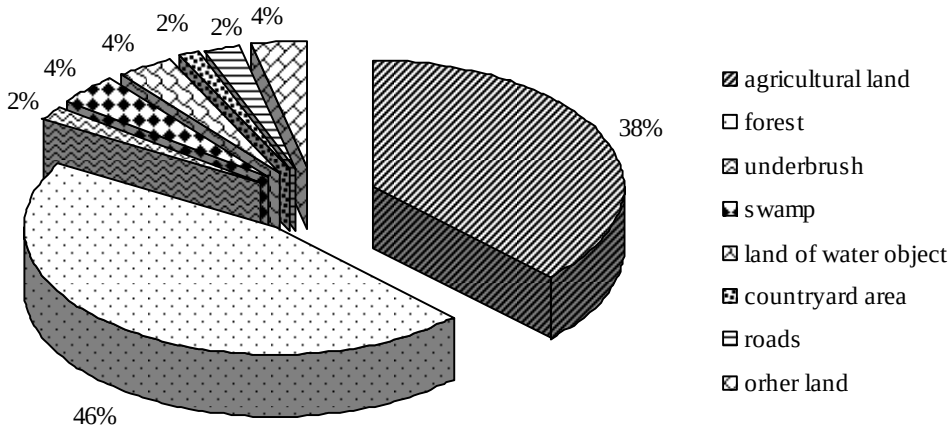
The main indicators characterising the soil quality of agricultural land is a state of agricultural land (arable land, meadows, pastures, and orchards) and its drainage situation. This is justified by several scientists (Boruks, Sumarakovs, 1972; Boruks, 2004; Aleknavicius, Gurklys, 2003) who have carried out studies finding that each country needs good quality and timely data on the drainage condition that in turn depends on the soil quality assessment. According to the Cadastral Information System data (on 1 January 2010), the largest areas of land are covered by forests with an area of 2,955,491.8 ha (46%) and agricultural land of 2,429,774.7 ha (38%) (Figure 2).

According to the land records on the breakdown of land by types of use, the breakdown is stable and on 1 January 2010, it has not changed significantly. In recent years, a downward trend of arable land and increase forest cover is observed. Agricultural land has decreased by 4 142 ha (0.1%) and forest area has increased by 6 243 ha (0.1%) compared with 2008.

State Land Service has published the data on the drained agricultural area for 2007. The Cadastre Information System has registered real property where the drained area is recorded, but an area where drainage is performed appropriately is unknown.

Therefore, a survey covering 109 local real property experts was carried out to identify the actual extent of the area in the country as well as to learn the views of specialists. The first question in the questionnaire was "What is the area of agricultural land in your local parish and the drained area of the agricultural land, including the operating system of drainage area?" Only four responses from Stopiņi, Auce, Ādaži, and Balvi counties were received to this question. Besides, the replies were incomplete, as the approximate area drained was indicated,

except for Ādaži county indicating that drained agricultural land accounts for 1064.7 ha of the total agricultural land - 1935.4 ha of.

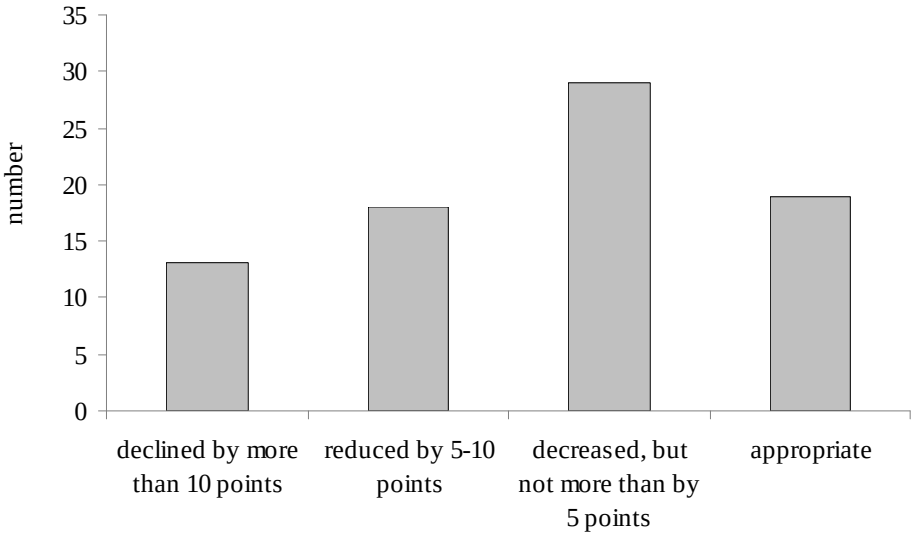


Source: author's construction based on the date of the State Land Service

Fig. 2. **Land areas by type of use, 1 January 2010**

However, Ādaži county indicated an approximate area of only 200 ha as the land of functioning drainage systems. Some counties have commented the questionnaire that the information on the agricultural area has still not been assembled counties, but access to its constituent parishes. However, the current state on agricultural land drainage by parishes or counties is not available.

The next question on the soil quality assessment was – "Does your local parish set the average agricultural land quality assessment in points, and is it consistent with the current situation?"



Source: author's survey (n=79)

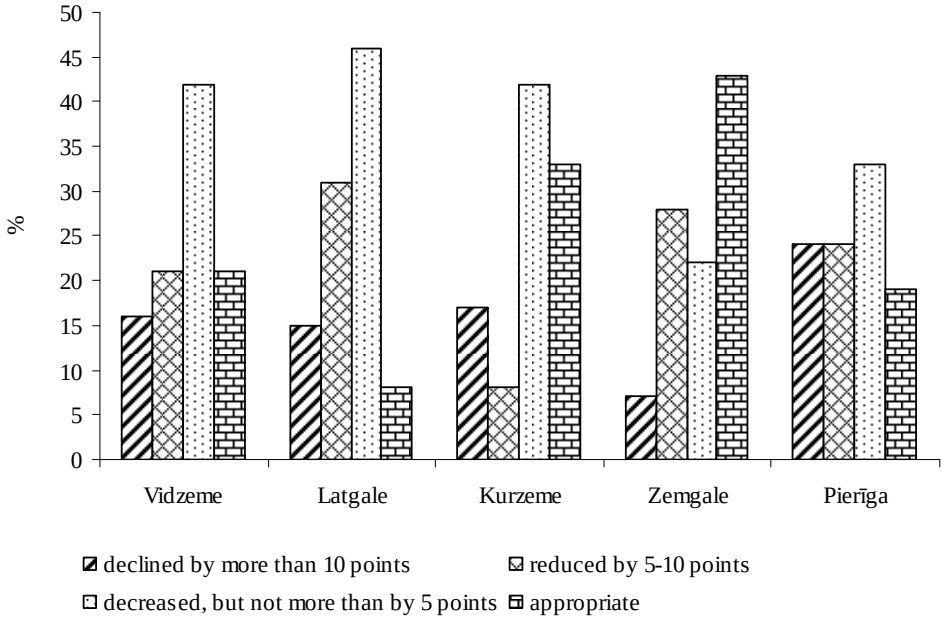
Fig. 3. **Respondents' assessment on the compliance of soil quality assessment**

Total respondents were split as follows (Figure 3) – 19 of respondents believe that the agricultural land quality assessment is appropriate; 29 - believe that it has decreased but not

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

more than 5 points; 18 - believe that the decline is of 5-10 points; and 13 - believe that it has declined by more than 10 points. None of the respondents answered that the qualitative assessment should be increased in their municipality.

The majority of respondents - 42% in Vidzeme, 46% in Latgale, and 33% in Kurzeme region have admitted that the assessment has decerased, but not more than 5 points (Figure 4). In addition, such an assessment decline in some cases may significantly affect the cadastral value of land. For example, if the land unit is located on agricultural land, which has the value of the first zone and its qualitative assessment is 52 points, then the base value is 990 LVL/ha. Yet, if the previous qualitative assessment of 52 points has fallen by 5 points, so there are 47 points, then the base value is 880 LVL/ha. Cadastral value has been reduced by 110 LVL/ha. In contrast, if the land unit is located in the agricultural land, which has the value of the first zone and its qualitative assessment is 58 points, then the base value is 990 LVL/ha, and a decrease in a qualitative assessment of 5 points leads to the assessment of 53 points, then the quality assessment group remains constant and does not change the basic value of the remaining 990 LVL/ha. Therefore, this change is examined in detail.

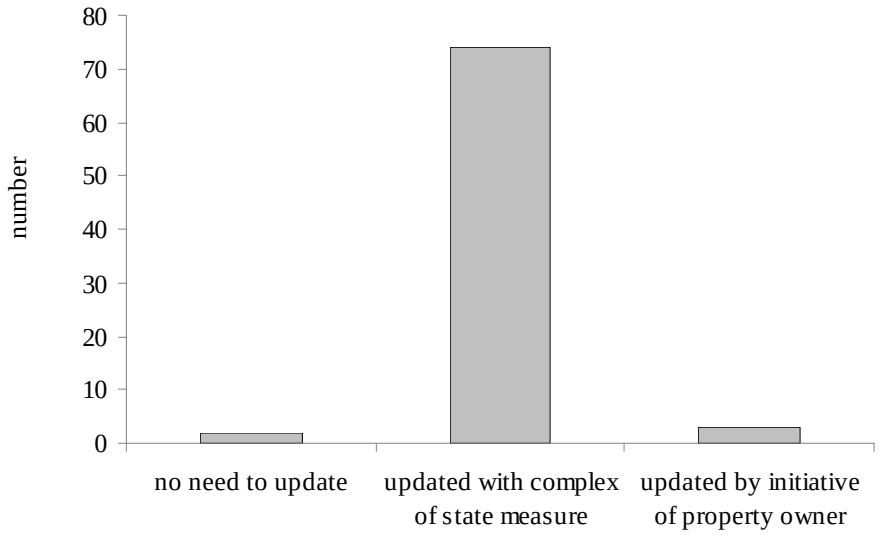


Source: author's survey (Vidzeme n=19, Latgale n=13, Kurzeme n=12, Zemgale n=14, Pierīga n=21)

Fig. 4. **Respondents' assessment on the compliance of soil quality assessment by regions**

Zemgale region is characterised by high quality agricultural land, asset evaluation and the development of agricultural production. Therefore, 43% of respondents in the region observe that the qualitative assessment of their local government is appropriate. In contrast, Latgale region, where the response "appropriate" is given only by 8% of respondents, while 46% say that a qualitative assessment has decreased by 5 points, and 31% - that a reduction is between 5 and 10 points.

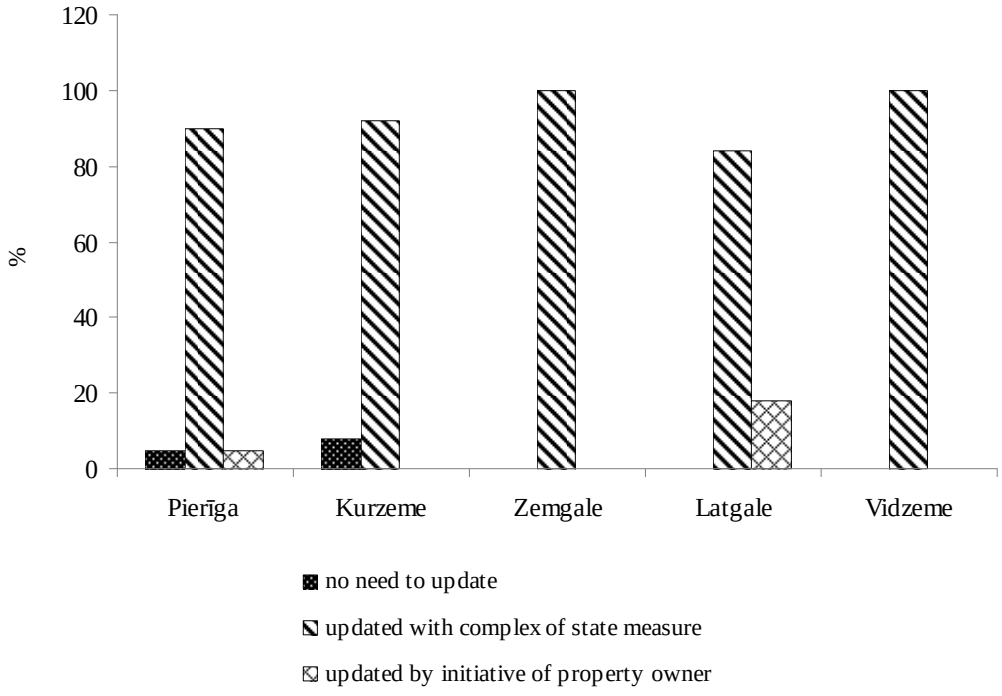
Therefore, the questionnaire was followed by the next question – "Is it necessary to raise agricultural land quality assessment?" In this matter, the respondents' opinion was ambiguous. Totally 74 respondents said (Figure 5) that the soil quality assessment had been updated with a complex of state measures.



Source: author's survey (n=79)

Fig. 5. **Respondents' assessment on the need for updating the agricultural land quality assessment**

Assessing the respondents' breakdown by regions (Figure 6), it may be noted that Vidzeme and Zemgale regions provide 100% consensus that the agricultural land quality assessment is updated with a complex of state measures.



Source: author's survey (Vidzeme n=19, Latgale n=13, Kurzeme n=12, Zemgale n=14, Pierīga n=21)

Fig. 6. **Respondents' assessment on the need for updating the soil quality assessment by regions**

The difference is seen in Latgale respondents' opinions, totally 18% of respondents note that it shall be updated after the property owner initiative, while 82% support the need for updating with a complex of state measures. In contrast, 8% of respondents in Kurzeme region

and 5% of respondents in Riga region argue that the soil quality assessment does not appreciate the update.

The study showed that the data used in the real property cadastral value in some cases do not reflect the real situation. This requires a significant research to improve the data quality and streamline the real property cadastral valuation.

Conclusions

1. Soil quality assessment is one of the most important indicators of the rural land value bases of cadastre development as well as in the calculation of the cadastral value.
2. According to the State Cadastral Information System of real property, which is based on the 1989 – 1991 year materials of soil mapping, the average assessment of soil quality is 37 points, which is not suitable on current farming conditions.
3. Soil mapping, which meets the FAO requirements should be carry out in order to obtain systematic information on the soil condition and consequently determine the cadastral value of real property.
4. The soil quality assessment analysis showed that only in 17% of Latvia's municipalities this assessment is appropriate.
5. According to the research and questionnaire results, it may be concluded a voluminous case complex, which would result in updated soil quality assessment is required on the state level.

Bibliography

1. Aleknavicius, P., Gurklys, V., Maziliauskas, Aleknavicius, A. (2003). Assessment of Consequences Resulting from Abolishing the Obstacles on Land Transactions. Transactions of the Estonian Agricultural University. Baltic Surveying'03. Tartu – pp. 12.-22.
2. Baumane, V. (2009). Improvement of Cadastral Valuation Models. In: Proceedings of the International Scientific methodical Conference: Baltic Surveying 2009. Tartu: Estonia University of Life Sciences, pp. 11-15.
3. Baumane, V. (2010). Cadastral Valuations Models. In: Proceedings of the International Scientific Conference: Economic Science for Rural Development, No 22. Jelgava: LLU, pp. 68-75.
4. Boruks, A. (1991). Zemes vērtēšanas metodika. LR LM Zinātniski tehniskās informācijas un propagandas centrs. 116 lpp.
5. Boruks, A. (2004). Dabas apstākļi un to ietekme uz agrovidi Latvijā. Rīga: LR VZD. 166 lpp.
6. Boruks, A., Sumarokovs, G. (1972). Zemes kvalitātes nozīme lauksaimniecībā. Rīga: Liesma. 225 lpp.
7. Nekustamā īpašuma valsts kadastra likums (2005). LR likums (15.12.2005.) Latvijas vēstnesis Nr.205 (3363) 22.12.2005.
8. Kadastrālās vērtēšanas noteikumi (2006). Ministru kabineta 2006. gada 18. aprīļa noteikumi Nr. 305. Latvijas Vēstnesis, Nr. 72, 2006. gada 10. maijs.
9. Par agrāro reformu Latvijas Republikā (1993). Latvijas Republikas Augstākās Padomes 1990. gada 13. jūnija lēmums. Latvijas Republikas zemes līkumošanas akti, I daļa. Rīga: Baltika. 86 lpp.
10. Par zemes reformu Latvijas Republikas lauku apvidos (1993). Latvijas Republikas 1990. gada 21. novembra likums. Latvijas Republikas zemes likumdošanas akti, II sadaļa. Rīga: Baltika. 120 lpp.

Economic Impact of Tourism in Ķemeri National Park

Iluta Berzina, *MBA*
Faculty of Economics, Latvia University of Agriculture
Tamara Grizane, *MBA*
Faculty of Economics, Latvia University of Agriculture

Abstract. Valuation of tourism economic impact (EI) in Ķemeri National Park (KNP) is a novelty in not only KNP but also it is the first such scale and character research on the national parks in Latvia in general. The aim of KNP is to gain a certification of the sustainable tourism charter in Europe certifying that the development of the park has been planned in a sustainable and balanced way. Thus, an assessment of tourism economic impact in KNP done by the authors was necessary. Data of the valuation base were collected in the result of 1100 KNP visitors' interviews during the tourism season of the year 2010. Using tourism EI theories and calculation methods adapted from the scientific experience of the USA, Finland, and other countries, EI of tourism was stated in five resulting indicators: 1) direct EI is LVL 1827402.97; 2) induced impact – LVL 114448.00; 3) indirect impact – LVL 1838847.77; 4) total EI – LVL 3780698.74 or almost LVL 3.8 million; and 5) multiplier effect of tourism income – 2.07. The main conclusions and suggestions for the administration of KNP are: 1) to carry out a regular and versatile tourism monitoring in different segments, including entrepreneurship and local community located in the territory of KNP or close to it; and 2) consumption cost shall be applied (to sell it) by improving or supplementing the existing tourism offer. Thus, separate events of a widely spread idea in the world would be implemented – to use different business approaches in tourism for national parks financed by the state.
Key words: national park, economic impact of tourism, multiplier of tourism income.

Introduction

According to the law of the Republic of Latvia "On Especially Protected Nature Territories" (1993); with amendments until March 31, 2010), National parks are wide areas, which are characterised by excellent national natural formations, are not affected by human and are only a little changed landscapes and cultural landscapes with a variety of biotopes, cultural and historical monuments, and characteristics of cultural environment. The main objective of a NP is nature protection, preservation of cultural and historic heritage, scientific investigations, education, and recreation (Latvijas Vēstnesis, 2010). Therefore, the role of tourism is inseparable like its development, which is closely connected with economic development not only in the territories of NP but in municipalities in general. NPs have potential benefits from tourism, which can be seen as: 1) protection and preservation of natural and cultural heritage; 2) enhancing economics; and 3) increasing the local community's level of life quality (National Park System Advisory Board, 2004; Eagles, McCool, Haynes, 2002; Department of Environment and Conservation NSW, 2006). As economic impact increases, the total benefit increases and this provides increased tourism demand, tax revenues, economic structure of the territory, activity of entrepreneurship, and balance of economic activity in country regions. Therefore, an overall economic impact is increasing the role of economic impact (Goeldner, Brent-Ritchie, 2000; Wall, Mathieson, 2006; Burns, Holden, 1995).

Due to the fact that since 2006 KNP is a member of the European Federation of Nature and National Parks, EUROPARC[1], KNP administration (a structural unit of the Department of Nature Protection of the Republic of Latvia) had a possibility to involve in an international project with 18 collaboration partners "National Parks and Benefits – Facilitating Socially Economic Benefit in Regions by Sustainable Management of the Incorporated Protected Nature Territories".

[1] EUROPARC (1973) – *(Federation of Nature and National Parks of Europe)* an international organisation that unites professionals of nature and national parks, decision makers, supporters, governments for creating a net for protecting landscapes and biological diversity in Europe. The main operational aim is to increase effectiveness of nature protection in Europe. Operational fields – science, applied researches, gathering statistics, implementing projects (particularly in the territories of *Natura 2000*), facilitating community's environmental education and partnership-EUROPARC, 2010a

Within the project the purpose is to submit an application for receiving a certification of the sustainable tourism charter in Europe[2], a document which has not been received by any protected nature territory (PNT) in the Baltic States. During the project it was concluded that KNP has good pre-conditions for implementing this aim but strategic planning and close collaboration with the interested parties in tourism, including the visitors of the park, are necessary (Ķemeru jaunumu portāls, 2010; LR DAP, 2010). The administration of KNP shall elaborate a Sustainable Tourism Development Strategy of NP Territory to implement the principles of the Charter. Therefore, a socially economic environment valuation of administratively economically significant surrounding areas in KNP has to be carried out. This valuation was done by the authors and such valuation has not been done in any of four national parks in Latvia. One of the pre-conditions was to obtain the base data by carrying out 1100 KNP visitors' interviews. Interviews were carried out during the tourism season in the year 2010 according to the methodology developed by the leading project partner – the Ministry of Agriculture, Environment and Consumer Right Protection of Meklenburg-Westpomerania (Germany). In order to valuate socially economic impact of KNP, it is necessary to do the calculations of KNP economic impact and that shall be a component of socially economic environment analysis of administratively significant surrounding areas of KNP.

Economic Impact (EI) is a snapshot of an entire existing economy at a specific point in time. It traces the flows of spending associated with tourism activity in a region (territory) to identify changes on employment, income and government tax revenue on the regional or provincial level (Alberta Province of Canada, 2010). Basing on this definition, the calculation results of economic impact of KNP will not be dynamic in time because the calculation is done for the first time. Therefore, the changes of EI cannot be stated and the result of the research shall be perceived as a fact and point of reference for further similar calculations. At the same time, this obstacle is a work restriction as well.

The aim of the research is to calculate the economic impact of tourism in KNP.

Pre-conditions performed for achieving the aim of the research: 1) carried out interviews with KNP visitors; 2) summarised and analysed results of the interviews with KNP visitors.

The tasks of the research: 1) to study, select and justify the methodology for determining tourism EI; 2) to do calculations according to the selected methodology and present as a result of the research; and 3) to draw conclusions and make suggestions for the administration of KNP for preserving or improving the result of EI characteristics.

Results and discussion

Approaches for calculating economic impact

Tourism contribution to the economy is not easy to estimate. This is mainly because diverse types of businesses selling goods and services to tourists do not constitute an easily separable economic sector. It is also difficult to isolate the economic impact of any type of tourism (Stynes, w.y[3]). In Latvia in general descriptive field researches are carried out[4] with some exceptions[5] including methods of input – output, field mapping, finance inspection, conditional valuation, or case study analysis models. However, there are several economic analysis and their methods in tourism. For instance, suggested by Michigan State University in the United States (US), based on Burchell and Listokin (1978), Walsh (1986), Warnell (1986), Johnson and Thomas (1992), Williams (1994), Frechtling (1994), etc., theories, which help

[2] The Charter has been developed in collaboration between EUROPARC Federation with European Commission (EC) from 1995 to 1999, realizing the calamity done by human by excessive and inconsiderate actions on nature values in order to take action for preserving it for the next generations. Currently the Charter Park (CP) certificate has been received by 50 different protected territories in Europe but not in the Baltic States. CP certificate is an international confirmation that the development of the protected area has been advisedly planned by respecting interests of all interested parties (EUROPARC, 2010-b).

[3] w.y. – without year

[4] "Lauku ceļotājs (LC)", Fund of Latvia Nature (FLN) etc. – researches in tourism field

[5] For instance, Prof. Dr. oec. S. Jēgere; Prof. Dr. phil. R. Ķīlis – researches in culture field; FLN – tourism development plans for several protected areas (field analysis methods and case study used)

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

estimate the extended impact: 1) economic impact analysis (int. al. input – output (I/O) models); 2) fiscal impact analysis; 3) financial analysis; 4) demand analysis; 5) benefit cost analysis (B/C); 6) feasibility study; 7) environmental impact assessment; and 8) tourism income multiplier assessment (Berzina, Livina, 2008). Further in the text the authors do a comparison of methods, based on scientific literature studies.

Fiscal impact analysis is used to identify changes in the efficiency request of state infrastructure and services, which is calculated basing on the principles of expenses and benefits. The analysis is based on such fiscal indicators as community's income, expenses, value of land, aims of land use, and distances from the central service points. This method is usually used in municipalities (regional, local) to determine the differences between expenses and received benefit, which arise as taxes or duties (Stynes, w.y; Burchell, Listokin, 1978). The method cannot be used because the existing economic impact of tourism in KNP ought to be known and not its demand efficiency. Moreover, although KNP is a state institution, it does not have possibilities to impact the amount of its income, which depends on tax revenues.

Financial analysis is used to determine the stability, viability, and profitability of a company by using accountancy data. The objective of the method is to give the necessary analytic material for company's managers in order to make decisions. The method is not appropriate for valuating economic impact as it gives economic analysis of a company's internal operation. In entrepreneurship, a financial analysis is analogue to fiscal impact analysis in state and municipal institutions (Stynes, w.y.; Jēgere, w.y.). The method cannot be used because the aim of KNP is not to value the result of internal work.

Demand analysis is used to calculate or predict the number, types of travellers, and sales amounts of goods or services to find the reasons of success or failure, and to determine the possibilities for improving sales amounts. Time scale methods, Delfi method, factor and structure analysis, and quality and competitiveness valuation models are used (Stynes, w.y). The method is not appropriate because KNP does not offer any tourism service for charge. It is determined by provision of an accessibility principle of national park values (Eagles, McCool, Haynes, 2002). However, this experience has been changed in the world, including business principles in national park tourism (Berzina, Livina, 2010).

In the result of **Cost-benefit analysis (C/B)** it is possible to calculate relative economic effectiveness of alternative policy (or action) by comparing expenses and benefits. Therefore, the most effective alternative from the social, economic, environmental etc. aspect has been identified including monetary and non-monetary values. Travel cost (T/C) and / or contingent valuation method (CVM) are used in general. The analysis is focused on community's benefit. The aim of benefit cost analysis is to find out all possible kinds of impact and valuate them monetary (i.e. to confer money value) (Stynes, w.y.; EK Reģionālās politikas ģenerāldirektorāts, 2006). The method is not appropriate because it is not necessary for KNP to have a decision on an alternative development scenario. However, data gathered in the survey allow using T/C method that can be used as output data in calculating EI of tourism.

Feasibility study is developed to determine the economic possibility of some policy or action. It usually includes financial analysis and market demand analysis. Benefit cost analysis is similar to it. The research is focused on individual sector (in entrepreneurship) more than on community in general (Stynes, w.y). The method is not appropriate because economic impact of tourism in KNP is important and it develops in a close partnership with local community and entrepreneurship involved in tourism.

Environmental impact assessment (EIA) is used to identify, valuate, and forecast the impact or changes of existing or planned actions in social, economic, cultural, biological, physical, and ecologic environment. EIA methodological spectrum begins with simple surveys and concludes with detailed process simulation models (Stynes, w.y). The method is not appropriate because the impact of the existing tourism in KNP is initially important to valuate changes on any EIA factors in the future.

Money Generation Model (MGM2) – MGM2 estimates both the direct and secondary effects of visitor spending, and focuses mainly on the economic effects in local regions around the park. MGM2 uses primary data on tourism activity or visits, spending, multipliers, I/O modelling systems applied in the assessment of multipliers (Michigan State University; Wen-Huei Chang, 2001; Stynes, w.y.), and calculation model of tourism demand economic impact

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

adapted from Michigan University (USA): Money Generation Model 2 (MGM2). The basic components of tourism demand economic impact analysis and calculations in MGM2 are summarised in the following equation (*Equation*, 1) (Michigan State University):

(1)

EI = Number of Visitors x Average spending per visitor x Economic multipliers

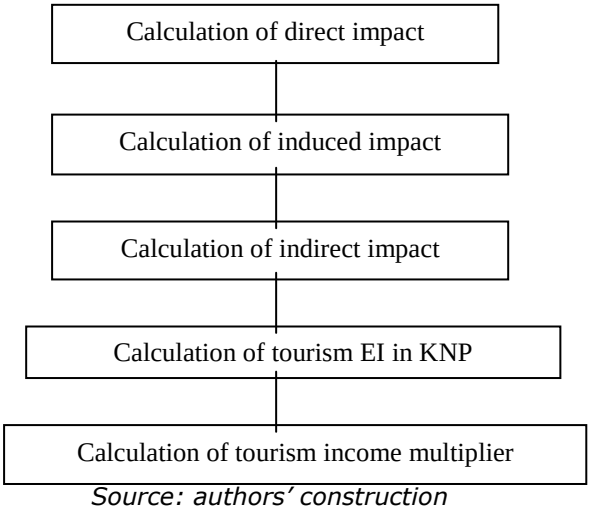
This equation suggests three distinct steps and corresponding measurements or models:

1) estimation of the changes of number and types of tourists to the territory;
2) estimation of average levels of spending (often within specific market segments) of tourists in the local area;
3) application of the changes of the spending to a regional (territorial) economic model or setting of multipliers to determine the secondary effects.

MGM2 cannot be used in Latvia, as there is no dynamic and detailed statistic information, which is required by this approach. Moreover, MGM2 approach includes unilateral, statistic basis gained only from the point of a traveller and it uses only primary statistics, providing more contracted and less interpretable calculation results.

Economic impact analysis (int. al. input – output (I/O) models) (EI) is used to outline tourism activities in the territory of finance flow, identifying changes in sales amounts, tax revenues, incomes, and employment. Basic methods: travellers' surveys on their expenses, statistic analysis of secondary (state) economics, economic base models, including input – output (I/O), and multiplier analysis determining direct, stimulating or induced, and indirect impact (Stynes, w.y.; Jēgere, w.y.). Basic variables for assessing economic impact of tourism are 1) visits or tourism activity (demand) – arrivals, same–days visitors, length of stay, occupancy, etc.; 2) spending (demand) – expenditure; 3) multipliers (supply) – sales, income, employment, taxes, and value added; 4) shortages (Wells, 1997; (Stynes, w.y.; UNWTO, 2000; Alberta Province of Canada, 2010). EI method can be used as it includes characteristic indicators and their values have been clarified in KNP visitors' interviews and in the result of secondary statistic selection. The only drawback – the EI use result will not show any changes. The reason for this is the lack of output data dynamics (data in KNP have not previously been collected, there is the lack of secondary statistics or it is too consolidated).

Tourism income multiplier assessment – is an economic indicator, which characterises circulation of the money spent by foreign tourists in a specified country and the going to other countries. For developed countries, it balances between 1 and 2.



Source: authors' construction

Fig. 1. **Methodological design for calculating tourism economic impact in Ķemeri National Park in 2010**

For developing countries tourism income multiplier is usually lower than 1. Tourism income multiplier value 0.5 indicates that due to the shortage of financial means (cost for imported goods and services) the specified country will receive only a half of each currency unit spent by a tourist (Tūrisma un viesmīlības terminu skaidrojošā vārdnīca, 2008).

The method is appropriate, since it can reveal the spectrum of local tourism industry. The higher the multiplier, the wider is the spectrum of tourism and other necessary services for community in the territory. Not only circulation of money spent by foreign tourists but also money spent by local tourists is important in KNP, as 84.2% of visitors are local tourists.
The authors include the result of theoretical study and selection of the most appropriate methodology in a schematic methodological design of the research (Figure 1), where the results of the research will be obtained implementing it step by step.

The calculation results of tourism economic impact in KNP

Direct impact (DI) is employment and income created by tourism activities plus KNP contribution to tourism in the year 2010. Direct impact is income available for those companies and organisations, which KNP has bought products or services from. Tourism is an income source for 288 tourism industry companies; these companies provide 1208 work places with an average monthly salary LVL 204.15 and ensure economic contribution to the territory for LVL 1,827,402.97 (Table 1).

Table 1

Direct economic impact in Ķemeri National Park tourism in the year 2010

No.	Position	LVL
1.	Income	260820.97
2.	Employment (salaries, taxes)	1522397.00
3.	KNP contribution in tourism	44185.00
	Total	1827402.97

Source: authors' calculations

Induced impact (IDI) is KNP visitors' impact – expenses spent on catering, transport, accommodation etc. services. Induced impact is created, when tourism expenses further in companies are spent on necessary goods, services, employees' salaries, which are spent in consumption (Table 2).

Table 2

Tourism induced impact in Ķemeri National Park in the year 2010

No.	Fields of expenses	LVL
1.	Accommodation	25626.29
2.	Retail sales	51228.08
3.	Catering	12922.64
4.	Tourism service programmes	1276.13
5.	Transport expenses	20394.87
	Total	114448.00

Source: authors' calculations based on the visitor inquiry data

Indirect impact (II) is a multiplier impact and it is connected with both previously mentioned impacts. Indirect impact is changes in sales, income, and work places in those companies, which deliver goods and services to tourism related organisations and companies in KNP. This is calculated according to the formula (*Equation* 2) (Rinne, 1999):

(2)

$$II = DI + IDI \times 10\ \%$$

Thus, a calculation result is created, which shows that the indirect tourism impact in KNP in the year 2010 is LVL 1,838,847.77.

Total tourism economic impact (TEI) – is a total tourism economic impact indicator, which is calculated according to the formula (*Equation* 3) (Huhtala, 2006):

(3)

$$TEI = DI + IDI + II$$

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Thus, a calculation result is created, which shows that the total tourism economic impact in KNP in the year 2010 is LVL 3780698.74 or almost LVL 3.8 million, thus it is 855 times more than KNP contribution to tourism in the year 2010. The authors comment that this result could be higher if tourism monitoring could have been done in KNP tourism attractions provided by the private sector.

Tourism income multiplier (K) – is an economic indicator, which characterises how the money spent by tourists (and one-day visitors) circulates in the specified territory. There are different approaches how to calculate tourism income multiplier. The authors use an approach applied in Finland, when IM is obtained by dividing TEI with the total sum of tourism expenses (Huhtala, 2006). Thus, the value of tourism income multiplier in KNP is calculated to be 2.07, which shows that 1 currency unit spent in tourism during a year creates 2.07 times higher income (people employed in tourism industry spend a part of their salary for other goods and services in the territory).

Conclusions, proposals, recommendations

1. Valuation of tourism economic impact in Ķemeri National Park (KNP) is a novelty in not only KNP but also it is the first such scale and character research on the national parks in Latvia in general.
2. Tourism economic impact calculation models offered by the theory of economics can be partly used for doing calculations in KNP. Reasons: 1) the usage aims of the models do not confirm with the current needs of KNP administration; and 2) there is a lack of detailed data, which requires carrying out a regular and versatile tourism monitoring in different segments, including entrepreneurship and local community located in the territory of KNP or close to it.
3. The results of the research scientifically prove that tourism in KNP and its surrounding territories annually contributes to the economy 855 times more than the administration of KNP contributes to tourism.
4. To improve the EI result, KNP administration shall pay more attention to tourism monitoring, increase of contributions to tourism by improving or supplementing the existing tourism offer and determine a consumption cost to it (to sell it). Thus, separate events of a widely spread idea in the world would be implemented – to use different business approaches in tourism for national parks financed by the state.

Bibliography

1. Alberta Province of Canada (2010). Tourism: Economic Impact Analysis: A Useful Tool in Estimating Tourism Impacts. *Economic Impact Analysis.* Retrieved: http://www.tpr.alberta.ca/tourism/tourismdevelopment/startingatourismbusiness/impactanalysis.aspx . Access: 10 January 2010.
2. Berzina, I., Livina, A. (2008) *The Model on Estimating Economic Benefit of Nature-based Tourism Services of Territories of National Parks, Latvia.* Corfu, Greece: WSEAS Press. p. 213.
3. Berzina, I., Livina, A. (2010) *Financial Relations of National Park Agencies in Latvia: Opportunities for ICT and Dynamic Modelling.* Barcelona, Spain: University of Barcelona. p. 807.
4. Burchell, R. W., Listokin, D. (1978). *The Fiscal Impact Handbook: Estimating Local Costs and Revenues of Land Development*. New Brunswick, NJ: Rutgers University Centre for Urban Policy Research (CUPR).
5. Burns, P.M., Holden, A. (1995). *Tourism: A New Perspective*, Prentice Hall. p. 239.
6. Department of Environment and Conservation NSW (2006) Impacts of Protected Areas on the Regional Economy of North-East NSW Retrieved: http://www.environment.nsw.gov.au/projects/NortheastEconomicStudy.htm. Access: 13 November 2010.
7. Eagles, P.F.J., McCool, S.F., Haynes, C.D. (2002). *Sustainable Tourism in Protected Areas: Guidelines for Planning and Management*. IUCN –The World Conservation Unit. p.183.
8. EK Reģionālās politikas ģenerāldirektorāts (2006). *Metodiskie norādījumi izmaksu un ieguvumu analīzes veikšanai* . Retrieved: http://ec.europa.eu/regional_policy/sources/docoffic/2007/working/wd4_cost_lv.pdf . Access: 17 September 2010.
9. EUROPARC (2010-a). *What we are?, What we do?* . Retrieved: http://www.europarc.org/what-we-do/our-strategy. Access: 28 October 2010.

10. EUROPARC (2010-b). *European Charter for Sustainable Tourism.* Retrieved: http://www.europarc.org/what-we-do/european-charter-for. Access: 12 September 2010.
11. Ginsburg, A., Throsby, D. (ed.) (2006). *Handbook of the Economics of Art and Culture.* Amsterdam: Elsevier. p. 1055.
12. Goeldner, C.R., Brent-Ritchie, J.R. (2000). *Tourism: Principles, Practices, Philosophies, 8th ed.* John Wiley & Sons, New York. p. 579.
13. Huhtala, M. (2006). *Assessment of Local Economic Impacts of Recreation: The Case of Pallas-Ounastunturi National Park*. Retrievedhttp://www.metla.fi/metinfo/monikaytto/lvvi/esitelmat/2006/2006-huhtala-mvv3.pdf . Access: 11 October 2010.
14. Jēgere, S. (w.y) *Kultūras pasākumu centru ekonomiskās ietekmes novērtējuma metožu un modeļu analīze un izvēle*. Retrieved: http://www.turiba.lv/komunikacijas_2009/pages/Jegere_lv.html . Access: 13 November 2010.
15. Ķemeru jaunumu portāls (2010). *Baltijas aizsargājamo dabas teritoriju pārstāvji vienojas par sadarbību ilgtspējīga tūrisma attīstības veicināšanā*. Retrieved: http://www.Ķemeri.lv/baltijas-aizsargajamo-dabas-teritoriju-parstavji-vienojas-par-sadarbibu-ilgtspejiga-turisma-attistibas-veicinasana/ . Access: 3 November 2010.
16. Latvijas Vēstnesis (2010). *LR Likums „Par Īpaši aizsargājamām daba teritorijām".* Retrieved: http://www.likumi.lv/doc.php?id=59994 . Access: 20 November 2010.
17. LR DAP (2010). *Ķemeru nacionālais parks*. Retrieved: http://www.daba.gov.lv/public/lat/ipasi_aizsargajamas_dabas_teritorijas/nacionalie_parki/kemeru_nacionalais_parks/ . Access: 13 November 2010.
18. Michigan State University (MSU), *The National Park Service's Money Generation Model (MGM2)*, Retrieved: http://web4.msue.msu.edu/mgm2/default.htm. Access: 3 September 2010.
19. National Park System Advisory Board (2004) *National Park service Science in the 21st century.* Retrieved: http://www.nature.nps.gov/scienceresearch/index.cfm. Access: 13 November 2010.
20. Rinne, P. (1999). *Luontomatkailun aluetaloudelliset vaikutukset Kuhmossa. Tiedonantoja 93*. Joensuun yli- opisto. Metsätieteellinen tiedekunta. p. 107.
21. Stynes, D.J. *Economic Impacts of Tourism*. Retrieved: https://www.msu.edu/course/prr/840/econimpact/pdf/ecimpvol1.pdf . Access: 13 November 2010.
22. Tūrisma un viesmīlības terminu skaidrojošā vārdnīca (2008) *Tūrisma ienākumu multiplikators*. Retrieved: http://termini.lza.lv/term.php?term=t%C5%ABrisma%20ien%C4%81kumu%20multiplikators&list=multiplikators&lang=LV . Access: 10 November 2010.
23. UNWTO (2000) *Data Collection and Analysis for Tourism Management, Marketing and Planning: A Manual for Manages and Analysts*. p. 330.
24. Wall, G., Mathieson, A. (2006). *Tourism: Change, Impact and Opportunities*, Prentice Hall. p. 432.
25. Wells, M. P., (1997) *Economic Perspectives on Nature Tourism: Conservation and Development*. Retrieved: http://www.icrtourism.org/Publications/Economicperspectivestourism.pdf . Access: 10 November 2010.
26. Wen-Huei Chang, (2001). *Variations in Multipliers and Related Economic Ratios for Recreation and Tourism Impact Analysis*. Retrieved: https://www.msu.edu/user/changwe4/dissertationWHCabs.pdf . Access: 9 September 2010.

Possibilities to Use Latvia Wood Resources for Heat Energy Production

Ligita Bite, Dr.oec., assistant professor
Department of Business and Management, Faculty of Economics, Latvia University of Agriculture
Gunita Mazure, Dr.oec., associate professor
Department of Accounting and Finance, Faculty of Economics, Latvia University of Agriculture
Kristaps Makovskis, Mg.oec., research assistant
Latvian State Forest Research Institute "Silava"

Abstract. The research aim is to determine the amount of heat energy possible to generate from wood in the main cuttings and improvement cuttings. The following methods have been applied for the research purpose: monographic, logically constructive, and graphic. The research authors basing on the methods developed by scientists from Germany, Denmark, Finland, and Sweden, have calculated the amount of heat energy that Latvia would obtain if utilising timber cutting scraps and firewood, which remain unused in the main and improvement cuttings. The calculations allow concluding that the available firewood resources in 2009 in the main and improvement cuttings equalled to 1672.6 thousand m^3, available forestry scraps - 728.56 thousand m^3, tiny saplings - 376 thousand m^3, energy wood obtained from brushwood - 870 thousand m^3, energy wood from roots and stumps – 652.5 thousand m^3. The calculations allowed concluding that in 2009 it was possible to produce heat energy amounting to 6.0 million MWh using energy wood.
Key words: wood resources, energy wood, power industry.

Introduction

Forest industry is the governing sector in the national economy of Latvia. Accumulation of the solar energy in the wood would account for the majority of the energy balance in the forest industry as well as for the base of renewable energy resources. The development of wood use in energy (production of heat and electricity) would develop local production and provide a creation of new jobs. To produce the necessary heat energy and electric energy in Latvia, the missing energy resources (natural gas, coal, and oil products) are imported, thus increasing Latvia's energy dependence on importers and their prices. However, at the same time, Latvia annually exports a considerable amount of energy wood resources, which could be utilised for the production of heat energy and electric energy in Latvia. Similarly, a significant amount of wood resources after woodcutting and removing remain unused in the woods.

The research aim: to determine the amount of heat energy that is possible to generate after woodcutting and removal from the main cuttings and improvement cuttings.

The following **tasks** are advanced to achieve the set aim:

1) to study opportunities of the forest sector of Latvia in the development of power industry;
2) to identify types for generation of energy wood;
3) to calculate the amounts of firewood and forestry scraps in the main and improvement cuttings that might be used for production of heat energy.

The following methods have been applied in the research: monographic, logically constructive, and graphic.

Research results

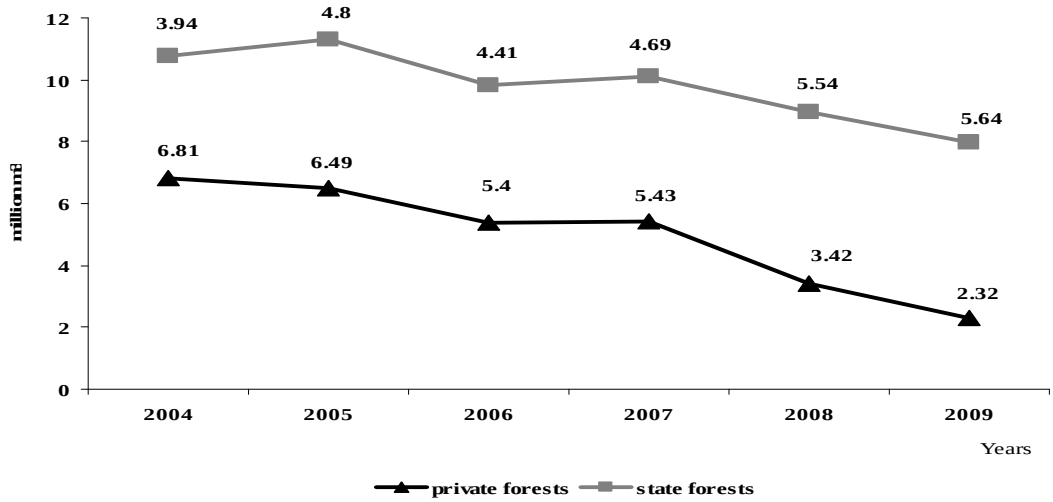
Historically forest resources and use of these resources have played a significant role in the socio-economic development of Latvia, being the main source of employment and income in rural areas and the whole country.

The forest and timber are one of the most essential renewable natural resources in Latvia. According to the recent forest sector statistical inventory data, in 2009 there were approximately 3.22 million hectares of land in Latvia, which are covered by forest or

agricultural territories that satisfy the criteria related to being turned into forestland. This represents approximately 49.9% of the state's territory (Meža nozare Latvijā, 2009). According to the average percentage of forestland per capita, Latvia ranks among the leading forestry countries in Europe with almost 1.2 hectares of forestland per capita (in Europe the forestland per capita is 0.27 ha). Only Finland, Sweden, Norway, and Estonia have higher percentage. In Latvia, climatic and geographic conditions are favourable for forest growing. Natural growing factors have created conditions that in Latvia the prime cost for growing one cubic metre of wood is 1.3 times lower than in the Scandinavian countries. These natural factors and work of foresters of previous generations have ensured competitiveness of Latvia's forest sector on the international market. Although, in terms of value added generation, Latvia's forest sector lags far behind the Scandinavian countries (the price of exporting wood sector products from Latvia, calculated per 1 ha of forest, equals to EUR 180-190; while the price of wood exports from Finland and Sweden accounts for EUR 470 and EUR 510 respectively) (Meža nozare Latvijā, 2009).

According to the forest statistical inventory data, the amount of timber is by 53 million larger than it was considered previously. The increase of timber amount may be explained by the increase of proportion of forestlands and young forest stands *(*Mežaudžu krāja, 2009).

Wood cutting rate in state-owned and private forests has changed between 2005 and 2009. Until 2008, the majority of wood was cut in private forests, yet starting from 2009, the situation changed and mostly wood is cut in the state-owned forests. This may be explained by the decrease of timber prices and increase of cutting volumes in Latvian State forests aimed at support of local woodworking companies (Figure 1).

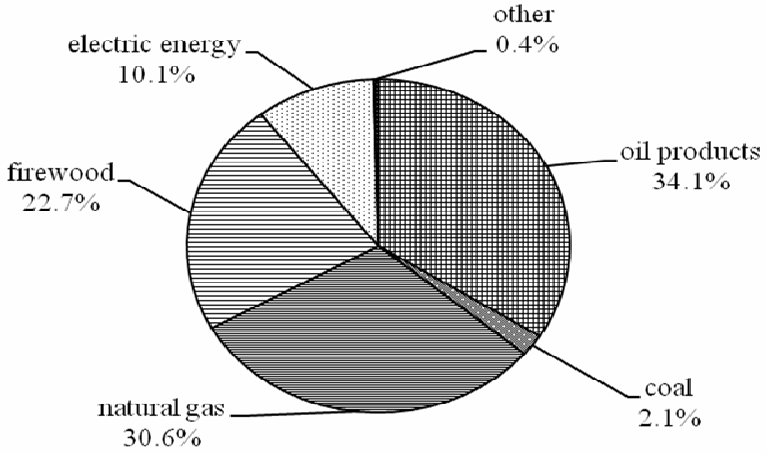


Source: authors' construction based on the data of VMD (State Forest Service), 2010

Fig. 1. **Timber cutting amount in the state and private forests between 2005 and 2009, million m^3**

The data of Figure 1 show that the annual amount cut in Latvia remains quite stable, i.e. approximately 9-11 million m^3 of timber each year. In 2009, totally 7.96 million m^3 of timber were cut, which is by 1 million m^3 less compared with 2008. In total, 5.54 million m^3 of timber or 61.8% of total amount was cut in the state-owned forests (0.85 million m^3 more than in 2007) and 3.42 million m^3 of timber or 38.2% – in forests owned by private owners, local governments, or other types of owners (2.01 million m^3 more than in 2007). The proportion of timber coming from state and private forests shifts over the course of time, and it is forecasted that in future, the majority of timber resources will come specifically from state-owned forests (Meža nozare Latvijā, 2009).

The proportion of firewood in Latvia's energy balance accounts for 22.7% of all the resources, thus ranking it in the 3rd position. Oil products (34.1%) and natural gas (30.6%) in Latvia's energy balance rank in the 1st and the 2nd positions respectively (Figure 2).



Source: Meža nozare Latvijā, 2009

Fig. 2. **Latvia's energy balance in 2009, %**

Figure 2 illustrates that oil products in Latvia's energy balance have the highest proportion, followed by natural gas; yet, these two resources are imported in Latvia. The only local resources, which are possible to attain, are firewood and electric energy produced by hydroelectric power stations and wind parks.

Partially, Latvia is able to cover its needs for electric energy. However, not fully, since annually Latvia imports 30% on average of the necessary electric energy.

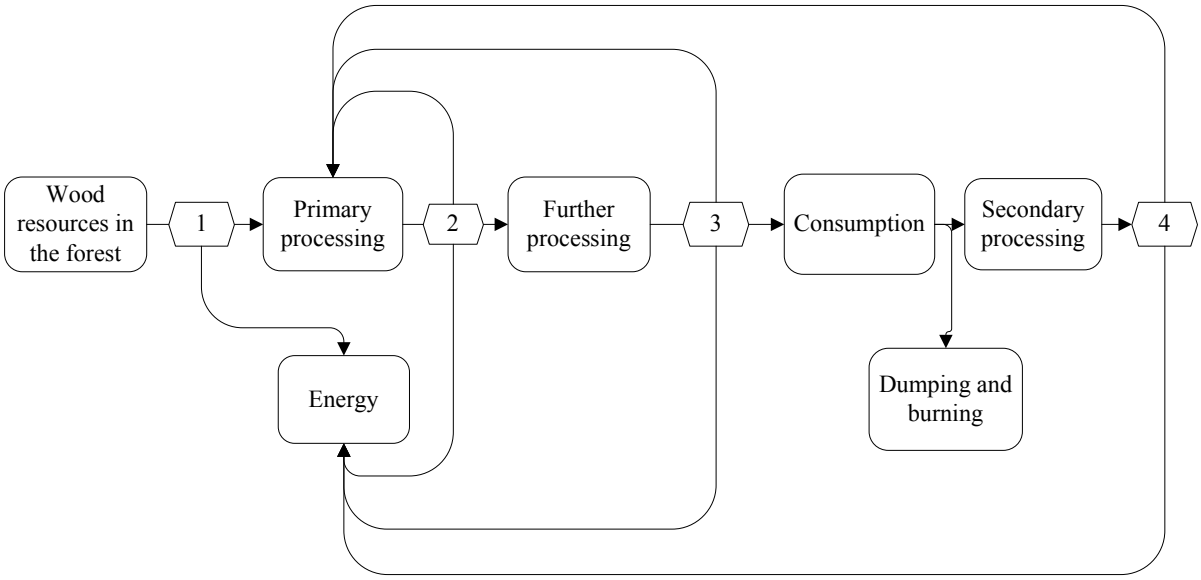
In Latvia, similar to other Scandinavian countries, the majority of energy is consumed for the production of heat; hence, the share of wood in Latvia's overall energy balance accounts for almost 23%. For example, in Norway, the share of wood in the energy balance is 10% (Trømborg E. et al., 2008), and in Finland the figure equals to 20% (Karkkainen L., 2008). Wood in the energy balances of developed countries accounts for 15% on average, while in developing countries it accounts for only 2% (MacFarlane D.W., 2009). Nevertheless, it shall be considered that many of the bio-energy resources that are out in the forest are wasted at this time – cutting scraps, many tiny saplings, the green mass, and stumps. Major energy resources could be ensured if all of the above mentioned was used, and that would enhance the country's energy independence. The state and local governments shall work together to find a complex approach to these issues, because this can create a powerful energy sector, one that is based on the use of local renewable resources and also ensures new opportunities in terms of regional development. Optimal use of local renewable resources would mean that the proportion of fuel used for heat production that can be attributed to timber resources could increase from the current 24% to fully 45% of all consumption (Meža nozare Latvijā, 2009).

Most of the technically available forestry scrap resources (around 68%) are in privately owned forests, and it is thought that the total amount of such scraps is between 2 and 2.5 million m^3. Improvements to the technologies that are used to extract such resources from the forest would make it possible nearly to double the use of timber in the energy industry. Forest owners need to engage in better co-operation for this purpose, or they shall find outsourced providers of the necessary services (Meža nozare Latvijā, 2009).

It is critically significant to balance the extraction of the resources, transport and logistics, modernisation of boiler houses etc. to ensure optimal use of these resources. Thus, companies producing heat ought to be encouraged to shift from fossil fuels to ones that are more environmentally friendly. The use of renewable resources in the energy resources largely relate to the use of new technologies and replacement of traditional products such as firewood and wood chips with products that are easier to use and require less spending on transport and storage.

As it is shown in Figure 3, it is possible to generate energy wood from wood during all wood processing stages; starting from forestry scraps, which may be obtained immediately after

cutting and ending with the secondary utilisation of timber as fuelwood or raw materials for the production of new wood and timber products.



Source: Būmanis K., 2008

Fig. 3. **Utilisation possibilities of wood resources**

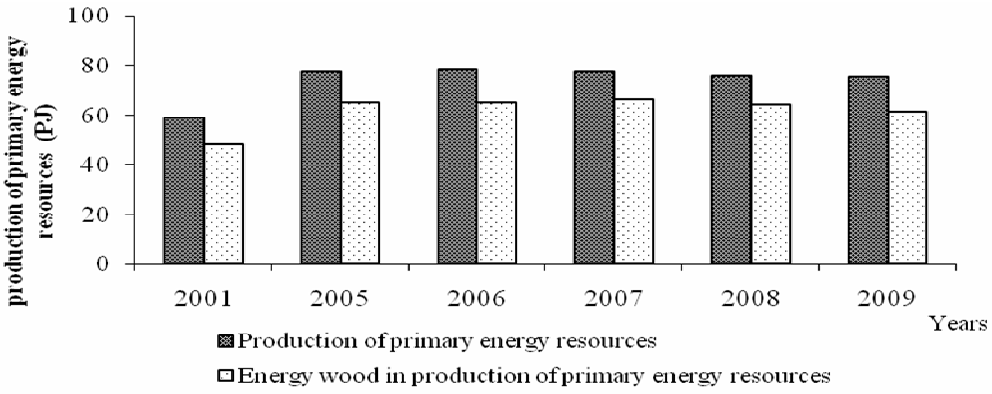
As illustrated in Figure 3, wood that is suitable for energy production is either produced or available in all timber-processing stages from the forest to consumer. Every producer is interested in an efficient use of all forestry by-products and scraps to ensure effective utilisation of raw materials and thus, also more profitable business. However, competition for raw materials exists between wood processing and energy production industries; besides the growth of competition in inevitable with the increase of production amounts. Competition for generation of resources between wood processing and energy production is observed in all stages of wood resource flow: 1) round timber, 2) by-products of wood pre-processing, 3) by-products of wood further processing, and 4) by-products of secondary processing.

Firewood could be obtained in almost all wood-processing cycles. Firewood includes wood granules, wood briquettes, wood chips, and wood shavings. In 2009, mostly soft wood chips and wood shavings were sold in Latvia – 578.2 thousand tons, thus accounting for 41% of total firewood.

In Latvia, the use of wood in centralised heat supply has developed in two main directions. The first direction relates to burning of wood chips, applying efficient imported technologies, which in many places are introduced by means of support from different foreign funds and state guarantees. The implementation of these projects has required huge investments; thus, the proportion of capital costs is large in the price of heat energy. Another possibility of wood utilisation refers to wood burning in considerably cheaper yet also less efficient equipment manufactured in Latvia. In such cases, heat energy price covers a quite high proportion of fuel and labour force costs (Enerģētiskās koksnes tirgus izpēte, 2004).

In 2001, primary energy resources obtained from wood products amounted to 48.1 PJ, in 2005 – 65.2 PJ, in 2006 – 65 PJ, in 2007 – 66.4 PJ, in 2008 – 64.1 PJ, and in 2009 – 61.5 PJ (Figure 4).

According to Figure 4, in 2009, wood accounted for 81.8% of total produced primary energy resources, since it has fluctuated within a range of 83.1% - 85.7% within the past five years.



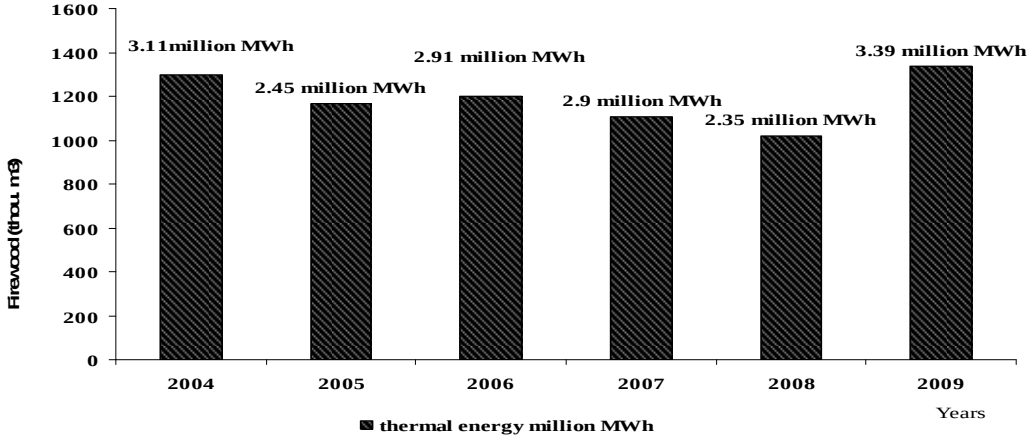
Source: authors' construction based on the CSB data, 2010

Fig. 4. **Use of energy wood for the production of primary energy resources between 2001 and 2009, PJ**

The other widely used resource is hydro energy, which has fluctuated within a range of 12.5% - 17.2% of total electric energy production amount within the past five years. Utilisation of wind energy, peat, bio diesel fuel, biomass, and other oil products is less significant. This means that wood takes the most substantial position in the production of primary energy resources.

The research "Utilisation of Wood in Power Industry of Latvia" organised by the European Bank for Reconstruction and Development in 1994-1995 is still one of the most voluminous studies, which included the research on the availability and efficiency of energy wood. The research was done by the leading specialists from Latvia, Germany, Denmark, Finland, and Sweden, and it has not lost its importance even today, especially from the point of methodology. The research provides formulae for calculation of amount of wood and forestry scraps obtained in the main cuttings and improvement cuttings on Latvia's conditions (Cars A., 2008; Šipkovs P., 2009).

The available amount of wood in the main cuttings for the period of 2005-2009 was calculated based on the methodology elaborated by the experts from Germany, Denmark, Finland, and Sweden (Figure 5).

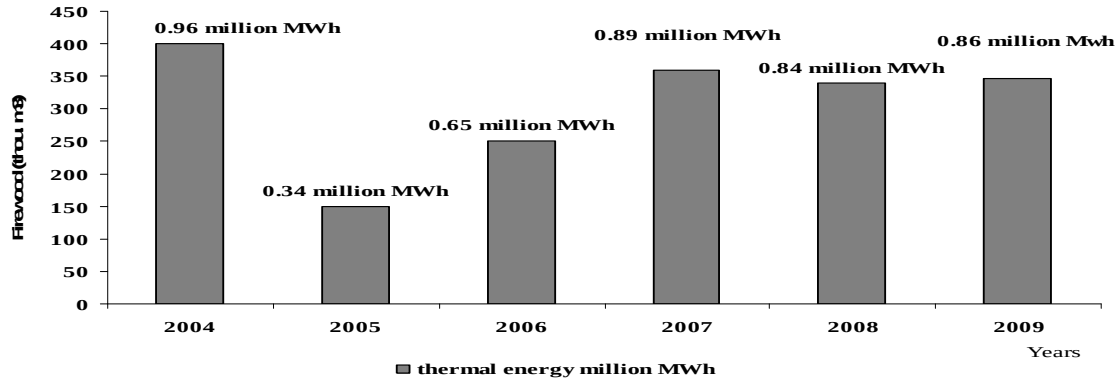


Source: Makovskis K. calculations based on the CSB data, 2010

Fig. 5. **Amount of heat energy to be generated from wood in the main cuttings for the period of 2004-2009, million MWh**

As illustrated in Figure 5, the most wood resources were available in the main cuttings in 2004, i.e. 296.9 thousand m^3; hence, it was possible to produce 3.11 million MWh of heat energy. In 2009, only 1338 thousand m^3 were available in the main cuttings, thus allowing producing 3.39 million MWh of heat energy.

Larger emphasis in wood generation is placed on timber improvement cuttings. Trees, which may leave a negative impact on the main tree species in the future, are cut in timber improvement cuttings. Based on the developed methodology, the authors have calculated the possible amount of heat energy to be obtained in case this wood is collected and processed (Figure 6).

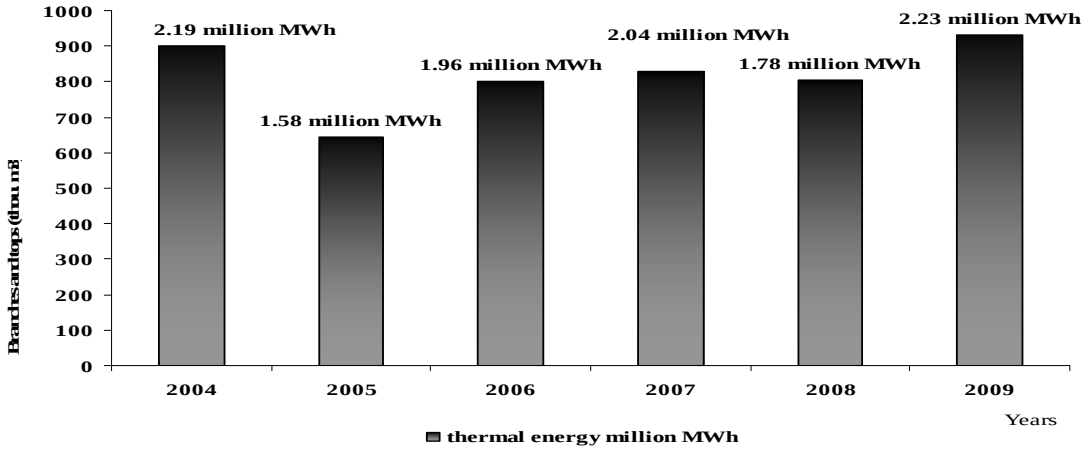


Source: Makovskis K. calculations based on the CSB data, 2010

Fig. 6. **Possible generation of heat energy from wood in the improvement cuttings between 2004 and 2009, million MWh**

The data in Figure 6 show that most wood in the improvement cuttings was available in 2004 - 397.2 thousand m^3; thus, it was possible to produce 0.96 million MWh of heat energy in that year. The smallest amount of wood in the improvement cuttings was removed in 2005 - 143.3 thousand m^3, hence, allowing producing only 0.34 million MWh of heat energy.

Forestry scraps are the second most important firewood resource after wood. Forestry scraps, after proper processing, may be efficiently utilised in different spheres. The majority of cuttings scraps (branches and tops) generate in the main cutting areas. Cutting scraps (branches and tops) comprise approximately 10% of cut wood in the main cutting. The amounts of main cutting change every year; thus, changing also the amount of cutting scraps (Figure 7).



Source: Makovskis K. calculations based on the CSB data, 2010

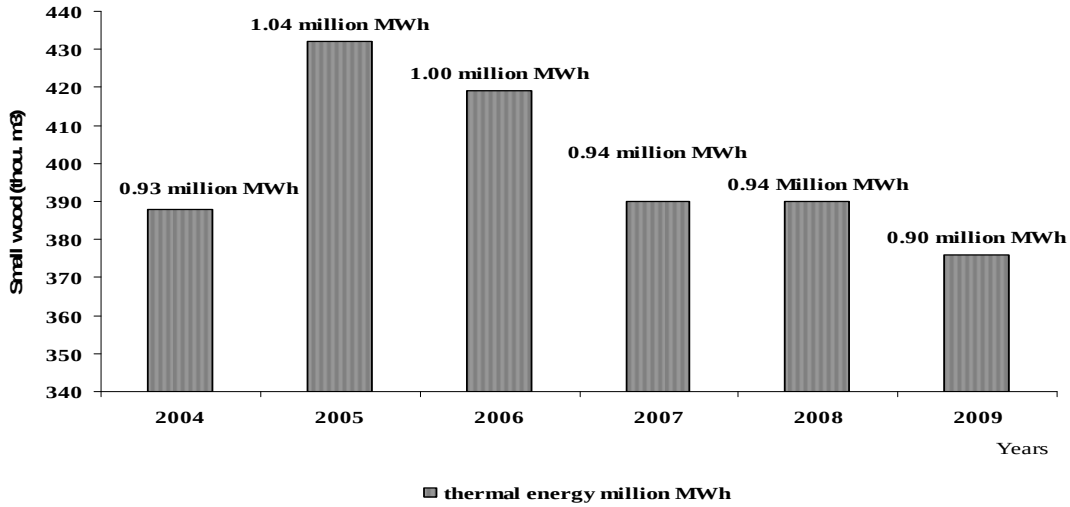
Fig. 7. **Possible generation of heat energy from branches and tops in the main and improvement cuttings between 2004 and 2009, million MWh**

The data in Figure 6 show that it was possible to produce the most heat energy using branches and tops remained in the main and improvement cuttings in 2009, when 930 thousand m^3 of the mentioned cutting scraps were available. Yet, the smallest amount of heat

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

energy was produced in 2005, since only 645 thousand m^3 of branches and tops were available.

It is possible to generate energy wood also in the improvement cuttings, thus, removing those trees that could leave a negative impact on the main species of trees. Improvement cutting is done in the forest stands where trees have the average height of trees up to eight metres. Time and intensity of trees removal in the improvement cuttings differ for various species of trees, besides the number of trees to be left change depending on the type of stand growing conditions (Cars A., 2008).



Source: Makovskis K. calculations based on the CSB data, 2010

Fig.8. **Possible generation of heat energy from small wood in the improvement cuttings between 2004 and 2009, million MWh**

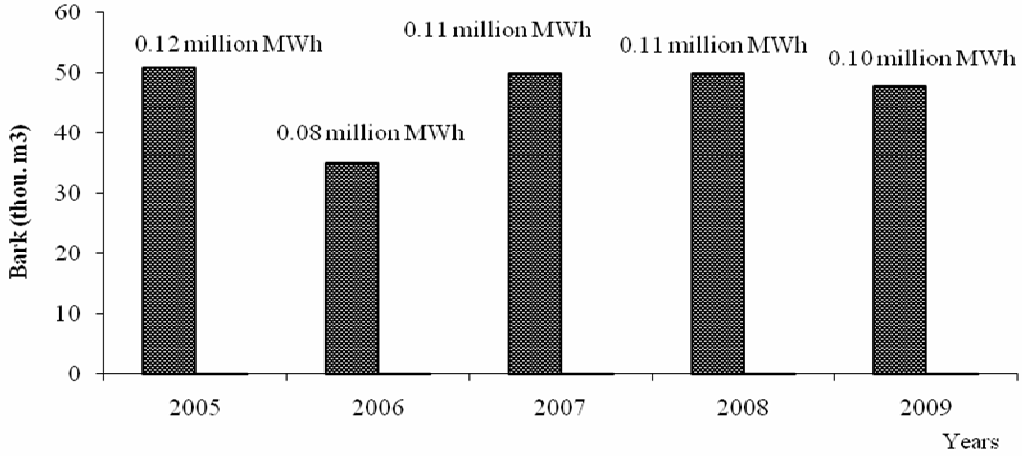
According to Figure 8, the majority of small wood in the improvement cutting areas was available in 2005 - 432 thousand m^3, respectively it was possible to produce 1.04 million MWh of heat energy. Yet, in 2004 only 388 thousand m^3 of small wood was available, thus allowing to produce 0.93 million MWh of heat energy. It has to be considered that small wood obtained in the improvement cutting areas, mainly might be used as energy wood, since the obtained small stems are too thin and short to be utilised for other purposes.

Transformation of all the available wood, forestry scraps and small wood removed in the main cuttings and improvement-cutting areas into heat energy, would allow reducing the import of fossil resources. It would be possible to produce electric energy by utilising the available forest resources in cogeneration plants. The calculations include the available resources of energy wood; however, not all of them may be utilised and not always, it is economically efficient. It would not be economically efficient to collect and process forestry scraps if the cutting area is far from the road used for transportation of the processed wood. It would not also be profitable if the area of cut wood is small and it is not surrounded by similar cutting areas. It is not always profitable to take out and process forestry scraps from the improvement cuttings. Mostly stems are too thin and short, thus not ensuring a sufficient timber stand. Besides collection of stems require additional time and material resources; thus, it is not always economically efficient.

Based on the available literature, it is considered that naturally afforested agricultural lands and brushwoods form approximately 15% of agricultural land with the total area of 313 – 350 thousand hectares. Based on the data from the forest inventory performed by the Latvian State Forest Research Institute ”Silava” in 2007, the total area of afforested agricultural land is assumed to be 352.2 thousand hectares in 2008 (Lazdiņš A., 2008). Applying the methodology developed by scientists from Germany, Denmark, Finland, and Sweden, and assuming that this area will be utilised for generation of energy wood, followed by the arrangement of quick-growing plantation type forest stocks, at the turnover period of 15 years,

it was calculated that annually 0.87 million m^3 of energy wood will be available; thus allowing producing 2 million MWh of heat energy.

Bark could also be processed into heat energy; yet, benefit is small. Bark may be removed in all wood processing cycles. The present calculations include wood stand in the main cutting and improvement-cutting areas. Bark was calculated of the available amount of wood; since extraction of bark from forestry scraps and timber, is too complicated and inefficient. Assuming that on average by tree species and ages, bark accounts for 35 of stem biomass, the available volumes of bark from the main and improvement cuttings were calculated for the period of 2005-2009 (Figure 9).



Source: Makovskis K. calculations based on the CSB data, 2010

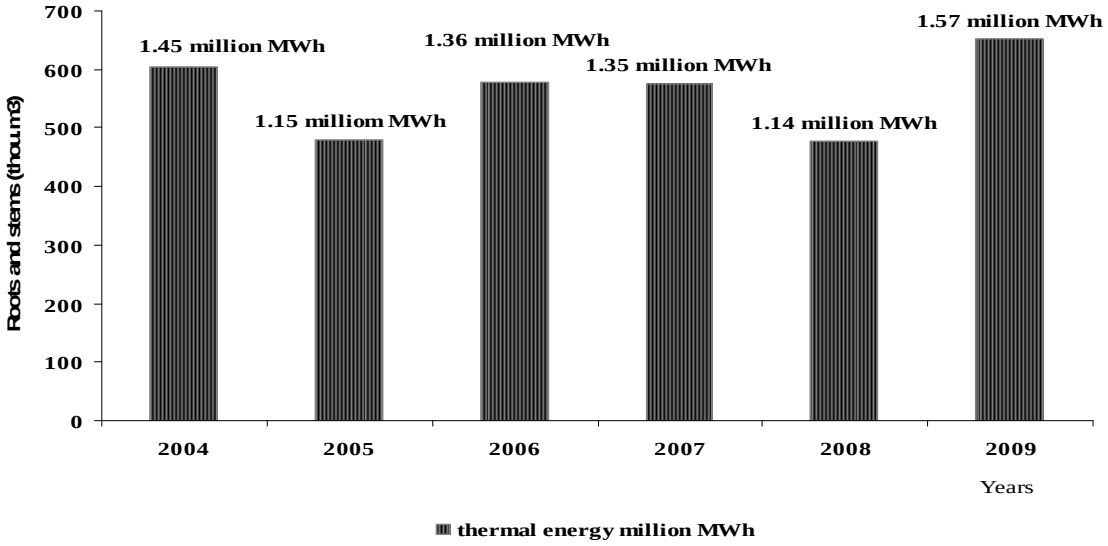
Fig. 9. **Possible generation of heat energy from wood bark in the main and improvement cuttings between 2005 and 2009, million MWh**

As illustrated in Figure 9, the largest amounts of bark in the main and improvement cuttings were available in 2005 - 50.8 thousand m^3, thus allowing to produce 0.12 million MWh of heat energy. It has to be admitted that bark is utilised in very small quantities and mass utilisation of bark in the production of heat energy is not envisaged. Nevertheless, it remains a potential future resource to be used in the energy sector.

Utilisation of stumps could ensure additional energy wood in the forestry. At present, stumps are utilised mainly on the experimental level; however, it may change in the near future and stumps could be utilised in larger quantities. Utilisation of stumps might provide additional income to forest owners as well as stumps could be used in energy production. Latvia has a relatively small proportion of dead wood in forests, comparatively large growth of forest stands as well as fertile soil. Therefore, removal and transportation of stumps would not deplete the soil. In addition, removal of stumps from the forestlands facilitates the preparation of cutting areas for planting and the planting process itself. Besides, forest is protected against different diseases, for example, spreading of root decay, which is an urgent problem in spruce stands. It is possible to obtain roots and stumps in the main and improvement cutting areas; however, usually they are not transported away from the cutting areas.

Assuming that on average by tree species and ages, roots and stumps account for 7%, the available volumes of roots and stumps were calculated for the period of 2004-2009 (Figure 10).

As illustrated in Figure 10, the largest amounts of energy wood from roots and stumps in the main cutting were available in 2004 - 605.2 thousand m^3, thus allowing to produce 1.45 million MWh of heat energy. It shall be considered that stump extraction, chipping and transportation costs exceed revenues. However, utilisation of stumps might be profitable if the prices of energy resources grow in the future.



Source: authors' construction based on the CSB data, 2010

Fig. 10. **Possible generation of heat energy from roots and stumps in the main cuttings between 2004 and 2009, million MWh**

To sum up the previous calculations, the authors conclude that the largest amounts of energy wood in Latvia may be obtained from firewood, followed by branches, stumps, and roots; while, the smallest amounts may be obtained from small wood.

Forestry scraps are mainly exported to Lithuania and Estonia. These countries have built new and modern cogeneration plants; thus, it is economically efficient to purchase forestry scraps from the borderland districts and process them in their countries. Thanks to high efficiency of new cogeneration plants, they may offer higher price for forestry scraps compared with local heat supply enterprises of Latvia.

Based on the free market conditions, Latvia may not restrict import and export of energy wood. Therefore, political and economic support shall be established for utilisation of local resources in power industry to implement sustainable development strategy by increasing the proportion of energy wood in Latvia's energy balance. One of the possibilities is a state guarantee for loans received for the construction of cogeneration plants. Another possibility is uptaking of the EU Structural Funds resources, which would enhance construction of plants, and make them more available to local governments and natural entities who lack huge financial resources. Thus, the increase in heat energy and electric energy tariffs could be limited, which were unavoidable, if cogeneration plants are constructed without the state or the EU Structural Funds resources.

Conclusions

1. Forestry is a significant sector in the national economy of Latvia, and it may constitute a large proportion of the energy balance, since the development of wood utilisation in energy (production of heat and electricity) might enhance the development of local production and creation of new jobs.
2. The proportion of firewood in Latvia's energy balance accounts for 22.7% of all the resources and 81.8% of total primary energy resources produced in Latvia.
3. It is possible to obtain energy wood from wood during all wood processing stages; starting from forestry scraps, which may be obtained immediately after cutting and ending with the secondary utilisation of timber.
4. Wood is the most available resource of all local types of fuel in Latvia. In 2009, the available firewood resources in the main and improvement cuttings accounted for 1369.7 thousand m^3, the available forestry scraps - 728.56 thousand m^3, small wood - 390.93 thousand m^3, energy wood from brushwoods - 870 thousand m^3, and energy wood from roots and stumps - 476 thousand m^3. In 2009, this calculated and unutilised amount of energy wood might allow producing 6.0 million MWh of heat energy.

5. More efficient utilisation of wood resources might improve Latvia's energy balance, since it is possible to produce electric energy in cogeneration plants utilising pulpwood and forestry scraps, which are presently exported. Therefore, it is possible to achieve 100% self-sufficiency of electric energy or even export part of the produced electric energy.

Bibliography

1. Atjaunojamo energoresursu izmantošanas iespēju izvērtējums Latvijā līdz 2020. gadam. (2007). Retrieved: http://www.politika.lv/index.php?f=1416. Access: 12 January 2010.
2. Domkins, A., Būmanis, K ., (2008). European Wood Processing Strategy. Country reports / COST E44/. Edited by Ghent University /Input Wood Processing Strategy. Helsinki. pp. 183-196.
3. Cars, A. (2008). Energoresursi Rīga: SIA Baltic Communication Partners, 10.-15. lpp.
4. Central Statistical Bureau (2010). Retrieved: http://www.csb.gov.lv/statistikas-temas/mezsaimnieciba-galvenie-raditaji-30111.html. Access: 12 January 2010.
5. Enerģētiskās koksnes tirgus izpēte. (2004). SIA Datakom. 123 lpp.
6. Faaij, A.P.C., (2004). Bio-energy in Europe: Changing Technology Choices, pp. 1-2.
7. Karkkainen, L., Matala, J., Harkonene, H., Kellomaki, S., Nuutinen, T., (2008). Potential Recovery of Industrial Wood and Energy Wood Raw Materials in Different Cutting and Climate Scenarios for Finland. Biomass and Bioenergy, No. 32, pp. 934-943.
8. Latvijas Valsts meži, unpublished information.
9. Lazdinš, A., (2008). Ātraudzīgo koku audzēšana un izmantošana bioenerģijas ražošanā. Retrieved: http://www.bt1.lv/bt1/ee/things/prezentacijas/06_Lazdins_Silava_LV.pdf. Access: 12 January 2010.
10. MacFarlane, D.W., (2009). Potential Availability of Urban Wood Biomass in Michigan: Implications for Energy Production, Carbon Sequestration and Sustainable Forest Management in the U.S.A. Biomass and Bioenergy, No. 30, pp. 628–634.
11. Mežaudžu krāja. (2009). Retrieved: http://www.zm.gov.lv/doc_upl/mezaudzu_kraja.pdf. Access: 12 January 2010.
12. Meža nozare Latvijā. (2009). Retrieved: http://www.zm.gov.lv/doc_upl/Meza_nozare_Latvija_2009.pdf. Access: 22 May 2010.
13. Šipkovs, P., (2009). Atjaunojamo enerģijas veidu izmantošanas iespēju un tehnoloģiju izpēte un novērtējums., Rīga, 65 lpp.
14. Trømborg E., Bolkesjø T. F., Solberg B. (2008). Biomass Market and Trade in Norway: Status and Future Prospects. Biomass and Bioenergy, No. 32, pp. 660-671.
15. Valsts Meža Dienests (2010). Retrieved: http://www.vmd.gov.lv/?sadala=762. Access: 22 May 2010.

Contribution Aspect of Renewable Energy Resource Usage in the Context of Latvia's Sustainable Development

Artis Bronka, *Mag.oec., PhD student*
Faculty of Economics, Latvia University of Agriculture
Andra Zvirbule-Berzina, *Dr. oec., associate professor*
Faculty of Economics, Latvia University of Agriculture

Abstract. It is inaccurate to assume that the concept of sustainable development can be substituted with a concept of economic growth or sustainability. The economy is only a tool for reaching the goal of sustainable development, using the environment as a foundation, – to satisfy the current needs and provide the same possibility for future generations. The interaction of the economy, power industry, and quality of the environment is very close; this is proved by the interaction of Gross Domestic Product, total consumption of primary energy resources, emission of greenhouse effect gases, and the aggregate national consumption of electric power indicator. Moreover, it is not possible to develop such a model of the power industry sustainable development, which would provide availability of large amount of energy, acceptable price for consumers, and have little impact on the environment in energy production. Choosing the beneficial conditions only, in any case two of the aforementioned dimensions would be positive, yet one negative. An alternative solution is to focus on models of sustainable resource usage, including sustainable production and consumption of energy. On such condition, renewable energy resources are of great importance, the rational usage of which positively affects the agricultural sector and regional economy. This can be explained by the extraction of energy resources and decentralised energy production. Essential is also a condition that in the model of sustainable energy source usage not only institutional level resolutions are of great importance, but also the attitude of society and understanding of the power industry related questions.
Key words: sustainable development, energy industry, renewable energy.

Introduction

In the 1950s and 1960s, many studies were conducted on the negative impact of excessive resource usage on the environment and planet. This type of research was a turning point for the implementation, evaluation, and inclusion of the sustainable growth concept onto the governmental agenda. As time passed the definition of sustainable growth was broadened, adding even more interrelated industries' political aspects and according to the "Treaty on the European Union" sustainable growth is an all-inclusive goal of the European Union (EU), and thus the Community emphasises collaboration among economic growth, social cohesion, and environmental protection (Mainstreaming Sustainable Development..., 2009 and History and Definitions…, 2010).

The interdependence of economies and ties to different markets, production and financial activities in the 21st century has risen to an extent that an economy's development in one country is influenced by the political policy and growth trends in another. Thus, one can say that globalisation trends depict the change of world economy and the challenge of sustainable growth. Undoubtedly, energy, which is linked to the policy of energy resource demand and supply, is one of those challenges in the 21st century. For instance, Scheer H, chairman of the board of the World Council of Renewable Energy and the German non-governmental organisation EUROSOLAR, states that the current world energy system is on the verge. As a possible solution Scheer H. emphasises the promotion of planned renewable energy resource (RES) usage, since only by using RES the supply and demand curves of energy can be shifted, creating an ecological balance and a positive effect on employment (Römpczyk, 2007).

The promotion of RES usage as a sustainable growth concept has become one of the main energy related matters in the policies of the European Union as well as Latvia. For instance, the Third Energy Package Directive 2009/28/EU On the Promotion of the Use of Energy from Renewable Sources and Amending and Subsequently Repealing Directives 2001/77/EC and

2003/30/EC states a mandatory target (20%) of RES usage for final energy consumption until 2020. The particular aim is divided between the Member States, imposing 40% of RES usage in final energy consumption by the year 2020 for Latvia (Mainstreaming Sustainable Development..., 2009).

In order to evaluate the importance of RES usage in the sustainable development framework, one shall first study the total impact of power industry on the dimensions of sustainable development, describing the interaction of the economy and energy industry, and then assess the total benefits from the usage of RES in the power industry on different industries, additionally providing a statement from people on energy usage matters.

An aspect, of the contribution to renewable energy resources usage in the context of Latvia's sustainable development, has been realised via the collaboration of economics sectors, which has been chosen as an **object** of this research. During the research, the renewable energy resources are thought of as a whole, without separating them into different energy resources.

The hypothesis: the contribution aspect of renewable energy resources usage is an opportunity for Latvia to promote sustainable development, integrating a successful collaboration between different economic sectors.

The research aim: to evaluate the importance of contribution aspect of renewable energy resources usage in the promotion of Latvia's sustainable development.

The research tasks:

1) to examine the nature of sustainable development;
2) to describe the importance of an energy industry sector in the sustainable development of a country;
3) to describe the contribution of renewable energy resources in the advance of Latvia's development.

The research is theoretical. It was performed in 2010 and the following **research methods were used in the paper:** analysis and synthesis as well as the monographic method for the compilation, description, and interpretation of the information in a schematic way. The study also uses a graphical method to reflect and interpret statistical data. The main research sources include publications of the power sector experts, the planning documents (files) of Latvia's power industry as well as information from Internet resources.

Results and discussion

1. The nature of sustainable development

There are countless definitions of sustainable development concept. As stated in the study "Latvian Power Industry Policy: Onwards to Sustainable and Transparent Power Industry Sector", the very same concept appears in academic literature in the 1970s; however, as a term in the political arena it establishes itself only after 1987, when the United Nations' World Commission on Environment and Development came with an announcement called "Our Common Future" also known as Gru Harlem Brundtland report (Sprūds, et al., 2009).

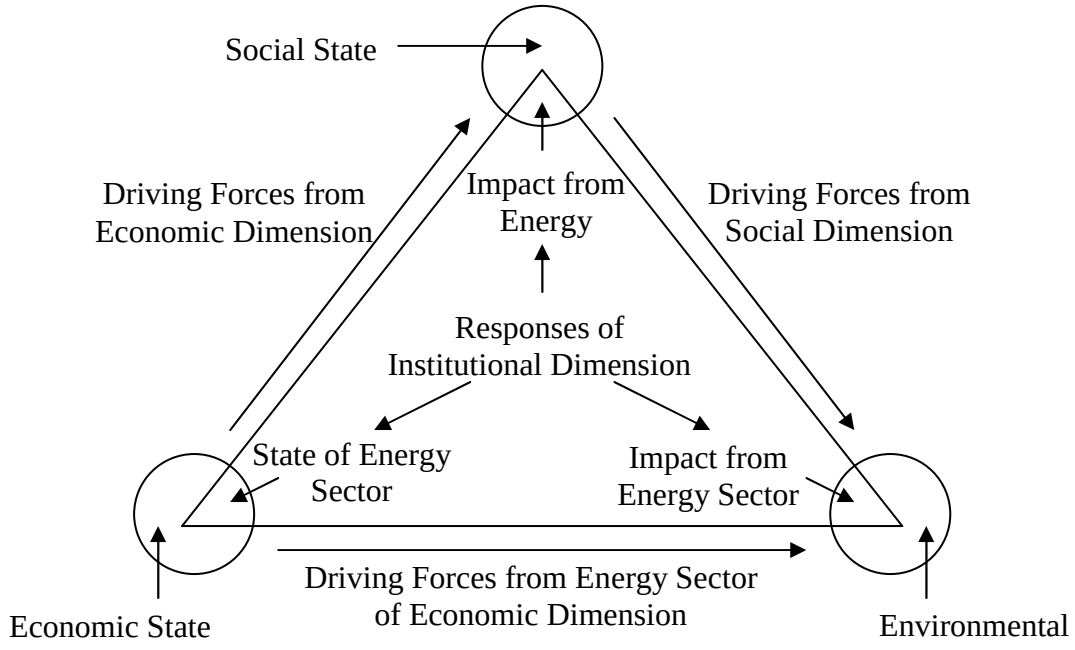
Hence, one of the most used definitions of sustainable development in academic literature as well as in various studies and industry descriptions is taken from the report "Our Common Future", where it is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (History and Definitions…, 2010).

The definition from "Our Common Future" of sustainable development can be evaluated as all-inclusive. For instance, in the study of Adams W.M., a professor at the Department of Geography, University of Cambridge, "The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century" it is stated that the particular definition from the report can be used to describe different ideas, plus it can be used as well by people from different industries (environment activists, the government, economists, political policy developers, and entrepreneurs). However, an indisputable fact remains, the particular definition links two fundamental issues – in spite of that the deterioration of the environment causes economic development, it is crucial, and there is a need for growth in order to decrease social differences, meaning poverty (Adams, 2006).

In the academic literature, the basis of the term is described with three dimensions – environmental, economic, and social (Figure 1). Yet another factor is widely added to the dimensions – the political aspect, namely, institutional setting. In addition, witnessing the impact of globalisation another dimension is reckoned – information and information technologies (Dimensions of Sustainable..., 2008).

When preparing for the Summit on ***Sustainable Development*** (***Earth Summit) in Johannesburg*** in 2002, a committee created by the International Atomic Energy Agency reviewed power industry's indicators on sustainable development, providing a set of preliminary indicators for the development of sustainable energy usage. As a result, several indicator groups were distinguished: driving force / state / response of institutional dimension (Figure 1).

With the lapse of time, the indicator setting created by the Committee on Sustainable Development was amended. In 2005, a decision was made to distinguish only three indicators for sustainable development of the power industry, and they are based on the three dimensions of sustainable development: environmental, economic, and social.



Source: Vera, et al., 2005

Fig. 1. **Interrelations between sustainability dimensions of the energy system**

In general, an indicator setting of the power industry sustainable development was created and it was used to supplement the sustainable development dimension model (Figure 1). From this point of view, the sustainable development model serves as a framework for the evaluation of the power industry and environmental policy in the context of sustainable development (Vera, et al., 2005).

When describing the term sustainable development it is useful to distinguish between sustainable development and sustainability. Sustainability is a system feature and an explicit political term. The point is to preserve a specific condition of the system. The term sustainable development refers to the process and puts a greater emphasis on change or the development of an idea. Sustainable development does not imply a balance, it is more of a dynamic term, acknowledging the fact that the human society tends to change (Sustainable Development in…, 2009).

Furthermore, as it is stated in the research "Use of Renewable Energy Resources for Securing Sustainable Development of Latvia" one shall follow certain guidelines in order to ensure sustainable development: environment quality – necessary foundation for sustainable development; economy – a tool that allows to achieve sustainable development; and living

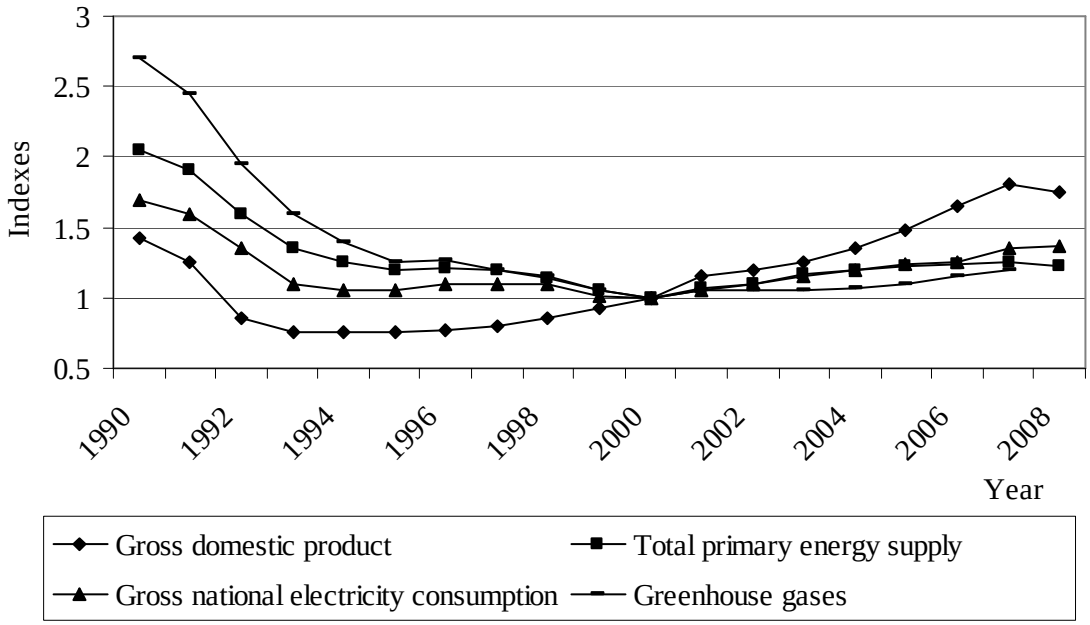
standards – the goal of sustainable development. These ideas differ from the traditional ones, where the economic growth is defined as a common goal and the environment with its resources is just a tool (Klāvs, et al., 2010).

2. The importance of an energy industry sector in the sustainable development of a country

The definition of power industry determines that it is a sector of the national economy, which deals with production of energy, its transference, and delivery (Akadēmisko terminu datu..., n/d).

According to the scheme of energy flow, power industry can be divided into two subfields: production and supply of primary energy sources (extraction, supply, and usage of renewable energy sources, and extraction and processing of fossil energy sources), and supply of secondary energy sources (supply of electricity and heat) (Revīzijas ziņojums: Enerģētikas…, 2009).

Interaction of economy, power industry, and quality of environment is very close, which is illustrated by Latvia's development tendencies during the past 18 years (Figure 2), pointing at the interaction between three important dimensions – environment, economy, and power industry (Enerģētikas attīstības pamatnostādnes…, 2006).



* Reference year is 2000 – relative value for all indexes is 1

Source: Par enerģētikas attīstības, 2010

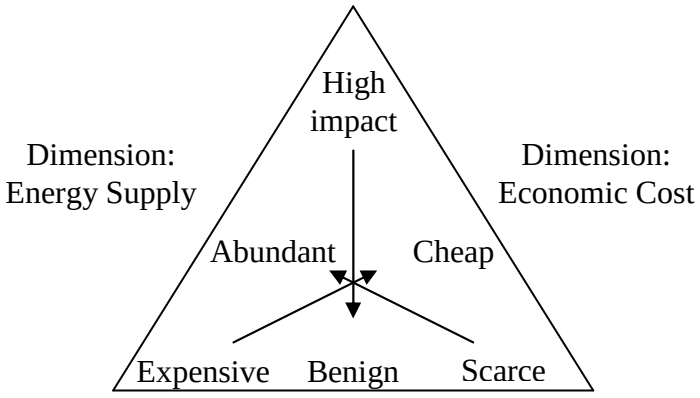
Fig. 2. **Interaction of energy, economic, and environment indicators in Latvia, 1990-2008**

Gross Domestic Product (GDP) is one of the main factors in the development of the economy, yet not always, its growth causes increase in energy consumption. As stated in the research "Evaluation of the Usage Potential of Renewable Energy Sources in Latvia until 2020", this is explained by energy efficiency related activities, introduction of which reduces indexes of energy intensity. Thus, it enables the situation when, regardless of the growth in GDP, the consumption of energy resources does not increase (Atjaunojamo energoresursu izmantošanas..., 2008).

According to the subfield division of power industry and interaction of economy, power industry, and environment quality (Figure 2), it is possible to claim that power industry is a driving force of the economic development, the matter of national security as well as an important component of living quality. For example, there is a tendency of change stated

between household income and the providing variety of energy sources/availability of energy in the research "World Energy Outlook 2002" conducted by the International Energy Agency. Consumption of energy resources increases and the structure changes with the increase in household income. Consumption of electric power is still increasing, and biomass is almost not being used at all (World Energy Outlook, 2002).

The interaction between energy, economy, and environment indexes can also be described using the so called "3E Trilemma" (Figure 3), on which Gregg J.S., a doctor of Geographic Sciences, has focused in his pieces of research in the University of Maryland.



Source: Gregg, 2009

Fig. 3. **The complex relationship (framework) between energy, environment and economy – the "3E Trilemma"**

In the perfect case, the energy supply system would be able to provide a great volume of energy (Figure 3), the produced energy would be competitive so that it could be purchased for a reasonable price (people could afford it), and it would have a minor impact on the environment. Yet, existence of such a situation is not practically possible, because the most favourable position of the power industry sustainable growth indexes is exactly on one of the dimensions. Choosing beneficial cases only, simultaneously just two dimensions can intersect, which, as a result, creates a trilemma – in any choice two indicators will be positive, but one negative (Gregg, 2009).

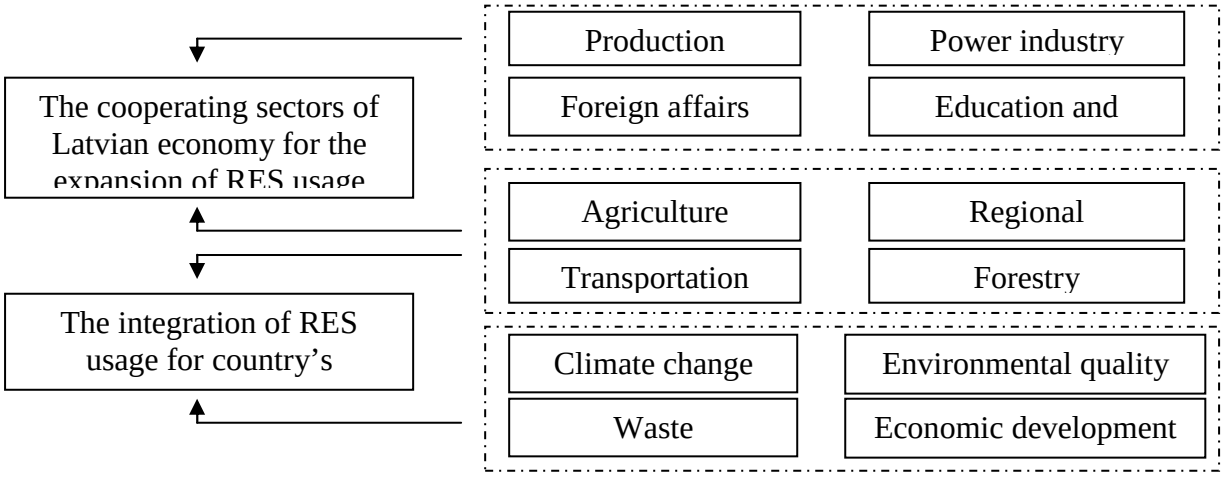
World energy consumption increases each year, and shortage of energy power sources in many places slows down the economic development. As Zaļoksnis J., an assistant professor at the Faculty of Geography and Earth Sciences, the University of Latvia, points out in his research "Natural Resources", variety of energy sources is very high. Reasonably using energy as well as using diverse combinations of energy resources, it is possible not only to maintain the existing living standard, but also to increase it in the future (Zaļoksnis, n/d).

Accordingly, an alternative solution for the use of energy is being outlined – reorientation to models based on the usage of more sustainable resources (move along the dimension in Figure 3 inwards mutually closed frame), including sustainable energy production and consumption. In such a scenario, the use of RES has also an essential importance among other.

3. The contribution of renewable energy resources in the advance of Latvia's development

In Latvia, the consumption of primary resources is ensured by local and renewable energy resources – wood, turf, reeds, hydro resources, wind, biomass, bio fuel, and imported energy resources – oil products, natural gas, coal, etc. Three energy resource types dominate in the primary resource supply chain and all three have almost equal market share. They include oil products, natural gas, and wood (each of them occupies 30% on average). With the growth of

wood resource usage, the energy dependency of Latvia has decreased from 86% in 1990 to 54% in 2009. However, it still can be seen as a great achievement. Thus, the main principle of RES usage for Latvia on the institutional level is based on the power industry's sustainable development economic dimension indicator – dependency on import. The priority is energy supply risk reduction, and only after the latter two other positive aspects (Figure 4) of RES usage follow (Par enerģētikas attīstības…, 2010).



Source: authors' construction based on Atjaunojamo enerģijas resursu…, 2006 and Atjaunojamo energoresursu izmantošanas…, 2006

Fig. 4. **The cooperation between sectors of Latvia's economy for the promotion of RES usage and RES integration into the country development**

The research "Usage of Renewable Energy Resources in Latvia's Regions and Measuring of Environmental, Economic, and Social Benefits on National and Regional Level" states that an integrated approach is necessary in order to attain a successful RES usage (Figure 4), because it is the only way to reach the goal of RES usage (Atjaunojamo enerģijas resursu…, 2006).

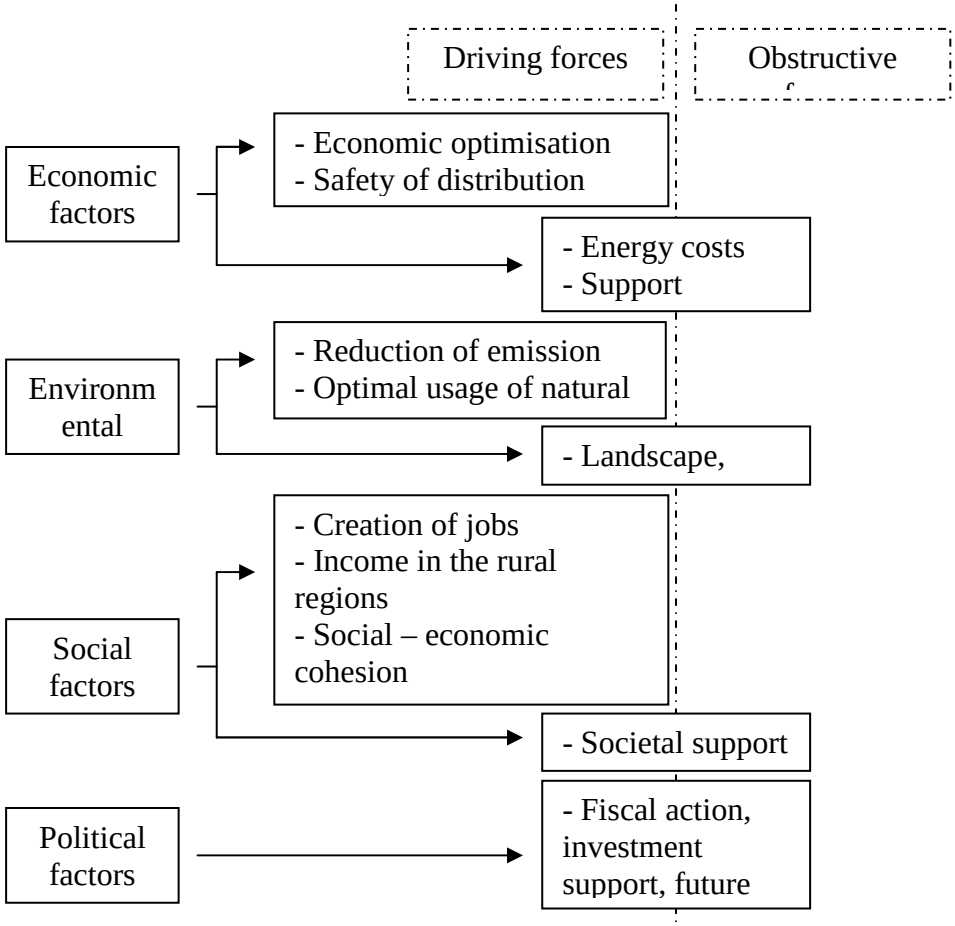
"Guidelines for the Use of Renewable Sources of Energy 2006-2013" also state that for a successful expansion of RES usage (Figure 4) a collaboration among different sectors of Latvia's economy is necessary (Atjaunojamo energoresursu izmantošanas…, 2006).

Experts and practitioners of Latvia's power industry start paying even more attention to such RES type as biomass, since its usage (especially forestry) is seen as the future of Latvia's power industry. The positive impact of biomass usage is especially associated with the agricultural sector and regional economy. It is explained by the energy resource extraction, decentralised energy production, environmental, social, and economic indicator improvement on the regional and national level.

Sprūds A., an associate professor of Riga Stradiņš University also focuses on the latter claim in the study "Latvia's Power Industry Policy: towards Sustainable and Transparent Power Industry Sector", stating that the power industry has a long-term effect on the societal development in general. The sustainable economic development model incorporates the promotion of competition and competitiveness, development of small and medium enterprises, diversification of agricultural and regional development possibilities, and other factors. The usage of local RES gives a great investment into the promotion of national economic development. The presence of fossil energy resources is not eliminated in the future development of Latvia; however, the future innovation potential is connected with new – environmental friendly and energy efficient technologies, and RES usage in the power industry (Figure 5) (Sprūds, et al., 2009).

The uneven position in relation to fossil resources (energy costs) is considered as one of the most important barriers (Figure 5) for the usage of RES in Latvia as well as in the world. Therefore, additional stimulus is needed for its usage. From this point of view on the

institutional level in Latvia and the EU, the RES usage aspects are one of the main power industry matters that are integrated even more into the united energy and sustainable development policy. For instance, in 2010, the European Union enforced a new strategy "Europe 2020: A European Strategy for Smart, Sustainable and Inclusive Growth" that also incorporates the 2009 Third power industry package directive terms that are to be met until 2020 in the EU, namely, to increase energy efficiency by 20%, to increase the share of RES in the energy end consumption by 20%, and to decrease greenhouse gases emissions by 20%, comparing with 1990 (given good conditions, the reduction of emission should be decreased by 30%) (Europe 2020: A European…, 2010).



Source: authors' construction based on Atjaunojamo enerģijas resursu…, 2006 and Atjaunojamo energoresursu izmantošanas…, 2006

Fig. 5. **The driving and obstructive forces of the renewable energy resource usage in Latvia**

Thus, from the institutional point of view to achieve the EU mandatory target for RES usage in Latvia in 2020 (40% in final energy consumption), the RES usage division matters according to its goal in the power energy (electrical energy), thermal energy and bio fuel sectors become topical (since the year 2006, the RES share in the final energy consumption in Latvia composes 30% on average, for example, in 2008 it was 30.2%).

Hence, public stance (Figure 5 "Societal support") on the RES usage and energy matters in general becomes even more popular. In the autumn of 2008, "DnB NORD Latvian Barometer" conducted a survey in order to determine the public opinion about the national power industry. After examining the survey and experts opinion, one ought to conclude that the majority of people in Latvia have only a somewhat idea (assessed with a personal bias) on the ongoing processes in the power sector. The latter claim is supported by the following facts:

- most of the respondents (73%) assess the prices of the energy end product (natural gas, fuel, electricity etc.) as the main problem in the power industry. However, the majority (55%) suggest the promotion of RES usage as a possible solution. Hence, a contradiction is present, because the energy from RES would be more expensive than the one produced from fossil energy resources;
- most people (56%) find that the reason for the increase of the energy price is associated with the willingness of producers to reap greater profits. In reality, power becomes more expensive, since the price of energy resources, especially natural gas that is used in the production of heat and electricity in Latvia, grows, plus, the tariffs are calculated in accordance with the Cabinet methodology;
- exactly the heat cost increase is pointed out by the respondents (29%) as the biggest problem in the national power industry. However, if one analyses the actions taken for energy efficiency, people associate them with switching off electric appliances and acquisition of economical household appliances, since building heat insulation is very expensive (if one compares in practice, exactly building heat insulation is the proper way to save up to 30-40% on monthly heat utility payments) (DnB NORD Latvijas…, 2008).

When describing the attitude and understanding of the power sector related matters of Latvia's people in general, it is necessary to stress the results of Eurobarometer research 322 (2009), which shows that Latvia's respondents demonstrate the least concern about the climate change among the EU-27 countries. However, the greatest concern is about the financial crisis and economic downturn. Given such position of locals, it is possible to define the approach of society morale change – RES usage in energy production, saving energy, and its effective use should be emphasised to the society as a way to economic recovery, and material and moral welfare and comfort. However, Eurobarometer study 262 (2006) on the attitude of society towards different information sources of power industry related topics points out that the society (EU-25 countries) trusts more its local governments than governmental institutions. Thus, local governments should undertake a great role both in information delivery to locals about power industry topics and in the implementation of RES usage projects, showing and explaining the benefits of RES usage in the context of sustainable development (Klāvs, et al., 2010).

Conclusions and proposals

1. From the perspective of human wellbeing, with an emphasis on the functioning of an ecosystem in a longer period of time, an effective use of the resources (wherewith also renewable resources) is an integral part of sustainable development, since exactly the environment with its available resources is emphasised as the foundations for sustainable development.
2. As there is no one ideal solution (model) in the supply system of energy, the use of renewable energy resources has a significant importance in the creation of models based upon the usage of sustainable resources, achieving the use of combined energy resources ensuring the existing living standards in the future.
3. The proposed hypothesis has been proved, since by advancing the successful use of renewable energy resources, accomplished by an integrated approach among sectors of the national economy, the positive effect in sustainable development is particularly associated with branches of agriculture and regional economy, advancing the regional development and improving the environmental, social, and economic aspects on the national level.
4. To ensure the most effective use of renewable energy resources advancing the sustainable development of Latvia, the decisions concerning the usage of RES shall be primarily solved on an institutional level. At the same time, it is necessary to clarify energy related matters to the society on a broader scale and quality, emphasising the production of RES as a way for economic recovery and material welfare.
5. The attitude of society towards different information sources of energy industry related topics stresses that a great role in the clarification of the questions related to energy sectors shall be undertaken exactly by a local government. Subjectively justifying the importance of processes of energy industry in the context of sustainable development,

wherewith also the influence of energy industry processes on the population's utility payments; hence, the change in habits of energy consumption in households can be argued by the government as a valid solution for the change of the situation, progressing the welfare of the population.

Bibliography

1. Adams, W.M. (2006). The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century. Retrieved: http://cmsdata.iucn.org/downloads/iucn_future_of_sustanability.pdf. Access: 3 November 2010.
2. Akadēmisko terminu datu bāze (n/d) Latvijas Zinātņu akadēmijas Terminoloģijas komisija. Retrieved: http://termini.lza.lv/term.php?term=Ener%C4%A3%C4%93tika&list=&lang=LV. Access: 5 September 2010.
3. Atjaunojamo enerģijas resursu izmantošana Latvijas reģionos un vides ekonomisko un sociālo ieguvumu novērtējums nacionālā un reģionālā līmenī (2006) Fizikālās Enerģētikas institūts. Retrieved: http://www.innovation.lv/eee/default_files/FEI_lvaf_2006.pdf. Access: 5 September 2010.
4. Atjaunojamo energoresursu izmantošanas iespēju izvērtējums Latvijā līdz 2020. gadam (2008) Rīgas Tehniskās universitātes Vides aizsardzības un siltuma sistēmu institūts. Retrieved: www.vidm.gov.lv/files/text/VIDMPamn_201006__AERPamn.pdf. Access: 22 November 2010.
5. Atjaunojamo energoresursu izmantošanas pamatnostādnes 2006.-2013. gadam (2006) Vides ministrija. Retrieved: http://polsis.mk.gov.lv/view.do?id=2091. Access: 29 September 2010.
6. Dimensions of Sustainable Development (2008) Ministry of National Economy. Retrieved: http://www.moneoman.gov.om/book/sdi/English/1/1-2.pdf. Access: 5 September 2010.
7. DnB NORD Latvijas Barometrs Nr.4. (2008). DnB NORD. Retrieved: http://www.dnbnord.lv/Download/Latvijas%20Barometrs/petijums_nr4.pdf. Access: 16 October 2010.
8. Enerģētikas attīstības pamatnostādnes 2007.-2016. gadam (2006). Ekonomikas ministrija. Retrieved: http://polsis.mk.gov.lv/view.do?id=2017. Access: 11 September 2010.
9. Europe 2020: A European Strategy for Smart, Sustainable and Inclusive Growth (2010). European Commission. Retrieved: http://europa.eu/press_room/pdf/complet_en_barroso___007_-_europe_2020_-_en_version.pdf. Access: 20 December 2010.
10. Gregg, J.S. (2009). Sustainability. Retrieved: http://www.jsgregg.com/research.html. Access: 5 October 2010.
11. History and Definitions of Sustainable Development (2010) TOSCA. Retrieved: http://www.tosca-life.info/sustainability/definitions. Access: 12 October 2010.
12. Klāvs, G., Kundziņa, A., Ozoliņš, J., Reķis, J. (2010). Atjaunojamo energoresursu izmantošana Latvijas ilgtspējīgas attīstības nodrošināšanai. Retrieved: http://www.sfl.lv/upload_file/2010%20gads/AER_petijums.pdf. Access: 4 September 2010.
13. Mainstreaming Sustainable Development into EU Policies: 2009 Review of the European Union Strategy for Sustainable Development (2009). Commission of the European Communities. Brussels, 24.7.2009, COM (2009) 400 final. Retrieved: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0400:FIN:en:PDF. Access: 17 December 2010.
14. Par Enerģētikas attīstības pamatnostādnēs 2007.-2016. gadam noteikto uzdevumu izpildi: Informatīvs ziņojums (2010) Ekonomikas ministrija. Retrieved: http://polsis.mk.gov.lv/view.do?id=2017. Access: 11 September 2010.
15. Revīzijas ziņojums: Enerģētikas politikas izstrādes un īstenošanas koordinācija un uzraudzība, valsts atbalsta enerģētikai piešķiršanas atbilstība politikas mērķiem (2009). Valsts kontrole. Retrieved: http://www.lrvk.gov.lv/upload/Zinojums_18Feb09.pdf. Access: 16 December 2010.
16. Römpczyk E. (2007). *Gribam ilgtspējīgu attīstību*. Retrieved: http://www.vidm.gov.lv/lat/darbibas_veidi/ilgtspejiga_attistiba/files/text/Darb_jomas//Book_gribamia.pdf. Access: 18 September 2010.
17. Sprūds, A., Balcers, O., Eberšteina, D., Ozoliņš, J., Grišāne, A. (2009). Latvijas enerģētikas politika: ceļā uz ilgtspējīgu un caurspīdīgu enerģētikas sektoru. Retrieved: http://www.sfl.lv/public/30026.html. Access: 15 November 2010.
18. Sustainable Development in the European Union: 2009 Monitoring Report of the EU Sustainable Development Strategy (2009). Eurostat. Retrieved: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/865-EN/EN/865-EN-EN.PDF. Access: 18 October 2010.

19. Vera, I., Langlois, L., Rogner, H-H. (2005). Indicators for Sustainable Energy Development. Retrieved: http://www.un.org/esa/sustdev/publications/energy_indicators/chapter2.pdf. Access: 5 December 2010.
20. World Energy Outlook (2002). International Energy Agency. Retrieved: http://www.iea.org/textbase/nppdf/free/2000/weo2002.pdf. Access: 22 December 2010.
21. Zaļoksnis J. (n/d). Dabas resursi. Retrieved: http://www.geo.lu.lv/vides_izglitiba/DDwENGINE/SPAW_RTE/uploas/files/V+IA-5.Ener%C4%A3%C4%93tiskie%20resursi.pdf. Access: 9 October 2010.

Acknowledgement
The publication has been supported by the European Social Fund (ESF) within the Project "Support for the Doctoral Studies Programme at Latvia University of Agriculture" (2009/0180/1DP/1.1.2.1.2./09/IPIA/VIAA/017) //No.04.4-08/EF2.D2.20

Allocation of the EU Structural Funds – Promotion of Strategic Development of Territories in Latvia

Sanda Cingule-Vinogradova Mg.oec.
Ilze Latviete Mg.oec.
PhD students, Faculty of Economics, Latvia University of Agriculture

Abstract. There are significant territorial differences in Latvia according to the socio-economic development level. This is characterised by indicators across cities in regions, local governments (county), and the country. Studies done in the past few years show that the unfavourable regional differences increase. Latvia has an institutional system with a general aim to provide an even strategic development of the regions. At the current moment, it has not reached its aim; there might be a few reasons therefore: domination of certain political interests; unprofessionalism in the implementation of regional development policy; weakness of the civil society; and uneven allocation of the European Union (EU) Structural Funds, which have caused larger regional disproportions in Latvia instead of dissolving them. The article explores the allocated EU Structural Funds in perspective of Latvia regions and analyses their uneven allocation in the framework of planning period for 2004-2006.
The funding from the Structural Funds was granted through open project application contests, scheme of grants, and national programmes. All the activities are vital to the development of state territories. The uptaking of the EU Structural Funds is an instrument of decreasing the regional differences. Unfortunately, there is no requirement on the state level to achieve an even division of the finances among different parts of the territory, or marking a certain amount of finances to be forwarded to territories with specific problems.
Key words: strategic development of territories, regional policy, EU Structural Funds, regional equality.

Introduction

Regional policy in the EU Member States has been created in the course of several decades, and it is influenced by historical conditions and traditions. Regional policy is a financial solidarity instrument and powerful driving force of cohesion and economic integration, which emphasises the principle to decrease the differences in income and prosperity level among the EU regions. Regional development policy is a part of the general EU Member States' development policy. As I.Vilka mentions in her monograph notes (2004), it is an entity of activities and measures with the aim to decrease the differences of socio-economic development among places, regions, and territories. Regional development policy is an instrument of solving socio-economic problems – increase of prosperity of the inhabitants and stimulation of rational use of resources. The main aims and tasks of regional policy are to achieve balanced regional economic development; even and effective location and use of all material, labour, and other resources of the state regions; and stimulation of the economic growth and decrease of uneven differences in the less-developed regions. In addition, I.Vaidere and a group of authors in their research note that regional policy is an entity of coordinated and organised activities to provide development in the entire state territory. Regional economic policy or regional planning includes all public intervention forms, intended for geographical dislocation of economic activities. Regional policy tries to change the free market economy in order to achieve two interrelate aims: economic growth and improvement of social distribution (*Vaidere, Vanags, 2006*).

Strategic development of regions is an essential condition to guarantee stable functioning of the regions on conditions of market relationships and inter-territorial competition. The development direction is based on historical, nature and geographical, industrial, socio-cultural, and other factors. Strategic development of the region has insufficient resources, which creates the need to overlook this process to achieve an optimal result. Implementation programmes and measures of the action policy, which are focussed on development of the

state territory, may be regarded as regional development support instruments. Support for their implementation can be attained in different ways – from the state budget finances, the EU (EU Structural Funds, Cohesion fund and subsidies), or co-financing from other foreign countries.

The authors agree with M. Pūķis that along with the EU foundation, there is a tendency to observe that in the abovementioned union the role of states as such decreases and the role of regions increases. Also in Latvia, such concepts as "region", "regional policy", "regional development", and "regionalisation" are being used and mentioned often. During the two decades of independent Latvia, the economic and social differences among Latvia's regions still continue to increase, where all the regions, except Riga region and Riga vicinity, remain further away from the EU average indicators (*Pūķis, 2010*).

The aims and tasks of regional policy do not always work out in reality. In the social and economic development of Latvia's regions, disproportions can be observed, which show the increasing differences and different conditions for actions and possibilities of inhabitants. Latvia's regions are developing unevenly, and there are territories, where the development is slower *(Jermolajeva, Baltere, 2009)*. The low development of Latgale region in comparison with the other regions may be mentioned as an example. Several socio-economic indicators reveal that the possibilities of living environment and business activities are significantly different in Latgale.

Most of Latvian scientists who have explored regional development problems - E.Vanags, I.Vilka, I.Vaidere (2006, 2008), I. Šķiņķe, P.Šķiņķis (1997), M.Pūķis (2005), D.Saktiņa (2008), Rasnača L., Krūzmētra Ž., Saulāja I., Bite D. (2007), and B.Rivža, P.Rivža M.Krūzmētra (2001) - basically state the existence of regional differences; they identify problems in the spheres of employment, business activities, deterioration of infrastructure, and other spheres, and they state that the situation differs among different regions.

Since joining the EU on 1 May 2004, Latvia as one of the new Member States got the opportunity to participate in the EU regional and structural policy processes, with an aim to provide a more rapid equalisation of economic and social indicators towards the average EU Member State level. Latvia as one of the less developed EU regions has the opportunity to use the EU offered financial aid for the economic and social development. Currently, the largest financial instruments, from which Latvia receives financial support, are the EU Structural Funds and Cohesion fund (CF).

Financial resources of the EU budget support a variety of activities. This support may vary in amounts – it can cover all the expenses or participate in support for just a few per cents. In addition, the scope of potential recipients of financial support is very wide. Among them can be not only the Member States, but also the candidate countries, individual local governments, social organisations, private businesses, universities, and even independent individuals. As it is said in many documents related to the EU Structural Funds, their aim is to discard regional and social inequalities among the EU Member States and their regions, and to improve the economic and social cohesion all through Europe. The authors agree with J.Brizgs (2007) that these financial means are a great benefit for Latvia and they can essentially prompt the development of the country. Yet, one has to remember that funding also creates risk and inadequate use of the funds may lead only to regional inequality, social exclusion, environmental degradation, and corruption.

Therefore, the aim of the research is to evaluate the acquisition of the EU Structural Funds in order to balance equal regional development. The research hypothesis – acquisition of the EU Structural Funds by regions is drastically unequal, which shows that regional development in the country is formal.

The tasks to achieve the aim:

1) to explore the aims and core of regional policy in the EU and Latvia;
2) to evaluate the distribution of the EU funding and results in Latvia's regions in the framework of planning period for 2004 – 2006.

Materials and methods

Regulatory enactments of the Republic of Latvia, scientific researches on the EU Structural Funds, data of the Cabinet and the Ministry of Welfare available on their webpages, and data of the Central Statistics Bureau (CSB) of Latvia and EUROSTAT were used in the research.

The main methods used in the research include monographic descriptive method, and method of analysis and synthesis, which were used to explore problematic elements and synthesise interconnections or define conformity with the laws, facts, statistics and other data; to collect and process specific information about activities implemented by means of the EU Structural Funds.

Results and discussion
1. Regional policy in the EU and Latvia

Inequality of regions has several reasons. It may be a result of a constant unfavourable situation, which is created by geographical isolation or by recent social and economic changes. Such situation is often characterised by social isolation, low quality education, larger unemployment, and inadequate infrastructure. In case of several EU Member States, this situation is inherited from the centralised planning economy system. In the EU, essential socio-economic differences are observed among regions. The mentioned differences delay the EU development generally as well as the development of individual countries and regions (also, the richest). Consequently, one of the EU priorities implementing the solidarity principle is the economic and social equalisation or cohesion. The aim of convergence (cohesion) has been within the EU since the establishing of the European Community's Treaty of Rome *(Treaty Establishing the European Economic Community, 1*957). Cohesion is being measured as a degree, in which the disproportions of social and economic welfare among separate regions of the community are politically and socially acceptable. It has to be mentioned that the achievement of cohesion is especially emphasised in the Maastricht Treaty of 7 February 1992 Treaty on the European Union. The EU regional policy is a key component of structural policy. In practice, it is often called the structural policy, since the economic and social structure of the regions and all the country may change in the result of implementing the regional policy. Also now, in the current planning period of 2007 – 2013, a balanced development of the territories is one of the main aims of the Cohesion policy (*Struktūrfondu apguves..., 2009*).

The EU is active in the sphere of regional policy. Regional differences are mainly measured based on income per capita and the unemployment rate. The main aim – all the regions have to stimulate the EU economic development; it is solidarity policy, which helps the less developed regions through distribution on territorial level (*Armstrong, Taylor, 2000*). If the principles of regional development equalisation policy were implemented and used, the difference between economically stronger and weaker regions would remain, and even increase more. The regional policy of the EU is implemented based on the following principles: *concentration, programming, complementarily, partnership, openness, sustainability, and subsidiary* (*Reģionālās attīstības likums, 2002*).

D. Auers and T. Rostoks note in their research that the EU regional policy and especially its instruments, e.g., the EU Structural Funds, have received both – praise and a considerable amount of criticism. Although the aim of regional policy – the development of less developed regions – seems to be noble and not contradictory, the EU regional policy has been criticised from all sides – ideological, policy creation, and implementation point of view. On ideological level, it can be said that to some extent this policy distorts the competition between the regions. The money, which in the form of taxes is taken from the richest regions is forwarded to the less developed regions, thus ignoring the differences between these regions that have been created in the course of history. To some extent, on ideological level it is possible to see the contradiction between the reallocation of funds for the benefit of the poorest regions and the competition principles, which are fairly strictly followed by the European Commission. The authors also acknowledge that the EU regional policy is not much criticised on the ideological

level, because the idea to provide support to less developed regions is morally more superior to the regional competition idea (*Auers D., Rostoks T., 2005*).

From the point of view of policy creation and implementation, the EU regional policy may be criticised from the redistribution position, questioning the need of regional cohesion as such. Stefan de Rynck and Pol McAleavey criticise the EU regional policy for its "blindness", meaning the process when with the increase of money of the Structural Funds, political interests in reallocating increase, too. Both authors believe that over time the redistribution process has become more important than the interests of regions, which are recipients of these funds. The selfish thinking of the countries does not allow to use the EU regional policy to fight true retardation, degradation, and poverty, because it is hard for them to refuse support for their regions even then, if based on the evaluation of GDP per capita (which is the main indicator of regional development from the EU point of view) and employment rates, these regions would not be entitled to receive support (*Rynck S., McAleavey P., 2001*). It can be concluded that the main beneficiaries are the most organised and active social groups, but on the contrary, there is a question if these groups are really most in need for the EU funding. Therefore, it is important to try to achieve cohesion within regions rather than between regions.

There are four Structural Funds available for implementation of the regional development activities in the EU Member States: European Regional Development Fund (ERDF), European Social Fund (ESF), European Agricultural Guidance and Guarantee Fund (EAGGF), and the Financial Instrument for Fisheries Guidance (FIFG). Accordingly, the ERDF contributes to regional development by investing in public infrastructure, ESF addresses employment, education, and social issues; EAGGF supports agricultural and rural development; but FIFG – development of fishery (Vaidere…, 2006). The Cohesion Fund is established to finance large-scale infrastructure development activities (projects) in environmental protection and transport spheres. The Fund provides financial contributions for projects to meet the EU targets in environmental and transport spheres and for implementation of the EU policies and to achieve the requirements of directives. As I. Vilka (*2004*) admits in her research, the selection of the regional development tools is based on the matters of regional development policy.

Latvia's regional policy is in its formation process already for more than 15 years. During the first years after re-establishing of independence, there was a widespread opinion in Latvia that regional policy is the development of certain regions or less developed territories, not more (*Dažādā Latvija, 2004*). Only in course of time, this myth was broken and a real understanding of regional policy was established - that it works and exists all through the territory. In perspective, local governments will have the major role in regional development in Latvia as well as in the other EU countries.

Regional development in Latvia can be historically broken down into stages, based on the implementation of specific and important events: 1993 – establishment of the Ministry of Environmental Protection and Regional Development, including the establishment of the Department of Regional Development; 1994 – Regional development is recognised as one of the 10 priorities of the government; 1995 – Sub-department for balanced regional development is established within Regional Development department; the Regional Development policy Framework of Latvia is established; 1997 – Law on "Especially Supportable Regions" is adopted, in which 84 state territorial units get especially assisted region status for three years; 1998 – negotiations about the establishment of planning regions are commenced; 1999-2000 – five regional development agencies are established; 2002 – "Law on Regional Development" is adopted; 2008 – "Development Planning System Act" is adopted; 2009 – Administrative territorial reform is finished; 2010 – the Parliament of the republic of Latvia approved Latvia Sustainable Development Strategy till 2030 ("Latvija 2030").

Over recent decades, not only the state is actively involved in the implementation of regional policy using central authorities and local governments, but also the European Commission and other international organisations. In accordance with the Development Planning System Act, strategy hierarchically is the highest national development-planning document and its long-term objectives, development priorities, and spatial development

perspective are achieved by carrying out a downstream sector and territorial development policy.

The idea of non-economic division of regions is expressed in the studies of Latvian scientific regionalists. For example, O. Krastiņš, a professor of the University of Latvia, considers regions of Latvia as "historical counties", noting that the regional division also has a direct economic content: "Riga – wages, Latgale – pensions" (Krastiņš, 2000). A researcher of regional issues, PhD in economics I. Vaidere notes that Latvia has an artificial and distorted spatial structure of economy. On the one hand, it is characterised by an excessive concentration of population and production in Riga region and on the other hand – relatively low population density, weak industry, and infrastructure in the rest of the territory of Latvia (Vaidere, 1995). Associate professor of Business School "Turība" S. Keišs indicates that a clearly expressed monocentrism continues to exist and even becomes stronger quantitatively and qualitatively in Latvia with the capital Riga as the centre, and there is no reason to claim that the situation could be improved by getting support through financial instruments, which are created by the EU (Keišs, 2005). Scientists I. Vilka and P. Šķiņķis in their book "Dažādā Latvija" (2004) believe that strategic development documents that are related to the regional development of Latvia, mostly are created without an inter-sectoral approach as well as they are weakly coordinated between governmental institutions and local governments, and thus, attempts of their implementation are not successful enough in the practice of regional development. The ability of local, regional, and national institutions to participate in policy planning and implementation is only beginning to increase gradually.

The global economic crisis has brought new challenges to Latvia's economy and regional development. Defining the economic stabilisation programmes and measures in order to normalise the situation in the country, creates a situation when it is necessary to determine the priorities and the implementation mechanisms of regional development strictly and correctly, regarding the limited financial opportunities.

2. EU Structural Funds in the regions of Latvia

Between 2004 and 2008, Latvia has received the EU and other foreign financial assistance in the amount of LVL 1.55 billion as a financial incentive for the economic development, which is almost three times more than LVL 0.54 billion that Latvia paid to the EU budget over this period. This financing has been allocated for the development of state and local governments' infrastructure, support for enterprises, upgrading professional skills of the residents, and other activities. Between 2004 and 2007, additional financing out of the state budget directly from the EU in the amount of LVL 0.09 billion has directly received by the private sector, local governments, and non-governmental organisations (*ES finansējums.., 2009*).

Table 1

Territorial development index of the regions of Latvia, 2002-2009

Region/ Year	Riga	Kurzeme	Zemgale	Vidzeme	Latgale
2002	0.909	-0.303	-0.440	-0.835	-1.257
2003	0.975	-0.429	-0.469	-0.885	-1.31
2004	0.995	-0.428	-0.533	-0.895	-1.339
2005	1.003	-0.431	-0.590	-0.877	-1.346
2006	1.011	-0.520	-0.574	-0.851	-1.341
2007	0.999	-0.647	-0.516	-0.853	-1.267
2008	0.989	-0.651	-0.516	-0.827	-1.267
2009	0.956	-0.701	-0.508	-0.803	-1.164
Base increase 2009/2002	**0.047**	**-0.398**	**-0.068**	**0.032**	**0.093**

Source: authors' construction based on information: 1999 and 2009 statistical years, 2002- 2003 (Dažādā Latvija..., 2004), 2004-2006 (Reģionu attīstība..., 2007), 2007 (LR MK Noteikumi Nr. 370, 2008), 2008 (LR MK Noteikumi Nr. 319, 2009), 2009 (Reģionu attīstība…,2010)

Also during the period from 2009 to 2015, Latvia has planned a major EU budgetary aid, which will continue to flow into the national economy, including the regional economy in the coming years. Latvia's ability to acquire this financing and shift it to the key development sectors in the regions is a core principle of a successful regional development.

Latvia's movement towards the EU has contributed to activating the regional development issues in the country. However, the implementation of the EU regional policy does not automatically mean that national regional policy is also being implemented.

The authors of the research analyse the indicators of territory development index to identify the development level of Latvia's regions. Territory development index is a standardised indicator, which belongs to a comparison group of indicators; it is calculated every year. Indicators that describe socio-economic development of the territory are used for its calculation. Consequently, the territorial development indexes provide an overall insight into the development of the territories in comparison, both - across the country generally, and within a particular region or a specific territory in a particular period of time (Table 1).

Analysing territorial development index, it can be concluded that the highest rates for the period of 2002-2009 are observed in Riga region, while the least developed region is Latgale. Taking in notice the territory development indicators, theoretically, based on the EU and Latvian Regional Development Policy, the most attention and activities should be supposed for the least developed regions - Latgale and Vidzeme. It can be concluded that the overall tendencies in the country indicate that there are significant social economic differences between various territorial parts of Latvia. The development dynamics of indicators in the past few years show that Kurzeme is strengthening its position as the second strongest region, approaching Riga. Several development indicators of Latgale (GDP, development index) in 2009 indicate to a slight positive development dynamics; however, differences with other regions are significant.

Despite the fact that every year the socio-economic indicators reveal that Latgale is the least developed region in Latvia, it is exactly the region, which has received the least financing in the previous financial EU planning period (2004-2006) (Table 2) - only 4% of total financing provided by the EU funds. Riga region got the highest amount, almost half of the total financing (48%). Data on the number and volume of the implemented EU projects is presented across the regions, which provides an insight into their usefulness concerning a balanced territorial development.

Table 2

Financing from the EU Structural Funds and the number of completed projects in the regions of Latvia in the planning period of 2004-2006 (until 31 March 2009)

Regions	Financing, LVL	Proportion of financing, %	Number of projects	Proportion of projects, %
Riga region	231 109 478	48	2 072	30
Kurzeme region	97 499 507	20	1 492	22
Vidzeme region	45 756 655	10	1 352	20
Zemgale region	44 355 610	9	889	13
Latgale region	38 455 543	8	983	14
Latvia	20 813 312	4	67	1
Total	477 990 105		6 855	

Source: Ministry of Finance, 2010 and authors' calculations

The analysis of the absolute level of financing, based on the highest and the lowest rate, shows that economically stronger regions attract more financing. If geographical location and the number of population is taken into account, it is obvious that neither the geographical location nor the population create an interrelation with the acquisition of the EU funds - Latgale region does not have the lowest indicator of population and not all regions that are located at a greater distance from the capital have received less financing (for example,

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Kurzeme region received 20% of total financing). As it can be seen in Table 1, the largest share of financing is concentrated in Riga region - LVL 231 109 478 or 48%, but the lowest is in Latgale - LVL 38 455 543 or 8%. The rest of funding is divided - LVL 97 499 507 or 20% to Kurzeme region, LVL 44 355 610 or 9% to Zemgale region, and LVL 45 756 655 or 10% to Vidzeme region. The largest amount of financing is concentrated in Riga region, which shows that lower levels of financing come to those territories of the country where the indicators of economic activity, employment, and wealth are the worst, for example, to Latgale region, or in areas farther away from the capital city or the main transport roads of the country. This creates a risk that differences between these territories and the region of capital city or major cities could even increase.

Concerning the number of supported projects, Latgale region does not have the lowest activity. Analysing the relations between the project financing and the number of projects, it may be concluded that the number of projects does not automatically equal to the amount of financing, for example the number of supported projects in Kurzeme (1492 projects) and Vidzeme (1352 projects) regions is similar, the difference is 140 projects, but financing is halved. A peculiar situation arises in the analysis of the EU funded project financing in the project activity breakdown (Table 3).

Table 3

Financing from the EU Structural Funds and the number of completed projects in the regions of Latvia, across the funds in the planning period of 2004-2006 (until 31 March 2009)

Regions	ERDF		ESF		EAGGF		FIFG	
	Financing, LVL	Number of projects	Financing, LVL	Number of projects	Financing, LVL	Number of projects	Financing, LVL	Number of projects
Riga	177 658 582	946	33 373 331	608	15 849 969	426	4 227 596	92
Proportion	60%	55%	36%	46%	23%	13%	24%	21%
Kurzeme	29 297 840	182	42 668 168	239	13 213 927	764	12 319 572	307
Proportion	10%	11%	46%	18%	19%	23%	69%	70%
Vidzeme	29 180 912	257	2 916 498	96	13 000 174	978	659 071	21
Proportion	10%	15%	3%	7%	19%	29%	4%	5%
Latgale	21 975 510	175	6 927 021	201	9 241 669	598	311 343	9
Proportion	7%	10%	7%	15%	13%	18%	2%	2%
Zemgale	25 033 403	157	5 689 870	146	13 419 608	580	212 729	6
Proportion	8%	9%	6%	11%	20%	17%	1%	1%
Latvia	14 790 249	6	2 173 043	34	3 742 008	26	108 012	1
Proportion	5%	0%	2%	3%	5%	1%	1%	0%
Total	297 936 496	1 723	93 747 931	1 324	68 467 355	3 372	17 838 323	436

Source: Ministry of Finance, 2010 and authors' calculations

As shown in Table 2, within the framework of the EU Structural Funds, Riga region has implemented 2072 projects. Vidzeme region has implemented 1352 projects, Kurzeme region has implemented 1492 projects, and Latgale region has implemented 983 projects; while Zemgale region has implemented 889 projects with the support of the EU Structural Funds. Analysing the support amount, it is obvious that in the framework of ERDF, which aims to support equalisation of regional disparities through participating in stimulating the development and structural adjustment of less developed regions as well as in the reorganisation those industrial regions where the situation tends to become worse (*Eiropas Reģionālais..., 2010*), Riga region, which according to the analysed socio-economic indicators is the most developed region in the country, got the highest amount of funds. It may be concluded that the aim of the fund has not been achieved if 60% of total ERDF financing is allocated to Riga region. Latgale region is the least developed region in the country, but the ERDF project financing in the planning period of 2004-2006 is only 7%, which is the lowest level of funding among all the regions of the country. The same situation is with the ESF

funding, where Riga region received 46% of the grant. Within EAGGF and FIFG, the situation corresponds to the supported activities of the funds and regional specifics, accordingly - agriculture and fisheries. Consequently, when determining and allocating the EU Structural Funds co-financed projects, Latvian regional development aspects are taken into consideration only marginally and the regional component in project evaluation is included only formally.

Regional development support measures are diverse, but unfortunately, not always able to achieve their definite aim. The analysis of the distribution of the EU Structural Funds financing shows that the state has a rather formal support of regional development, which performs its function minimally. State regional development policy should be more oriented towards development and balancing of socio-economically less developed territories, not on distribution of funds for economically strong regions as it is currently done mostly.

Conclusions

1. Regional policy is an instrument of financial solidarity and a strong driving force of cohesion and economic integration, which emphasises the principle to decrease the income and prosperity differences among the EU regions.
2. Significant socio-economic differences can be observed among the EU regions. The mentioned differences delay the EU development generally as well as the development of individual countries and regions (even the richest).
3. Disproportions may be observed in the economic and social development of Latvia's regions, which marks that they are becoming even more unequal and have different conditions of possibilities and actions of their inhabitants. The regions of Latvia develop unevenly; there are territories with a slower development.
4. The current regional policy in Latvia had an insufficient influence on the development of the weakest state regions and the balancing of socio-economic indicators among regions.
5. Latvia has a rather formal stimulation of regional development, which performs its functions and aims only formally.
6. Defining of economic stabilisation programmes and activities in order to stabilise the situation in the country, creates a situation when the ways, priorities, and implementation mechanisms of regional development should be strictly determined and justified, which are being evaluated, taking into consideration the limited financial possibilities.
7. The highest and the lowest indicator of financial support amount of the EU Structural Funds show that the economically strongest regions attract more finances.
8. The interrelationship between the volume and the number of financed projects allows concluding that the number of projects does not provide the amount of financing.
9. State regional development policy should be more oriented towards the development and balancing of socio-economically less developed territories, not on distribution of funds for economically strong regions as it is currently done mostly.

Bibliography

1. Armstrong, H., Taylor, J. (2000). *Regional Economics and Policy.* Third edition. Oxford: Blackwell. p. 432.
2. Auers, D, Rostoks, T. (2005). *Kohēzijas politika un tās attīstības perspektīvas*. Stratēģiskās analīzes komisija. Latvija starptautiskās organizācijās. Zinātniski pētnieciskie raksti 1(2)/2005, Zinātne, 2005. 99 lpp.
3. Brizga, J. (2007). *ES struktūrfondi – palīgs vai drauds Latvijas ilgtspējīgai attīstībai*? p. 2. Retrieved: http://www.politika.lv/index.php?id=2996. Access: 4 October 2008.
4. *Dažādā Latvija: pagasti, novadi, pilsētas, rajoni, reģioni. Vērtējumi, perspektīvas, vīzijas* (2004): Valsts reģionālās attīstības aģentūra, Latvijas Statistikas institūts. Rīga: VRAA. 539 lpp.
5. *Eiropas Ekonomikas kopienas dibināšanas līgums* (Treaty Establishing the European Economic Community) (1957). Retrieved: http://eur-lex.europa.eu/lv/treaties/index.htm#founding. Access: 16 November 2010.
6. *Eiropas Reģionālais Attīstības fonds* (2010). LR Finanšu Ministrija. Retrieved: http://www.esfondi.lv/page.php?id=335. Accessd: 14 November 2010.
7. *ES finansējums laika periodā no 2004. līdz 2008. gadam* (2009). Ministry of Finance information.
8. Finanšu ministrija (2010). *Struktūrfondu apguves statuss (līdz 31.03.2009.)* Retrieved: http://www.esfondi.lv/page.php?id=650. Access: 2 December 2010.
9. Jermolajeva, E., Baltere, R., Švarce, D. (2009). Uzņēmējdarbības attīstība Latvijas reģionos – valsts atbalsts un Eiropas Savienības līdzfinansējums. From: *Daugavpils Universitātes Reģionālais ziņojums.* Pētījumu materiāli. Nr. 4, 2008. Daugavpils Universitāte: Saule, 7.-26. lpp.

10. Keišs, S. (2005). Reģionālās attīstības virzieni un pasākumu sistēma reģionu izveidei Latvijā ES kontekstā. *LZP Ekonomikas un juridiskās zinātnes galvenie pētījumu virzieni 2004. gadā*. Nr. 10, 73.- 79. lpp.
11. Krastiņš, O. (2000). Teritoriālā noslāņošanās ir mazāka nekā sociālā. Tomēr liela. *Latvijas Vēstnesis.* 19. okt., Nr. 368/369
12. *Līgums par Eiropas Savienību* (*Māstrihtas līgums*) (Treaty on European Union) (1992). Retrieved: http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html. Access: 16 November 2010.
13. LR MK noteikumi Nr. 319 „Noteikumi par teritorijas attīstības indeksa aprēķināšanas kārtību un tā vērtībām" (07.04.09.).
14. LR MK noteikumi Nr. 370 „Teritorijas attīstības indeksa aprēķināšanas un piemērošanas kārtība" (15.09.08.).
15. *Pabeigto 2004.-2006.gada plānošanas perioda ES struktūrfondu projektu skaits un finansējuma apjoms, sadalījumā pa ES fondu projektu aktivitātēm* (2010). Labklājības Ministrijas ES struktūrfondu departamenta sniegtā informācija uz 31.03.2009.
16. Pūķis, M. (2005). *Līdzsvarota reģionālā attīstība un vide.* Rīga, 2 lpp. Retrieved: http://www.politika.lv/index.php?id=1981&lng=1. Access: 4 October 2008.
17. Pūķis, M. (2010). *Pašu valdība*. Latvijas Pašvaldību savienība, Jelgavas tipogrāfija. 512 lpp.
18. Rasnača, L., Krūzmētra, Ž., Saulāja, I., Bite, D. (2007). Nodarbinātības problēmas mazpilsētās Latvijā pēc iestāšanās ES. From: *Economic Science for Rural Development: Development: Rural and Regional*, Consumption: Proceedings of the International Scientific Conference. No. 12. LLU, Jelgava, Latvia, 2007.gada 25.-26.aprīlis, p. 167.-175 and p. 259. ISBN 978-9984-39-199-1. ISSN 1691-3078.
19. *Reģionālās attīstības likums* (2002). 21.03.2002. likums ("LV", 53 (2628), 09.04.2002.).Retrieved: http://www.likumi.lv/doc.php?id=61002&from=off. Access: 16 November 2010.
20. *Reģionu attīstība Latvijā 2006* (2007). VRAA. Rīga. 57.-63. lpp.
21. *Reģionu attīstība Latvijā 2009* (2010). VRAA. Rīga. 172 lpp.
22. Rivža, B., Rivža, P., Krūzmētra, M. (2001). *Daudzfunkcionālu lauku uzņēmumu attīstības nosacījumu pētīšanas iespējas.* Starptautiskās zinātniskās konferences „Lauku attīstības problēmu risinājumi" materiāli, Jelgava, 8-13. lpp.
23. Rynck, S., McAleavey, P. (2001). The Cohesion Deficit in Structural Fund Policy. *Jornal of European Public Policy*. 8:4. 2001. August. p. 541.
24. Saktiņa, D. (2008). Sociāli ekonomiskās attīstības izvērtējums klasifikācijā noteiktajos atšķirīgo lauku tipu reģionos, ES atbalsta pasākumu ietekmes izvērtējums, klasifikācijas pilnveidošana lauku politikas īstenošanas vajadzībām. From: *LZP Ekonomikas, juridiskās un vēstures zinātnes galvenie pētījumu virzieni 2008.gadā*, Nr. 14, Rīga: LZP Humanitāro un sociālo zinātņu ekspertu komisija, Tautsaimniecības attīstības institūts, p. 125.-126 and p. 232. ISBN 13: 978- 9984-19-923-9, ISSN 1691-290X
25. *Struktūrfondu apguves statuss* (līdz 30.06.2009.) (2009). Finanšu ministrija. Retrieved: http://www.esfondi.lv/page.php?id=652. Access: 30 November 2009.
26. Šķiņķe, I., Šķiņķis, P. (1997). *Reģionālās politikas atspoguļojums administratīvi teritoriālā iedalījuma maiņās 1940.-1956.gadā*. Latvijas Arhīvi, Nr.1., p. 112, 46.-57. ISSN 1407-2270.
27. Vaidere, I. (1995) Ekonomikas reģionālās disproporcijas kavē tautsainiecības attīstību. *Labrīt.* 8. aprīlis, Nr. 84.
28. Vaidere, I., Vanags, E., Vanags, I., Vilka, I. (2006). *Reģionālā politika un pašvaldību attīstība Eiropas Savienībā un Latvijā*. Rīga: LU Akadēmiskais apgāds: Latvijas Statistikas Institūts. p. 56. and p. 295. ISBN 9984-97611-4.
29. Vaidere, I., Vanags, E., Vanags, I., Vilka, I. (2008). *Regional Policy and Development of Local Government in Latvia and the European Union*. Rīga, p. 61. and p. 326.
30. Vilka, I. (2004). *Pašvaldību reformas un reģionālā attīstība*. Promocijas darba kopsavilkums. Rīga, 23. lpp. and 38. lpp.

The research has been supported within the ESF project "Support for the Implementation of Doctoral Studies at Latvia University of Agriculture", Agreement No. 2009/0180/1DP/1.1.2.1.2/09/IPIA/VIAA/017, Contract No. 04.4-08/EF2.PD21.

Importance of Global and Local Policies to Foster Sustainable Consumption and Production

Skaidrite Dzene, *Mg.oec., PhD student*
Aija Eglite, *Dr.oec., associate professor*
Faculty of Economics, Latvia University of Agriculture

Abstract. Changes in consumption processes have been recognised as important steps towards sustainable development. In Europe Sustainable Consumption and Production (SCP) is increasingly seen as a broad and important tool with which to tackle today's environmental challenges. The aim of this paper is to give an overview of importance of global and local policies to foster sustainable consumption and production. A special focus is given to the policies of the European Union and Latvia, and targeted production-consumption areas of highest environmental impact: food and drink, and housing and mobility. The paper describes types of instruments for implementing SCP policy and global sustainable consumption governance as well as it provides a suggestion for a logical structure for framing SCP policies. The main conclusion of the paper agrees with the previous findings that (global) sustainable consumption governance is highly necessary, but individual governments by themselves have limited control over influences on the consumption patterns of their populations. Therefore, the governments should more active use mixes of instruments which stimulate collective action and engage producers, consumers, and civil society in facilitation of SCP.
Key words: sustainable consumption and production, policy, environment.

Introduction

During the past decade, sustainable production and consumption became an increasingly important category of international development policy, referred to by government and other policymaking bodies as "a key strategic approach to achieving sustainable development" (UNCSD, 1997).

Sustainable consumption and production (SCP) is a holistic approach to minimise negative environmental impacts from the production- consumption systems on the society. SCP aims to maximise the efficiency and effectiveness of products, services, and investments so that the needs of society are met without jeopardising the ability of future generations to meet their needs (Ministry of the Environment Norway, 1994).

The way people produce, use and dispose of goods is unsustainable and is rapidly depleting our planet's natural resources. Our quality of life, prosperity and economic growth depend on living within ecological limits. The global nature of modern economies calls for policies that also address the impacts of the EU lifestyles in other parts of the world. (European Commission, 2008)

Three main groups of actors influence the sustainability of private consumption: consumers, governments, and business. The fourth actor, which plays an important role in promotion of SCP, is a sector of International Non Governmental (INGO) and Governmental organisations (IGO).

The **aim** of this paper is to give an overview of importance of global and local policies to foster sustainable consumption and production.

The following **hypothesis** is stated: the governments with effective use of policy instruments are able to achieve sustainable consumption and production of their populations.

The following **tasks** are identified as relevant to attain the aim:

1) to describe the need of sustainable consumption and production;
2) to frame a policy scope of SCP;
3) to analyse the types of instruments for implementing SCP policy;
4) to identify the role of different stakeholders in Global sustainable consumption governance.

A special focus is given to the policies of the European Union and Latvia, and targeted production-consumption areas of highest environmental impact: food and drink, and housing and mobility.

The research is mainly based on the monographic descriptive **method** as well as the methods of analysis, synthesis and logical construction are used to study the problem elements.

The main **conclusion** of the paper agrees with the previous findings that (global) sustainable consumption governance is highly necessary, but individual governments by themselves have limited control over influences on the consumption patterns of their populations. Therefore, the governments should more active use mixes of instruments which stimulate collective action and engage producers, consumers, and civil society in facilitation of SCP.

Results and discussion

1. The need for sustainable consumption and production

To live sustainably, the Earth's natural resources shall be used at a rate at which they can be replenished. However, our consumer-driven society is putting enormous pressure on the planet. Europe's environmental footprint is one of the largest on the planet. If the rest of the world lived like Europeans, it would require the resources of more than two earths to support them.

Unsustainable consumption and production patterns are increasingly affecting the natural environment, society, the economy, and business. We need to live more sustainably. That means doing more with less. Our quality of life, prosperity and economic growth depend on living within the limits of the resources available. To do this we must change the way we design, make, use, and dispose of products. Achieving this change will involve all of us – individuals, households, business, local and national governments as well as the global community (European Commission, 2009)

All countries require sophisticated policy packages to engage and encourage institutions, industry, business, and citizens in tackling the unsustainable patterns of consumption and production which are the key cause of global environmental problems (4th RIM Preparatory Meeting..., 2009).

Previous research has identified the limits to national governmental influence on the sustainability of consumption patterns in a globalising world, highlighting the need for multilateral if not global sustainable consumption governance (Fuchs and Lorek 2002).

SCP received its international recognition at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. Ten years later, the Johannesburg Plan of Implementation singled out "changing unsustainable patterns of production and consumption" as one of the main elements of sustainable development. This plan, along with the Marrakech Process launched in 2003 to support the implementation of policies, projects and strategies on SCP, and to contribute to the 10 Year Framework of Programmes on SCP, provided the basis for the political framework for action on SCP.

The EU Sustainable Development Strategy, revised in 2006, identifies sustainable consumption and production among its seven key challenges. In 2008, the EU Commission presented a specific Action Plan on Sustainable Consumption and Production to complement existing policy instruments and approaches for more SCP (Lähteenoja et al., 2009).

2. The policy scope of SCP

Overarching policies

The upper level of the SCP policy scope is represented by overall policies and policy measures supporting the implementation of SCP. The group comprises overarching economy-wide crosscutting strategies introduced at the level of the national or regional economy and thus relevant to all economic stakeholders. It includes policies/strategies partly or wholly aimed at SCP regional and national sustainable development strategies and other broad cross-cutting strategies e.g. environmental action plans or climate strategies. These are often

adopted at the highest level by government. These policies may include concrete targets and goals and indicators for measuring progress (4th RIM Preparatory Meeting..., 2009).

National Sustainable Development Strategy of **Latvia**

This is hierarchically the highest development planning document in the country and it sets out long term strategic goals and measures to be achieved for sustainable development in Latvia until 2030. In relation to environment, some of its strategic goals are: creation of an attractive living environment for the citizens and the preservation of the natural ecosystems; becoming an EU leader in the area of nature conservation, increase and sustainable use of nature capital and strengthening Latvia's position in the EU in full and efficient exploitation of the local renewable energy potential (European Commission, 2010). Unfortunately the concept of sustainable consumption is not included in this document.

Reducing the administrative burden is an important issue for the **Latvian government**. Optimisation of the number of policy documents has also taken place in the framework of the institutional reform in order to optimise budgetary means of various governmental structures (European Commission, 2010) that has led to lesser infringements of the EU environmental legislation (Table 1). In 2009 the number of the EU environmental legislation infringements has been decreased by 50% in comparison with 2008.

Table 1

Infringements of the EU environmental legislation

	Latvia			
	31 December 2007	31 December 2008	31 December 2009	*EU-27 total*
Infringements of the EU environmental legislation	9	12	6	*451*

Source: European Commission, 2010

SCP policies along the life cycle

There are more focused policies aimed at individual parts of the life-cycle chain of products. These are often developed and administered by individual ministries.

The following policy areas are distinguished for SCP policies along the life-cycle stages:

• the use and management of raw materials covering policies targeted at the use and management of raw materials including exports and imports;

• leaner and cleaner production and the environmental technologies covering cleaner production, environmental management in business, greening of supply chains, environmental accounting and reporting;

• better products and services and the market place; covering policies aimed at promoting the supply and sale of greener/more sustainable products and services;

• smarter consumption includes policies aimed at exerting direct influence on the decision-making of private consumers and policies aimed at changing or adjusting the "framework conditions", and also covers policies on more sustainable procurement by the public sector;

• end of life / waste comprising policies aimed at waste prevention and promoting sustainable waste management practices (4th RIM Preparatory Meeting..., 2009).

SCP policies specific to key production-consumption areas

At the same level there are SCP policies specific to the production-consumption areas of highest environmental impact. Numerous studies have revealed that the consumption activities that have the largest environmental impacts are eating and drinking, housing (including infrastructure), and mobility. These three areas are responsible for around 70% of the total global warming potential. The specific activities that make the largest contribution relate to the consumption of electrical energy, gas, steam and hot water (14%), private household transport (11%), and food products, beverages and tobacco (9%) (Lähteenoja et al., 2009).

Table 2

Political and economic framework

Food and drink	Housing	Mobility
• Reduce meat consumption • Reduce food and packaging waste • Reduce food miles	• Increase energy efficiency in existing buildings • Less living space per person • Change occupant behaviour	• Reduce travelled kilometres • More compact cities • Fleet renewal

Source: Lähteenoja et al., 2009

• *Food and drink* covering policies aimed at promoting more sustainable agriculture and food manufacturing, policies aimed at reducing food waste etc.
• *Housing* referring policies aimed at sustainable use of construction materials, promotion of low energy and zero energy housing, and prevention of construction waste.
• *Mobility* covering policies aimed at promoting more sustainable modes of transportation, policies aimed at reducing transport demand, and policies aimed at improving the eco-efficiency of transportation (4th RIM Preparatory Meeting..., 2009).

Policies aimed at social aspects

A final thematic area of SCP policies is that of policies aimed at social aspects. This includes for example, policies aimed at poverty reduction but with an environmental element, policies promoting socially responsible investment, corporate social responsibility, fair trade, local and regional products, and policies aimed at creating new 'green' jobs (4th RIM Preparatory Meeting..., 2009).

3. Types of instruments for implementing SCP policy

Progressing towards sustainability requires changes to individual behaviour and mindsets but also requires structural changes such as better choices and even less consumption as well as more efficient production and consumption. Effective policy instruments can help in shaping these. Governments and other organisations have a number of policy instruments at hand to influence the operations or behaviours of different actors in order to achieve SCP. To better address the complex environmental, social and economic challenges, different policy instruments are increasingly combined to create 'policy mixes' (Lähteenoja et al., 2009).

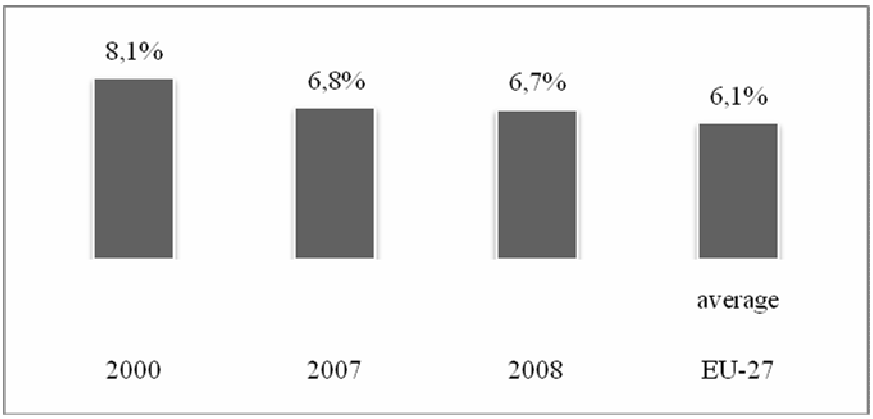
Policy instruments can be categorised in many different ways. A large number of measures and tools have been or could be used for the concrete implementation of SCP-relevant policy and strategy.

Economic instruments – include fiscal instruments such as fees and charges, taxes and subsidies, emission trading schemes, feed-in tariffs, tradable permits, deposit-refund systems, etc. (4th RIM Preparatory Meeting..., 2009).

Environmental taxes - or 'eco-taxes' as they are commonly called - are taxes that aim to have a positive environmental impact. Environmental taxes can be collected from businesses, consumers, or any other organisation. They usually have both a positive environmental effect and a revenue raising effect (Lähteenoja et al., 2009).

The figure below shows the share of environmental taxes in total tax revenues in **Latvia** which is similar with the EU-27 average. The tax harmonisation is perceivable after Latvia became a member of the European Union.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011



Source: European Commission, 2010

Fig. 1. **Share of environmental taxes in total tax revenues in Latvia for the period of 2000-2008, %**

The law "On Natural Resource Tax" in Latvia adopted in 2005 defines taxes on natural resources used for economic reasons. In 2009 and 2010 several amendments have been brought into the law "On Natural Resource Tax", in particular, relating to tax rates for waste disposal (European Commission, 2010).

Sustainable (Green) Public procurement is also regarded as economic instrument (can be also seen as voluntary instrument) as it influences how the market functions. Every year public authorities in the EU spend around EUR 1.5 trillion on bridges, roads, schoolbooks, office appliances, and other public goods. Green public procurement refers to when public authorities take environmental criteria into account in their purchasing decisions. Sustainable public procurement (SPP) goes further by considering social aspects as well. Even though sustainability is a high priority for most public authorities, SPP has not been widely adopted and the concept is not yet transforming into everyday action (Lähteenoja et al., 2009).

In **Latvia** Green public procurement (GPP) has not been popular: in 2006 only 20% of total purchases were recorded with environmental conditions. In leading EU Member States (Austria, Denmark, the Netherlands, Britain, Finland, Germany, and Sweden), the figure reaches 50-70%.

Although since 2004 on the adoption of the EU Public procurement directive, there were made various activities to promote GPP, there are still a number of specific barriers that have so far prevented the spread of GPP in Latvia (information, economic, technical, and organisational barriers) (Ministry of Environmental Protection...).

- *Regulatory instruments and standards* – include elements such as bans, emissions limits, integrated pollution prevention and control, product standards, and building codes.
- *Participatory instruments and voluntary agreements* – are often developed by partnership between the government and business, and include voluntary reporting initiatives, setting of voluntary targets for products improvements and emissions reductions, voluntary certification schemes etc. Participatory activities can take many forms, such as town meetings, workshops, conferences, and citizen juries or councils. The basic concept behind these tools is to allow citizens the opportunity to influence political processes in addition to elections.
- *Information-based instruments* – include instruments such as eco labelling, consumer guidelines, consumer campaigns, websites and portals, all aimed at raising awareness about SCP.
- *Education and training* & *research funding* - e.g. the integration of SCP thinking into both formal and informal education at schools, universities etc.

Furthermore, the research shows that while implementation of a single policy instrument alone often has limitations, relying on policy mixes is likely to increase the effectiveness of individual policy measures implemented in the field of SCP. Thus the different types of policy

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

measures should not be seen in isolation, but rather as different elements supporting each other when used in combination in a policy package (4th RIM Preparatory Meeting..., 2009).

4. Global sustainable consumption governance

Global governance means multi-actor, multi-level governance in which governments may or may not play a prominent role (Brand et al. 2000). Most importantly, other relevant (non-state) actors need to be considered. With respect to sustainable consumption, these actors have to include consumers and business as well as IGOs and societal organisations.

Consumers

Consumers play a core role with respect to the achievement of sustainable consumption, but they clearly are not the only ones responsible for the (un)sustainability of consumption. Consumers make their consumption decisions in a socio-economic context. Their choices are constrained by matters of financial, time, and human resources, by requirements imposed on them by their professional or personal environments (Ropke, 1999).

It is becoming more and more evident that consumers are increasingly interested in the "world that lies behind" the product they buy. Apart from price and quality, they want to know how and where, and by whom the product has been produced. This increasing awareness about environmental and social issues is a sign of hope. Governments and industry must build on that (Toepfer, 1999)

From an optimistic perspective, the growing numbers of consumers pursuing a different consumption and life style may appear promising. From a pessimistic perspective, which may be closer to actual consumption levels and patterns in industrialised countries, achieving the fundamental value shifts necessary for strong sustainable consumption is outrageously difficult at best, and completely impossible at worst. In the pessimistic view, then, only a huge crisis, be it environmental or economic/financial may force unwilling consumers to pursue a more sustainable consumption behaviour (Fuchs,D., Lorek, S., 2004).

Business

Business is an inconsistent stakeholder with respect to sustainable consumption governance for two reasons. First, business is supposed to be one of the major beneficiaries in shifts in political capacity from the state to non-state actors due to globalisation and developments in global governance. Secondly, business is generally perceived as an actor with very little interest in changing consumption patterns and especially consumption levels towards sustainability.

Fundamentally changing consumption patterns and reducing consumption levels, in particular, does not match with the set up and functioning of today's economic system(s) which is to a large extent based on the mass production of incredibly cheap products.

Nevertheless there is preciously little evidence that business is willing and ready to support strong sustainable consumption governance at least in promoting eco-efficiency (Fuchs, D., Lorek, S., 2004).

Governments

Government is the third actor to play a major role with respect to sustainable consumption governance. Sustainable consumption, as sustainable development in general, is a public good, and government intervention frequently is needed for the provision of public goods as these tend to be undersupplied by the market. Furthermore, governments influence socio-economic contexts framing and constraining consumption. Finally, governments are still the core actors when it comes to adopting international agreements.

Since most governments still work within the "growth" discourse which suggests that economic growth in terms of increasing GDP is the most important goal to strive for. The environment, for instance, only fits into this equation as long as measures to improve environmental quality do not hurt economic growth. One of the frequently proclaimed goals of politicians is to increase consumption in order to foster the economic growth. In this ideological framework, ideas about reductions in private consumption are not received favourably.

Finally, a significant problem for governmental intervention is that individual governments by themselves have limited control over influences on the consumption patterns and levels of their populations. As previous research has shown, globalisation and its associated trends in

trade liberalisation, capital concentration, and the diffusion of information and values, for instance, strongly influence the sustainability of consumption patterns (Fuchs and Lorek 2001). Individual governments can do little to change the institutional framework of these influences unless they opt out of the present international economic and political systems.

Hand in hand with the use of mixes of instruments is the need for governments to shift from a more traditional role of control (regulation and standards) to a wider role of governance or "change management". The concept of change management recognises that collective action and engagement by producers, consumers and civil society is the key in achieving SCP, and that government must play a role in promoting and framing such collective action (ASCEE, 2008). Government can act as facilitator, collaborator, leading partner, and network host, to supplement (but not replace) its role as regulator (4th RIM Preparatory Meeting..., 2009).

IGOs and (I)NGOs

They have been the main actors in the global sustainable consumption arena so far. Both groups face obstacles as sustainable consumption advocates as well, however, although different ones. IGOs need to be sensitive to governmental interests, and thus frequently tend to stick "politically correct" policy objectives. (I)NGOs tend to be less dependent on government approval. However, they face the problem of limited capacities.

The United Nations Commission on Sustainable Development (CSD)

It has been among the most active participants in the sustainable consumption arena. In general, the sustainable consumption issue clearly has benefited from the high level and openness of dialogue possible at the CSD, and, in consequence, received some visibility on the global governance agenda. The CSD emphasises that changing consumption and production patterns have been a subject of discussion at all of its sessions.

UNEP

Most of the work on sustainable consumption the United Nations Environmental Programme UNEP has pursued since the Earth Summit has been focusing exclusively on increasing the eco-efficiency of consumption with a particular interest in identifying interesting options for innovations for business. A focus on consuming less was intendedly and explicitly excluded in the context of this work.

Its stated goal is to understand the forces driving global consumption patterns, to develop appropriate activities for business and other stakeholders, and to look for innovation potentials for business, governments, and NGOs. For the business focus, the programme promotes the adoption of the life cycle approach. With respect to the NGOs, the objective is to help the latter improve communication by developing strategies for delivering reliable information on consumption, products, and environment, and to foster training and networking activities.

OECD

Another important actor among IGOs with substantial work on sustainable consumption is the Organisation for Economic Cooperation and Development (OECD). It took on the subject of sustainable consumption in 1995 acknowledging that the OECD countries are home to 19% of the world's population but consume 80% of the world's resources.

The OECD's work on consumption and environment is housed in its integrated work programme Environmental Impacts of Production and Consumption.

The Consumption and Environment work itself focuses on data and analysis with the aim to help countries reduce environmental impacts of household consumption patterns, with a particular focus on tourism, food, energy, and water consumption.

As a conclusion the authors are predicting that the future of global sustainable consumption governance rests solely on the shoulders of (I)NGOs with some potential help from IGOs, and is waiting for its time to come (Fuchs, D.A., Lorek, S., 2004).

Conclusions and proposals

Unsustainable consumption and production patterns are a global problem and can be tackled only if governments are coming to an agreement to move this problem on policy agenda as priority.

Globalisation is a strong reason, why individual governments by themselves have limited control over influences on the consumption patterns of their populations. Therefore, the

governments should more actively use mixes of instruments which stimulate collective action and engage producers, consumers, and civil society in facilitation of SCP. This is a key in achieving more sustainable consumption and production.

Since the Gross Domestic Product (GDP) which main index depends on consumption level is used as the main indicator to measure the economic growth in a country; the governments are not interested to lower it. Therefore, a wide range of existing policy instruments to foster SCP is not used as efficiently as they could be.

The government of Latvia has to revise the National Sustainable Development Strategy and develop a national Sustainable Consumption and Production programme, since sustainable development is not possible without sustainable consumption and production.

Bibliography

1. 4th RIM Preparatory Meeting on Sustainable Consumption and Production (2009). *Progress Review of Policy Development. Background Paper.* Retrieved: http://www.rona.unep.org/documents/partnerships/SCP/Background_paper_prp_scpmtg%5B1%5D.pdf. Access: 3 January 2011.
2. ASCEE (2008). Policy Instruments to Promote Sustainable Consumption. *Final Report to the European Commission.* Retrieved: http://www.ioew.de/uploads/tx_ukioewdb/ASCEE_Workshop_Background_Paper.pdf. Access: 20 December 2010.
3. Barber, J. (2003). Production, Consumption and the World Summit on Sustainable Development. *Kluwer Academic Publishers. Environment, Development and Sustainability*, Issue 5, pp. 63-93.
4. Brand, U., Brunnengräber A., Schrader L., Stock Ch., Wahl, P. (2000). *Global Governance. Alternative zur neoliberalen Globalisierung?* Münster: Westfälisches Dampfboot. p. 224.
5. European Commission (2008). Sustainable Consumption and Production - a Challenge for us All. *Environment Fact Sheet.* Retrieved: http://ec.europa.eu/environment/eussd/pdf/brochure.pdf. Access: 30 November 2010.
6. European Commission (2009). *Smarter and Cleaner. Consuming and Producing Sustainably*. European Communities. p. 25.
7. European Commission (2010). *Environment Policy Review 2009*. European Communities, p. 300.
8. Fuchs, D., Lorek S. (2004). Sustainable Consumption. Political Debate and Actual Impact. *Sustainable Europe Research Institute (SERI)*. No. 4, p. 29.
9. Fuchs, D., Lorek, S. (2002). Sustainable Consumption Governance in a Globalising World. *Global Environmental Politics* 2(1), pp. 19-45.
10. Lähteenoja S., Brüggemann N., Tuncer, B. (2009) Sustainable Consumption and Production Policies. The Role of Civil Society Organisations. *A Guide for Civil Society Organisations*. Retrieved: http://action-town.eu/wpcontent/uploads/2009/01/PolicyInstumentsGuidelines.pdf. Access: 30 November 2010.
11. Ministry of the Environmental Protection and Regional Development Latvia. *Green Public Procurement.* Retrieved: http://www.vidm.gov.lv/lat/darbibas_veidi/zalais_publiskais_iepirkums/. Access: 3 January 2011.
12. *Ministry of the Environment Norway. (1994). Oslo Roundtable on Sustainable Production and Consumption.* Retrieved: http://www.iisd.ca/consume/oslo004.html. Access: 30 November 2010.
13. Ropke, I. (1999). The Dynamics of Willingness to Consume. *Ecological Economics* 28, pp. 399-420.
14. Töpfer, K. (1999). *News Release NR 99-90*. UNEP. Retrieved: http://www.unep.fr/scp/sc/. Access: 7 January 2011.
15. UNDP (1998). *Human Development Report 1998*. Retrieved: http://hdr.undp.org/en/media/hdr_1998_en_contents.pdf. Access: 15 December 2010.
16. Worldwatch Institute (2004). *State of the World 2004*. Washington, D.C. Worldwatch Institute. p. 245.

Heritage Parks in the North Vidzeme: Resource and Usage

Tamara GRIZANE, MBA, *PhD student*
Department of Business and Management, Faculty of Economics
Latvia University of Agriculture
Iluta BERZINA, MBA, *PhD student*
Department of Business and Management, Faculty of Economics
Latvia University of Agriculture

Abstract. Heritage Parks (HPs) are a resource of local inhabitants' recreation and tourism. This resource requires significant finances, which attraction depends on the evaluation results of the park. The value of the park is reflected by its usage. During the period from July to October, in 2009 and 2010 the authors examined 10 Heritage Parks of the Northern Vidzeme, which are located in the North Vidzeme biosphere reserve. Twenty expert interviews, which were carried out during this period, enabled the authors to evaluate the choice of a specific park for festivals, sport or recreation purposes, depending on its visual effect and maintenance conditions. The results showed that visually the most attractive and best-maintained parks (*Braslavas*, *Dikļu,* and *Ozolmuižas*) were used for recreation (Eigenvalues = 5.060), for festivals (*Braslavas*, *Ozolmuižas,* and *Dikļu*) (Eigenvalues = 1.971) and for sport (*Braslavas*, *Ozolmuižas,* and *Ārciema*) (Eigenvalues = 1.471). The results of the research may be used for establishing more effective policy of using and developing heritage parks.
Key words: heritage parks, visitors.

Introduction

Heritage parks as natural and historical heritage are an inseparable component of rural region basis. This connection is even more distinct in this case when Cultural Heritage Parks of the Northern Vidzeme are a part of the North Vidzeme Biosphere Reserve (DAP, 2010).

Heritage Parks are used both by local people and by tourists. Unfortunately, the physical state of these parks and their culturally historic values are not always in the best condition. The need for financial income from consumers is crucial in order to improve this situation. The best demand indicator of a park is the number of visitors in it. A higher number of visitors results in higher incomes. Therefore, the authors conclude, "a better financial state can be expected from a better management of the park" (Tye H., Gordon D., 1995; Becker B., 1996). A higher number of tourists and visitors produces not only an economic benefit, but also enables requirement for additional state subsidies and other benefits.

It is important to acknowledge that the budget of a Heritage Park is important in order to avoid and to reduce the negative impact on the nature. The authors point out that parks are mainly considered only as an essential part of natural tourism not as much as a source of financial income, which nowadays, even more during the financial crisis, is imprudent (Wells M., 1997).

Heritage Parks from the point of a tourism resource have a dual nature: firstly, it is necessary to conserve natural and cultural heritage; and secondly, it is necessary to use it proactively in the tourism industry (Smith M., 2003). This resource has its own value apart from human motivation to consume it (Makkerčers B., du Krosa H., 2007). On the contrary, other researchers state that a HP as a resource possesses a value defined by human abilities to use it (Fennell D., 1999). A Heritage Park will not be interesting for tourists if it has a limited accessibility – infrastructure (Novelli M., Schmitz B., 2006). The same idea is being attributed to visual condition and overall maintenance of a HP.

The hypothesis of the research: the use of a HP for festivals, sport, and recreation depends on the visual affect and the management model.

According to the hypothesis, **the aim of the research** was to prove that in order to use a HP for the needs of local people and tourists, parks need to be visually attractive and well managed.

The following tasks were set in order to achieve the aim: 1) to acknowledge other researchers' interpretation of HP resource values; 2) to inspect HPs and carry out their

evaluation survey; and 3) to process the collected data with the following research methods: monographic descriptive method, analysis and synthesis methods, and scientific induction and deduction methods. A factor analysis was used for grouping HPs by their means of usage, based on the evaluation of their visual condition and management model.

The situation of HP resources and their usage possibilities for festivals, sport, and recreation were observed in 2009 and 2010, during the period from July to October, when 10 Heritage Parks of the Northern Vidzeme were inspected and 20 interviews were carried out (Janele I., 1989; Janelis I., 2010; Čakste D., 2010).

The survey of HPs was carried out according to a randomness principle by choosing heritage parks within a distinct trip route. The respondents in the interviews were local people, park managers, employees of the local municipality, and tourism specialists who were competent in issues related to heritage parks. The respondents are not being examined within this research. The authors indicate on local community's insufficient awareness of heritage values and related activities in the nearby municipalities; a short range of specialists, which limited the number of respondents. The evaluation of visual condition and management was carried out subjectively by ranking HPs in a scale from 1 to 10. This research was commenced to diminish the lack of knowledge in order to 1) find the renovation possibilities of a HP; 2) attract finances for park management; 3) plan long-term management; and 4) facilitate the environmental awareness. The result of these actions will promote the development of enabling environment for the local people and tourism.

Applying statistical methods developed by experts for the processing of evaluation, the average result of each indication valuation was calculated according to Equation 1:

$$\overline{v}_j = \frac{\sum_{i=1}^{k} v_{ij}}{k}, \quad (1)$$

where:

$\sum_{i=1}^{k} v_{ij}$ - sum of experts' valuation;

v_{ij} - i-th experts' j-th indication valuation (in 10 points);

k – number of experts (Vasermanis E., Šķiltere D., 2002).

The coefficient was calculated according to Equation 2:

$$K = \frac{v_{ij}}{n}, \quad (2)$$

v_{ij} - i- experts' j- indication valuation (in 10 points);

n – number of indications.

The authors used regression and factor analyses to perform the third task and to determine the influence and connection correlation between indicators. A regression analysis enabled to find out the structure and direction; while a factor analysis – the internal structure of these relations, succeeding to interpreting the results of correlation. A factor analysis was used together with the regression analysis. The resulting indicator y is being researched assuming that a known, numerically measurable primary factor x_1, x_2,.....,x_m affects it. The following equation was used in the regression analysis:

$$y = f(x_1, x_2,.....,x_m), \quad (3)$$

in which factor interconnections were taken into consideration.

Factor interconnections were taken into account, first, when binding together regression analysis with factor analysis, then followed by their influence on the resulting indicator:

$$y = f[F_1(x_1,.....,x_m), F_2(x_1,.....,x_m),....., F_k(x_1,.....,x_m)] \quad (4)$$

A regression equation, which is constructed from K complex factors may be written as follows:

$$y = a_1' F_1 + a_2' F_2 +.....+ a_k' F_k \quad (5)$$

y – resulting indicator;

F_1, F_2,.....,F_k – complex factors;
a_1', a_2',.....,a_k' – multidimensional regression coefficient.

Equation 5 has no free member because all variables are standardised there: complex factors F_1, F_2,.....F_k – after model condition, and the resulting indicator y was standardised before.

The regression coefficients of Equation 5 are mutually comparable. Therefore, it is convenient to perform the analysis. Multidimensional regression coefficients are the correlation coefficients of the resulting indicator and corresponding complex factors pairs:

$$a_1' = r_{F1};\ a_2' = r_{F2};\ .....;\ a_k' = r_{Fk} \quad (6)$$

(Наследов, 2004).

Since complex factors are independent values, irrelevant factors are collateral. The researched indicator x was influenced only by the first two factors; thus, the equation is as follows:

$$y = r_{yF1}F_1 + r_{yF2}F_2, \text{ where} \quad (7)$$

$$y = r_{yF1}FE + r_{yF2}SP + r_{yF1}RE, \text{ where} \quad (8)$$

y – resulting indicator;
FE – complex factor *Festival*;
SP – complex factor *Sport;*
RE – complex factor *Recreation*;
r_{F1}, r_{F2} – multidimensional regression coefficients (Equation 6);

Verification of the hypothesis: (1) H_0: $H_1 = \beta^*$, H_1: $\beta_i \neq \beta^*$, since p-values are very low, it means β_i is statistically relevant and it is not equal to zero; (2) H_0: $\beta_1 = \beta_2 = 0$, $F_{nov} = 2.034 < 18.51$, H_0 cannot be denied (Revina I., 2002).

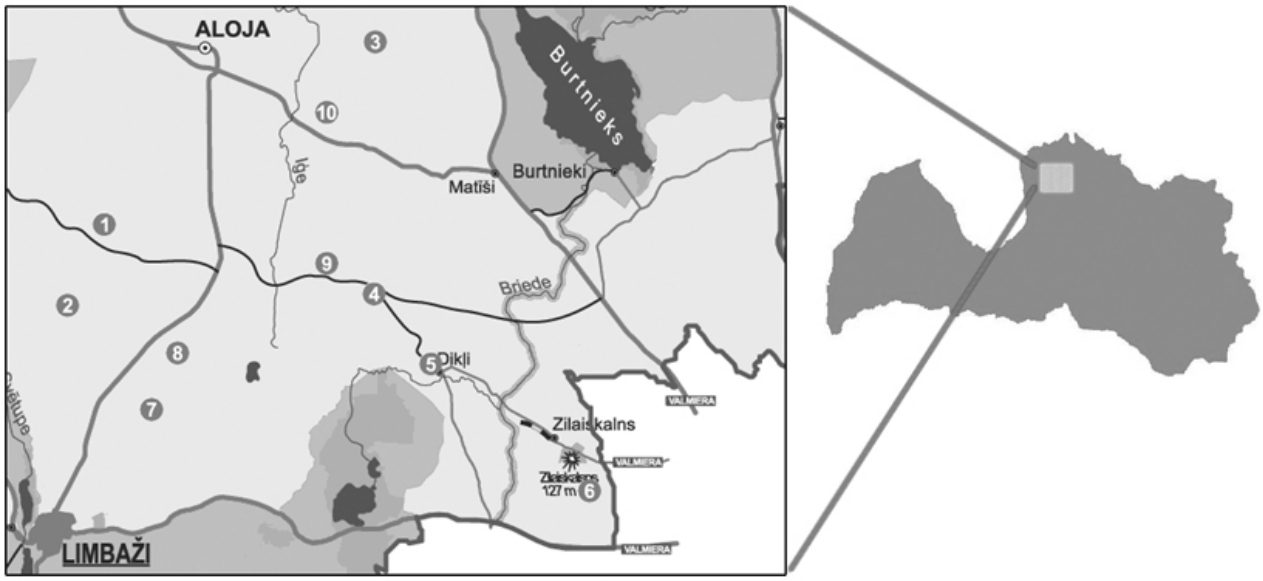
Results and discussion

During the inspection of 10 Heritage Parks (HP) of the Northern Vidzeme (Figure 1) it was realised (Table 1) that all of them are located within the North Vidzeme Biosphere Reserve (NVBR). Six of them are situated in Limbaži, one in Aloja, and 3 in Kocēni district. Within the survey route, there were even 2 Heritage Parks in two of the rural districts, namely, *Katvaru* and *Dikļu*. The area of an average park is 6,28ha. *Dikļu*, *Dūķeru,* and *Ķipēnu* parks are private properties, but others are under the regulation of local municipalities.

The highest rates of usage analysis are for *Dikļu* park – with the average sum rate of 17.54 and *Braslavas* park – 16.215. The lowest rates are calculated for the use of *Ķipēnu* and *Dūķeru* parks; depending on visual condition and maintenance level, the two score only 2.24 and 2.064. The authors point out that in these cases the model of HP management was not relevant, since *Dikļu* park is a private property, though the result is positive – 17.54. The often visited *Braslavas* park, which is managed by the local municipality was the second most attractive and well-maintained. According to three ways of usage, the highest rate was received by *Braslavas* park with its suitability for the usage *Recreation* – 14.50, and *Dikļu* park – 14.08.

An Unrotated Factor Matrix, where dispersion of every variable is equal to 1 (initial factors are standardised), was used for the factor analysis. While performing discriminant analysis (Table 2) according to three ways of usage: *Festivals*, *Sports,* and *Recreation*, the factor eugenvalue or dispersion of every factor is the highest for the usage *Recreation* - 5.27, *Festivals* – 1.47, and *Sports* - 1.27, which means that the visual condition and maintenance level is far less important for those visitors whose main goal of the trip is sport activities.

Discriminant analysis showed that the main scores of 10 parks were significantly different among each type of the used method. No significant difference was found for only three parks, including *Urgas*, *Dūķeru*, and *Ķipēnu parks* (Table 2). However, the overall correlation between each HP and the type of use was moderate (Canonical Correlation = 0.345; Sig. = 0.000).



Note –park number is given in Table 1
Source: map used by NVBR

Fig.1. **Distribution of study sites**

Table 1

Distribution of the study sites – Heritage Parks

No.	Name of the park	District	Local municipality	Area ha
1.	Ārciema	Limbaži	Pāle	8.1
2.	Āsteres	Limbaži	Viļķene	1.1
3.	Braslavas	Limbaži	Braslava	14.2
4.	Budenbrokas	Kocēni[1]	Dikļi	1
5.	Dikļu	Kocēni	Dikļi	4[26][2]
6.	Dūķeru	Kocēni	Kocēni	2
7.	Katvaru	Limbaži	Katvari	22
8.	Ķipēnu	Limbaži	Katvari	2
9.	Ozolmuižas	Aloja	Brīvzemnieki	3.9
10.	Urgas	Limbaži	Braslava	4.5

Source: authors' survey results

Factor analysis was used to group HPs by estimating their usage based on visual condition and maintenance level. The cumulative share of variance for three factors was 60.65% in the usage groups of HP for *Festivals, Sports,* and *Recreation* Factor loading of each HP item within each domain is presented in Table 3.

[1] On 15 February, 2010 amendments in the Law on Administrative Territories and Inhabited Localities concerning the change of Valmiera district to Kocēni district, came effective
[2] The total area of *Dikļu* Park is 26 ha, but the reflected 4 ha are maintained and thus, used in calculations

Table 2

Results of discriminant analysis related to Heritage Park (n = 20)

No.	The name of the park	Festivals			Sports			Recreation		
		Mean (SD)	F	Sig	Mean (SD)	F	Sig	Mean (SD)	F	Sig
1.	Arciema	4.466 (0.801)	5.575	0.14	3.868 (0.824)	4.692	0.024	5.268 (0.510)	29.921	0.000
2.	Asteres	2.372 (0.968)	2.450	0.116	1.216 (1.207)	1.007	0.386	8.060 (1.084)	7.435	0.005
3.	Braslavas	0.946 (0.392)	2.415	0.119	0.769 (0.295)	2.607	0.103	14.50 (0.356)	4.073	0.036
4.	Budenbrokas	0.325 (0.774)	0.420	0.663	0.325 (0.774)	0.420	0.663	1.960 (0.861)	2.277	0.013
5.	Dikļu*	1.720 (0.489)	1.472	0.257	1.740 (0.886)	0.835	0.451	14.08 (0.587)	0.695	0.051
6.	Dūķeru	0.732 (0.549)	1.333	0.290	0.286 (0.449)	0.638	0.541	1.222 (2.080)	0.587	0.560
7.	Katvaru	0.748 (0.606)	1.234	0.316	2.127 (0.723)	2.941	0.080	3.724 (0.785)	4.741	0.023
8.	Ķipēnu*	0.673 (0.683)	0.986	0.393	1.066 (0.448)	2.379	0.123	0.325 (0.903)	0.360	0.700
9.	Ozolmuižas	0.375 (0.532)	0.704	0.508	0.193 (0.566)	0.341	0.716	4.026 (0.691)	5.825	0.012
10.	Urgas	2.362 (0.837)	2.822	0.087	0.834 (0.796)	1.048	0.372	0.087 (0.752)	0.115	0.890

Source: authors' calculations

Table 3

Factor loading of a Heritage Park (n = 20)

Parks	Factor loading		
	Festivals_1	Sports_2	Recreation_3
Braslavas	-0.837	-0.796	-0.878
Ozolmuižas	0.463	0.707	-0.598
Dikļu	-0.796		-0.816
Ārciema		0.557	

Source: authors' calculations

Therefore:
Factor 1 = the usage of parks (*Braslavas*, *Ozolmuižas, and Dikļu*) for festivals with highly estimated visual effect and maintenance level (Eigenvalues = 1.971)
Factor 2 = the usage of parks (*Braslavas*, *Ozolmuižas, and Ārciema*) for sports with highly estimated visual effect and maintenance level (Eigenvalues = 1.471)
Factor 3 = the usage of parks (*Braslavas*, *Ozolmuižas,* and *Dikļu)* for recreational activities with highly estimated visual effect and maintenance level (Eigenvalues = 5.060)
Cumulative % of Variance = 60.652.

Insignificant factors were not used, since complex factors are independent values. The indicator x to be researched was only impacted by three factors, thus the equation is as follows:

$y = r_{yF1}F_1 + r_{yF2}F_2, + r_{yF3}F_3$, where (7)

$y = r_{yF1}FE + r_{yF2}SP + r_{yF3}RE$, where (8)

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

y – resulting indicator;
FE – complex factor *Festivals;*
SP – complex factor *Sport*;
RE – complex factor *Recreation*;
$r_{F1,}$ r_{F2} $r_{F3,}$ - multidimensional regression factors (Equation 6).

Verification of the hypothesis: (1) H_0: $H_1 = \beta^*$, H_1: $\beta_i \neq \beta^*$, as p-values are very low, it means β_i is statistically significant and it is not equal to zero. (2) H_0: $\beta_1 = \beta_2 = 0$, $F_{nov} = 2.034 < 18.51$, H_0 cannot be denied (Revina I., 2002; Наследов А., 2004).

Conclusions

1. The way of use mostly depends on the visual effect and maintenance of a HP: *Recreation* – 5.27 points; *Festivals* - 1.47, and *Sports* – 1.27. The way of use *Recreation* requires a qualitative environment of the park.
2. The usage number of *Dikļu* park is the highest – 17.54 points, the second highest result is for *Braslavas* park - 16.215 points. The lowest rates of the usage of HPs are received by *Ķipēnu* and *Dūķeru* parks - 2.24 and 2.064 points respectively.
3. A HP management model does not affect the usage of a HP; it depends on the visual impression and maintenance quality.
4. Grouping of parks according to their way of use is the following: a group *Festivals* includes *Braslavas*, *Ozolmuižas,* and *Dikļu* parks; *Sports - Braslavas*, *Ozolmuižas,* and *Ārciema* parks; and *Recreation - Braslavas*, *Ozolmuižas,* and *Dikļu* parks.

It is recommended to increase the awareness of local people on heritage values and related activities in the nearby municipalities, thus, enabling cooperation of the nearby municipalities of a HP in the aspects of HP renovation and usage, and finally improving environment quality and promoting the development of tourism.

Bibliography

1. Becker, B., Gerhart, B. (1996). The Impact of Human Resource Management on Organisational Performance. *Academy of Management Journal* Volume 39, No.4, pp. 779-801.
2. Čakste, D. (2010). Limbažu TIC darbiniece, intervija 8.oktobrī.
3. Fennell, D. A. (1999). *Ecotourism: An introduction*. London: Routledge. p. 316.
4. Janele, I. (1981). *Vecie lauku parki*. Rīga : Zinātne, 111 lpp.
5. Janelis, I. (2010). *Latvijas muižu dārzi un parki.* Rīga: Neputns. 304 lpp.
6. Makkerčers, B., Du Krosa, H. (2007). *Kultūras tūrisms: Tūrisma un kultūras mantojuma pārvaldības partnerība*. Rīga: Neputns. 280 lpp.
7. Novelli, M., Schmitz, B. (2006). Networks, Clusters and Innovation in Tourism: a UK Experience. *Tourism Management,* Volume 27, pp.1141-1152.
8. Revina, I. (2002). *Ekonometrija.* Rīga: Latvijas Universitāte, 270.lpp.
9. Smith, M.K. (2003) Reconceptualising Cultural Tourism. The Impacts of Cultural Tourism. *Issues in Cultural Tourism Studies*. London and New York: Routledge, pp. 29-61.
10. Tye, H.,Gordon, D.M. (1995). *Financial and Human Investments in Biosphere Reserve Management*.
11. Cambridge: World Conservation Monitoring Centre. p. 322.
12. Vasermanis, E., Šķiltere, D. (2003). *Varbūtību teorija un matemātiskā statistika*. Latvijas Universitāte Ekonomikas un vadības fakultāte. Rīga : SIA "Izglītības soļi", 186 lpp.
13. Wells, M. P. (1997). *Economic Perspectives on Nature Tourism, Conservation and Development.* Pollution and Environmental Economics Division, Environmental Economics Series, World Bank, Washington: DC, p. 256.
14. DAP Dabas aizsardzības pārvalde. Īpaši aizsargājamas teritorijas, Ziemeļvidzemes Biosfēras rezervāts. Retrieved: http://www.daba.gov.lv/public/lat/ipasi_aizsargajamas_dabas_teritorijas/. Access: 10 December 2010.
15. Наследов, А. (2004) *SPSS: Компьютерный анализ данных в психологии и социальных науках*, 1-е издание Санкт-Петербург: . Издательский дом Питер, 416 с.

Importance of Nutrition Labelling and Claims on Food among Elderly People

Joerg Hampshire, *professor, Dr. Nutrition and Food Quality*
Barbara Freytag-Leyer, *professor, Dr. Socio-ecology of Private Households*
Department of Nutritional, Food and Consumer Sciences, Fulda University of Applied Sciences

Abstract. In spring 2009 a survey was conducted to examine whether the labelling of food is used by elderly people and promotes a deliberate choice of food. Using questionnaires the data of 69 elderly people have been collected in Fulda. Results show that nutrition information on food is (very) important to 86.9% of the target group. Problems utilising the nutrition information are mainly due to the small writing on food packages (75.9%) and also due to the fact that nutritional information is not being understood by elderly people (38.9%). Nutrition labelling, and also nutrition and health claims are classified predominantly as being important. Yet, there are also reservations towards nutrition and health claims. A significant part of the interviewees do not trust the information on the packaging or do not understand the connection between nutrition claims and their own health. Deficits appear along using nutrition information. Only 29.0% of the elderly people are able to calculate the amount of fat in a serving size and only 23.2% evaluate the content of sugar in food properly. Some basic aspects shall be improved to secure responsible decisions towards health by the elderly population: the legibility of the information on food, the trust in nutrition information, and the nutrition knowledge about nutrients.
Key words: nutrition labelling, food packaging, elderly.

Introduction

Labelling food is one method to provide information of food composition to the consumers. Nutrition labelling on food concerns information about the presence of energy and certain nutrients in foods. Nutrition information on food packages aids to support the consumer to make healthy choices when they buy food. Neuhouser M.L. and colleagues (1999) discovered that people who wanted to reduce their fat intake did use nutritional values to choose low fat products. Driskell J.A. et al (2008) showed that labelling food with nutritional values did influence the selection of food positively among students eating in canteens. Patients with chronic kidney diseases determined that relevant nutritional information on food was important when choosing food (Hager M.H. et al, 2009). In Germany, approximately 80% of packed food is labelled with nutritional values. The tendency of optional labelling seems to continue (BLL, 2010). The EU Commission is planning a mandatory declaration of certain nutrients and energy on food (European Parliament, 2008).

Often food is also labelled with nutrition and health claims that are used to advertise their additional value. According to Williams P. (2005) health claims on food packages support the selection of food and enhance the knowledge about the association between nutrition and disease. In 2006, the Regulation "Nutrition and Health Claims on Food" is established on the European level (European Parliament, 2006). For this purpose, in 2010 the European Commission published a general list with all health claims other than those referring to the reduction of disease risk and to children's development and health. Health claims which are indicated in the list are based on generally accepted scientific evidence and should be well understood by the average consumer.

With age, the food choices for elderly people are becoming more difficult. Problems are the declining visual performance and mobility of this age group. According to the second national nutrition survey (Max Rubner-Institut, 2008) the supply of specific nutrients (e.g. vitamin D, foliate, calcium) is not assured among elderly people. The majority of the elderly people are aware of the health-supporting potential of nutrition. Changing nutritional habits is well known as a solution of different health issues such as obesity, high cholesterol values, diabetes, stomach, and intestinal discomfort as well as high blood pressure (Nestlé Deutschland AG, 2009). Within the scope of the EU research project Chance (Community Health Management to Enhance Behaviour), the results showed that elderly people used health information of doctors,

chemist's shops, and newspapers (Freytag-Leyer B. et al, 2009). It is questionable whether the labelling of food is used by elderly people and promotes a deliberate choice of food. To contribute to the clarification of this question, a survey was carried out in spring of 2009 among elderly people in Fulda.

The general aim of this research is to respond to the question of whether elderly people read, understand, and apply nutrition labelling as well as nutrition and health claims on food packages. The aims of the research in detail are the examination of how often elderly people do read the nutrition information on the food packaging, reasons why this information is not being read, the importance of this information with regard to other shopping criteria, and the ability to apply the information.

The survey was carried out in spring 2009. Totally 69 elderly people took part in the survey in Fulda; of the questioned people 69.6% are female, 23.2% male, and 7.2% provided no gender information (Table 1). In particular, the age groups of 71-75 years (23.2%) and more than 76 years (60.9%) are represented in the study. The education level was mainly secondary general school (60.9%) (Table 1).

Table 1

Demographic information of elderly people conducting the survey (n = 69)

Question	Answers					
Sex	Female: 48	Male: 16	No answer: 5			
Age (in years)	< 60: 1	60 and 65: 1	66 and 70: 7	71-75: 16	> 76: 42	no answer: 2
Graduation	Secondary general school: 42	Intermediate school: 12	Grammar school (classes 5-13): 8	No graduation: 1	No answer: 6	

Source: authors' construction

Within the scope of ecclesiastical or other events, one student of the Master programme conducted the questioning on the occasion by routine meetings of different senior citizen's groups. The senior citizens were informed before questioning about the aims of the investigation. Using sample food packaging, nutrition labelling, ingredient list, and nutrition and health claims as well as other marking elements were briefly explained to the elderly group. The questionnaire was five pages long and included 17 closed questions and another three questions could be complemented to given aspects. Multiple answers were possible with some questions. In addition, questions were put to personal information like age, gender, education as well as interest in nutrition, a self-assessment of health status, and health consciousness. The questionnaires were evaluated using SPSS Version 18.0.

Results

Among the questioned people 39.1% do have a great or medium (46.4%) interest in nutrition. The majority (53.6%) describe themselves as being health-conscious or at least as being partially (39.1%) conscious of health. The individual health status is mostly given as being good (Table 2).

Table 2

Attitude of elderly people towards nutrition and health (n = 69)

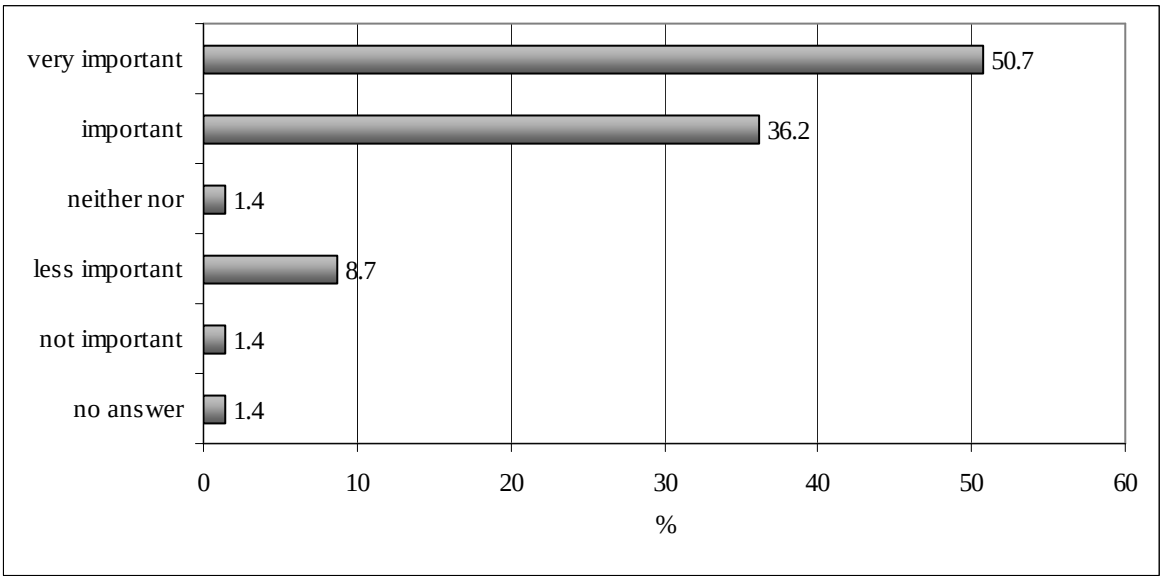
Question	Possible answers				
Interested in nutrition	high: 39.1%	medium: 46.4%	little: 4.3%	no answer: 10.1%	
I am health-conscious	yes: 53.6%	partial: 39.1%	no: 1.4%	no answer 5.8%	
My health status in general	very good: 8.7%	good: 69.6%	neither nor: 15.9%	poor: 4.3%	no answer: 1.4%

Source: authors' construction

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Nutrition labelling and ingredient list

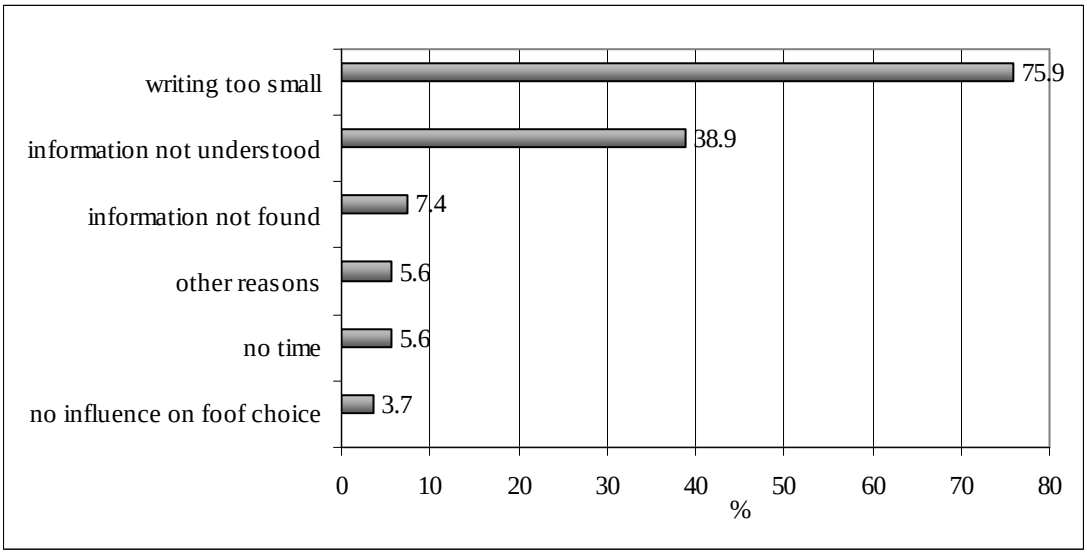
Totally 50.7% of the questioned people classify the nutrition information on food packaging as being very important and 36.2% as being important (Figure 1).



Source: authors' construction

Fig. 1. **Classification of nutrition information on food packaging among elderly people (in %, n = 69)**

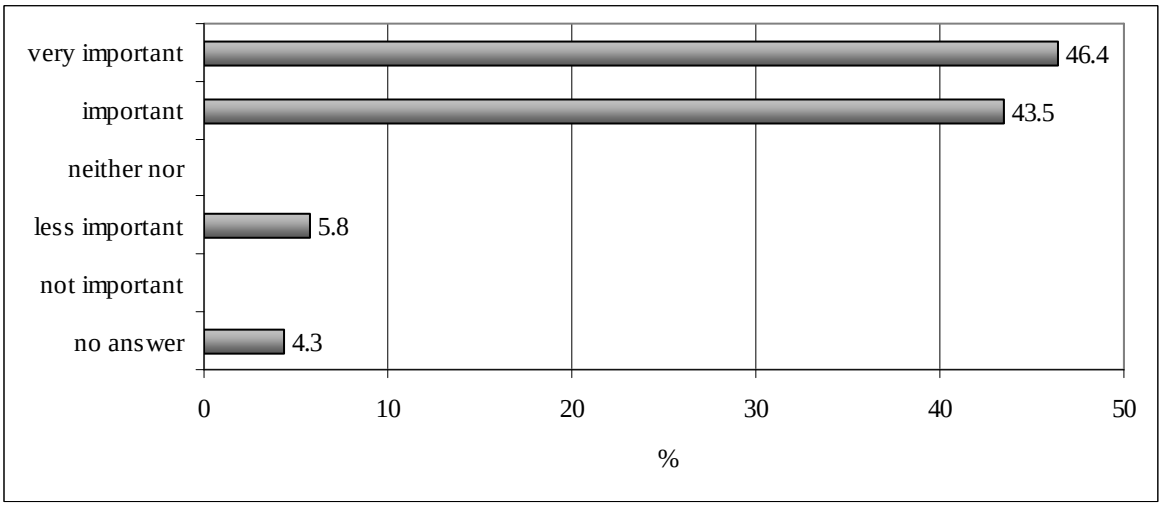
The reasons why nutrition information is not read are often due to the fact that the writing is too small (75.9%) or because the nutritional information is difficult to understand (38.9%) (Figure 2). Only 3.7% of the interviewees stated that they do not read nutrition information because it does not influence their food choice.



Source: authors' construction

Fig. 2. **Reasons why nutrition information is not read by elderly people (in %, n = 69, multiple answers possible)**

Among the people who answered that the nutrition information was difficult to understand, the part of people with middle and low interest in nutrition (66.7%) is greater than in the whole group (50.7%). Furthermore, the ingredient list is valued predominantly as being very important (46.4%) or important (43.5%) (Figure 3).



Source: authors' construction

Fig. 3. **Classification of the ingredient list among elderly people (in %, n = 69)**

Nutrition claims

The importance of nutrition claims among elderly people was identified by the following five nutritional claims: "high content of fibre", "low fat content", "sugar free", "high content of calcium", and "cholesterol free". The nutritional claims are mainly valued as being very important or important: high content of fibre (very important: 24.6%, important: 53.6%); low fat content (very important: 39.1%, important: 37.7%); sugar free (very important: 40.6%, important: 40.6%); high content of calcium (very important: 34.8%, important: 42.0%); and cholesterol free (very important: 46.4%, important: 31.9%) (Table 3).

Table 3

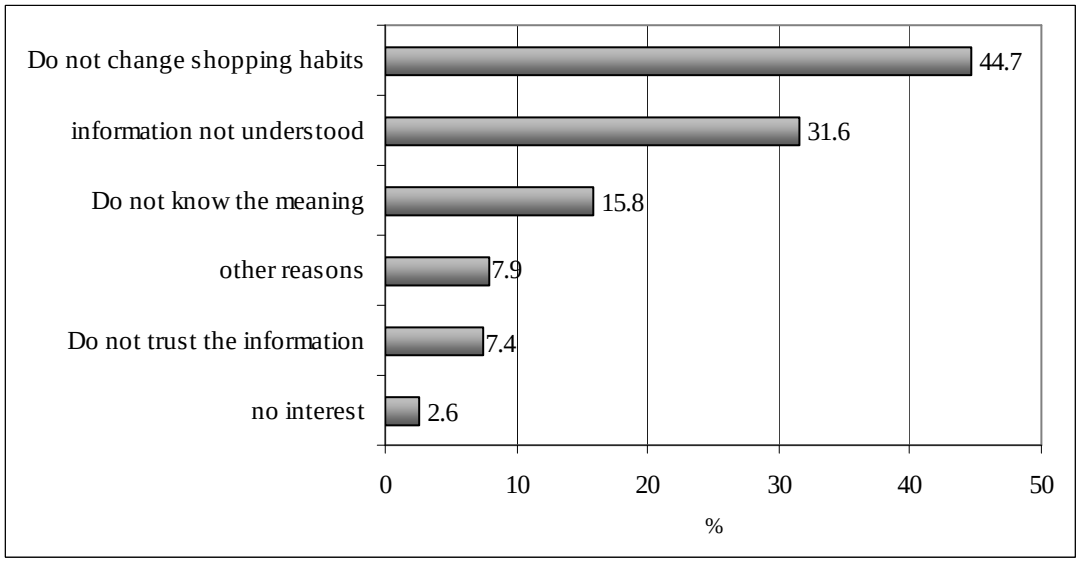
Importance of different nutrition claims on food among elderly people (in %, n = 69)

Information	Very important	Important	Neither nor	Less important	Not important	No Answer
High content of dietary fibre	24.6	53.6	5.8	4.3	1.4	10.1
Low fat content	39.1	37.7	7.2	11.6	1.4	2.9
Sugar free	40.6	40.6	2.9	7.2	2.9	5.8
High content of calcium	34.8	42.0	2.9	5.8	5.8	8.7
Cholesterol free	46.4	31.9	5.8	11.6	1.4	2.9

Source: authors' construction

The "free of cholesterol" claim accounts as being the most important claim, mainly due to the increasing problems with the blood cholesterol levels of the interviewees with higher age (Table 3).

When asked why the nutrition claims are not read, 31.6% of the subjects answered that they did not trust the information and 15.8% answered that they did not know the meaning of this information for health (Figure 4). The most frequently marked answer with 44.7% is that the nutrition claims do not influence the shopping habits. In this group, elderly people with a secondary general school education (94.1%) are represented more often compared with the overall sample (60.9%).

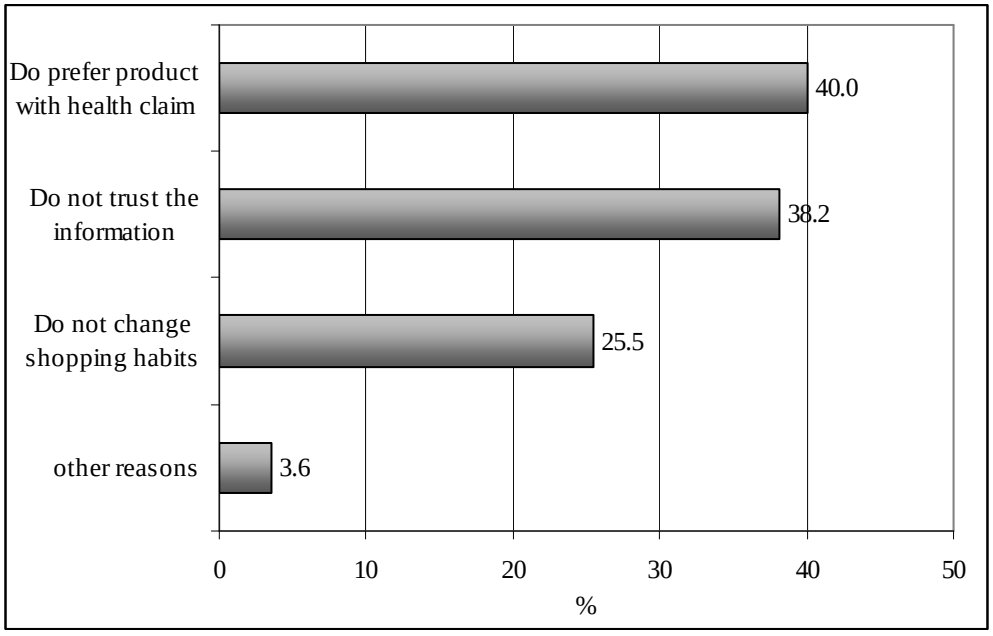


Source: authors' construction

Fig. 4. **Reasons why nutrition claims are not read by elderly people (in %, n = 39, multiple answers possible)**

Health Claims

Subsequently, the meaning of health-related information was ascertained by using the example of the claim "This product strengthens bones". When purchasing food, 40.0% of the interviewees indicate to prefer a product with this health claim to a comparative product. About one third of the questioned elderly people do not trust the health-related information (38.2%) or state that this health claim does not influence their shopping behaviour (25.5%) (Figure 5).



Source: authors' construction

Fig. 5. **Importance of health claims to elderly people (in %, n = 59, multiple answers possible)**

Elderly people with secondary general school education (78.6%) are more frequently represented among the group which does not change the shopping behaviour. Those with an

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

intermediate school education and grammar school education are less often represented (7.1%) than in the total sample (secondary general school: 60.9%; intermediate school: 17.4%; grammar school: 11.6 %).

Criteria for purchasing food

Storage life, sensory aspects, and the price of an item appear to be the most important criteria when purchasing packed food, while the nutrient composition of a product and with it the nutrition related information is ranked at the 4th place. A claim that promotes an additional health benefit is ranked in the 7th place only. The brand name has a greater importance for the shopping decision of elderly people than an additional health benefit (Table 4).

Table 4

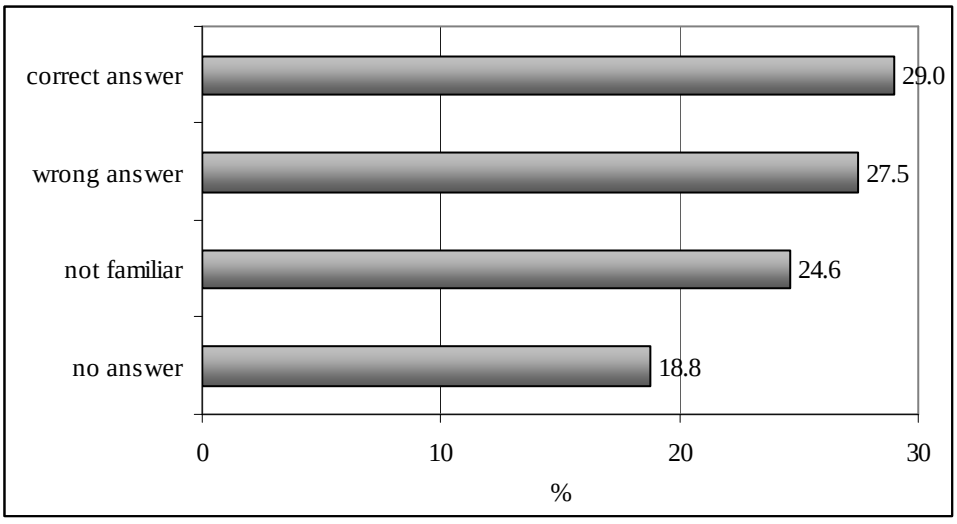
Importance of shopping criteria among elderly people (in %, n = 69, multiple answers possible)

Shopping criteria	Frequency naming "important" or "very important" (%)
Storage life	97.1
Flavour, appearance, freshness	91.3
Price of the product	82.6
Nutritional value	73.9
Easy to open	71.0
Brand name	66.7
Additional health benefit	63.7
Simple and fast preparation	53.6
Shopping habits	53.6

Source: authors' construction

Use of nutrition information

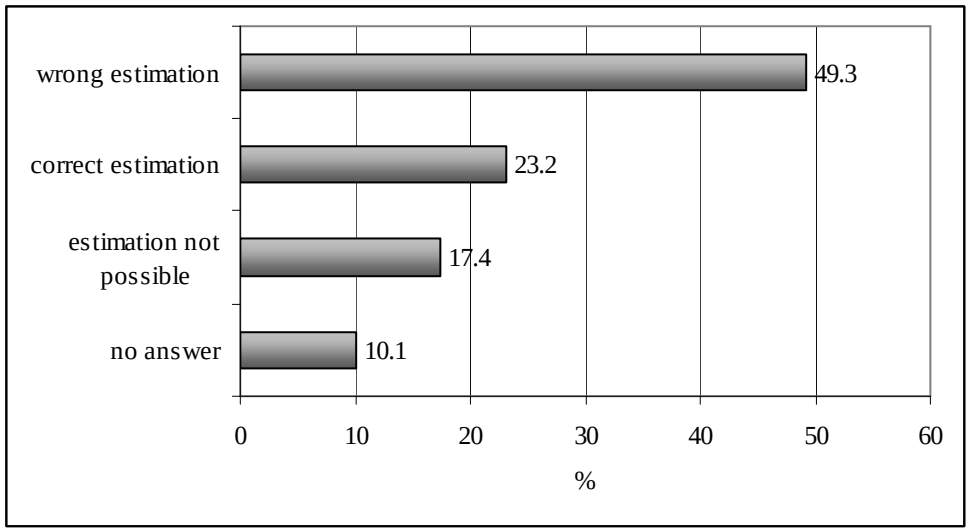
With a further question, it was determined whether elderly people were able to understand and apply the nutrition information. On the basis of a sample package, the interviewees were asked to calculate the content of fat per serving size in breakfast cereals (serving size 50g, content of fat per 100g). Only 29.0% of the interviewees marked the right answer; 27.5% marked a wrong answer; and 24.6% indicated not being able to determine the content of fat or did not answer the question at all (18.8%) (Figure 6).



Source: authors' construction

Fig. 6. **Results of applying the fat content from a sample food package among elderly people (in %, n = 69)**

During a further task, the interviewees were asked to grade the sugar content of the given food (breakfast cereals) as being high, medium, or low (Figure 7).



Source: authors' construction

Fig. 7. **Estimation of the sugar content of breakfast cereals by elderly people (in %, n = 69)**

In this task a wrong estimate is given by almost half of the interviewees (49.3%), while only 23.2% give the correct answer, and 17.4% indicate not being able to give an estimate or did not answer the question at all (10.1%).

Discussion

Nutrition labelling alone cannot solve the problems related to nutrition. Nutrition information can make a small but important contribution for the choice of suitable food (Cowburn G. and Stockley L., 2005). Nutrition and health claims on food packaging aids to communicate important information about food to the consumer and support a responsible selection of food (Leathwood R. et al, 2007). Nutrition labelling and nutrition claims are elements in food politics and should be seen in an extended scope of consumer education (van den Wijngaart A.W., 2002). This is also valid for health-related information. The importance of nutrition labelling on food is classified by many of the questioned elderly as being significant. Problems using the nutrition information are mainly due to the small writing, but also due to the fact that nutritional information is not being understood by the elderly people. Therefore, other shopping criteria like storage life, taste, appearance, and price have possibly a greater influence when purchasing food. Nutrition and health claims are classified predominantly as being important. The nutrition labelling has a greater importance for elderly people. There are bigger reservations among nutrition and health claims. A significant part of the interviewees do not trust the information on the packaging or do not understand the connection between nutritional related information and their own health. The group of elderly people stating that the information on food packaging has no influence on their food choices is greater among nutrition and health claims than among nutrition labelling. In particular, those with a secondary general school education are not influenced by nutrition and health claims in their shopping decision. Deficits appear using the nutrition information. Only 29.0% of the elderly people are able to calculate the amount of fat in a serving size and only 23.2% evaluate the content of sugar in food properly. This could be a reason why the "traffic light system" is favoured among the consumers, but not implemented on the EU level.

Conclusions, proposals and recommendations

Results show that nutrition information on food is (very) important to the target group. Problems to use the nutrition information are mainly due to the small writing on food packages and also due to the fact that nutritional information is not being understood by elderly people. Nutrition labelling and also nutrition and health claims are classified predominantly as being

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

important. But there are also reservations towards nutrition and health claims. A significant part of the interviewees does not trust the information on the packaging or does not understand the connection between nutrition claims and their own health. Deficits appear along the use of the nutrition information. Only 29.0% of the elderly people are able to calculate the amount of fat in a serving size and only 23.2% evaluate the content of sugar on food properly. Several aspects shall be improved to alleviate the choice of suitable food to elderly people. The improvement of the legibility of the information on food, the strengthening of trust of the consumers in the nutrition labelling, nutrition and health claims and the nutrition knowledge about nutrients needs to be considered among other things.

Bibliography

1. BLL (Bund für Lebensmittelrecht und Lebensmittelkunde e. V.) (Ed.) (2010). GfK-Studie: *Nährwertangaben auf verpackten Lebensmitteln*. Berlin: Weit verbreitete Nährwertkennzeichnung, 1. Auflage
2. Cowburn, G., Stockley, L. (2005). Consumer Understanding and Use of Nutrition Labelling: a Systematic Review. *Public Health Nutrition*, Volume 8, Issue 1, pp. 21-28.
3. Driskell, J.A., Schake, M.C., Detter, H.A. (2008). Using Nutrition Labelling as a Potential Tool for Changing Eating Habits of University Dining Hall Patrons. *Journal of the American Dietetic Association*, Volume 108, Issue 12, pp. 2071-2076.
4. European Parliament, (Ed.) (2006). Verordnung (EG) Nr. 1924/2006 des Europäischen Parlaments und des Rates vom 20. Dezember 2006 über nährwert- und gesundheitsbezogene Angaben über Lebensmittel. Retrieved: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:404:0009:0025:DE:PDF. Access: 12 September 2010
5. European Parliament, (Ed.) (2008). Proposal for a Regulation of the European Parliament and of the Council of 30 January 2008 on the Provision of Food Information to Consumers COM(2008) 40. Retrieved: http://ec.europa.eu/food/food/labellingnutrition/foodlabelling/publications/proposal_regulation_ep_council.pdf. Access: 12. September 2010.
6. Freytag-Leyer, B., Zimmerer, S., Klotter, C., Hampshire, J., Straka, D. (2009). Perception of Health Information in the Community Fulda-Südend and Kohlhaus. *Economic Science for Rural Development,* Volume 19, Issue 2, pp. 91-96.
7. Hager, M.H., Geiger, C., Hill, L.J., Martin, C., Weiner ,S., Chianchiano, D. (2009).Usefulness of Nutrition Facts Label for Persons with Chronic Kidney Disease. *Journal of renal Nutrition*, Volume 19, Issue 3, pp. 204-210.
8. Leathwood R., Richardson D., Starter, P., Todd P.M., van Trijp H.C. (2007). Consumer Understanding of Nutrition and Health Claims. *British Journal of Nutrition*, Volume 98, Issue 3, pp. 474-484.
9. Max Rubner-Institut (Ed.) (2008). Nationale Verzehrsstudie II: Ergebnisbericht Teil 2. Retrieved: http://www.was-esse-ich.de/uploads/media/NVSII_Abschlussbericht_Teil_2.pdf. Access: 12 September 2010.
10. Nestle Deutschland AG (2009). Nestlé Studie: Ernährung in Deutschland 2008. Kurzfassung. Retrieved: http://www.nestle.de/NR/rdonlyres/04E56E5B-8B60-4BC4-9E07-1B479C085467/0/Ergebnisse_Nestle_Studie_Kurzfassung.pdf. Access: 12 September 2010
11. Neuhouser, M.L., Kristal, A.R., Patterson, R.E. (1999). Use of Food Nutrition Labels is Associated with Lower Fat Intake. *Journal of the American Dietetic Association,* Volume 99, Issue 1, pp. 45-50.
12. Van den Wijngaart, A.W. (2002). Nutrition Labelling: Purpose, Scientific Issues and Challenges, *Asia Pacific Journal of Clinical Nutrition,* Volume 11, Issue 2, pp. 68-71.
13. Williams, P. (2005). Consumer Understanding and Use of Health Claims for Foods. *Nutrition Reviews*, Volume 63, Issue 7, pp. 256-264.

Innovation Opportunities of Export – Oriented Latvia's Forestry and Wood Processing Industry

Stanislavs Keiss, *Dr.oec., associate professor*
University College of Economics and Culture
Arkadijs Grisins, *Dr.oec., assistant professor*
University College of Economics and Culture

Abstract. Forestry and wood processing industry are one of the most important and priority clusters of the economy of Latvia. The key role in its export orientation, including appropriate regional production, was complicated, but not substantially destroyed by the heaviest implications of the recent global crisis's tremors that took place in the world economy. The enlargement opportunities of the innovative component are considered in the paper in the form of a statement in relation to the indicated cluster. These opportunities are seen due to the implementation activating of bio and even nanotechnologies, providing a higher value added as well as the consolidation of export potential.
Key words: forestry and wood processing industry, export orientation, innovative development, bio- and nanotechnology, Finland, Latvia.

Introduction

The results of this research, perhaps, might be taken into consideration elaborating a vitally indispensable further strategy for the development of the national economy, including its more effective regional industrial policy, the topicality of which has increased after the fatal accession of the Republic of Latvia to the European Union. Therefore, a special attention shall be paid to the analysis of problems and developments related to Latvian cluster of the forestry and wood processing industry areas. The cluster has not only maintained the foreign economic production potential but it has even substantially increased unlike the majority of other national industries and agriculture (excluding metal industry, production of rubber and plastic, and mining).

It is typically that in 2007, the last pre-crisis year in Latvia's economy, exactly the wood processing industry (including the production of furniture, paper, and woodpulp) had a growth by 486% in comparison with 1990 (in comparable prices), i.e. it had increased almost five times. It has resulted in higher technological production of furniture, paper, and woodpulp. Nevertheless, it experienced a substantial decrease in 1995, even declining to a risky level of 27-41%; however, it was able to recover and to achieve about 103-118% of the level of 1990 in 2007 (Latvijas Statistikas gadagrāmata, 1999; Latvijas Statistikas gadagrāmata, 2008).

The efforts to enlarge the export production are one of the priorities in the development of an open economy of Latvia. The wood processing industry has played an important role in the Republic of Latvia, since the first days after restoration of its independence. It is significant that in 2007 the export of wood industry and its products provided 22.5% of the amount of Latvian exports. Totally, 65% of the wood processing products were exported; thus, gradually achieving regional, and, in relation to some niches, even the worldwide economic volumes. For example, 77% of the production was exported to the EU countries, without taking in account Lithuania and Estonia, which received 6-7% of the export of Latvian wood processing industry. Hence, only 2% were exported to the CIS and 8% were exported to other countries, including some exotic countries (Ziņojums par Latvijas tautsaimniecības attīstību, 2008). Therefore, on conditions of the decrease in demand and prices in traditional markets of Europe, exactly Egypt (until the latest political developments in February 2011) became a serious export segment for Latvian wood processing. The amounts of export of Latvian wood products to Egypt (LVL million) were as follows: in 2007 – LVL 1.5 million; in 2008 – LVL 3.99 million; in 2009 – LVL 8.73 million; and in 11 months of the 2010 – LVL 22.63 million. Overall, during the period of 2009-2010, the share exported to Egypt increased from 7% to 13% of total export of Latvian softwood wood products. It is also significant that today exactly the wood, mainly in a form of expensive and qualitative timber, accounts for nearly 80% of Latvia's export to Japan.

It should be mentioned that after the sharp decrease of Latvia's wood export to Japan from LVL 17 million to LVL 13 million in 2008, the year of crisis, already in 2010 the amount of particular export increased to LVL 19.5 million. In 2010, Latvia also exported furniture and its accessories to Japan. Authoritative experts of Latvian wood processing industry suggest that taking into consideration the vast devastation caused in Japan by the earthquake and tsunami in March 2010, there may be a drastic demand in the production of Latvian wood processing (Линдерман, 2011; Линдерман, 2011).

So, notwithstanding the well-known problems of Latvia's economy, its strategic orientation to a more diversified export, including finished products and complementary parts related to a deeper processing level in other areas outside the mentioned cluster, is not disputable (Ziņojums par Latvijas tautsaimniecības attīstību, 2008).

The data of Table 1 confirm clearly the export orientation of the wood processing cluster of Latvia's economy, which had already become stronger on conditions of not yet overcome crisis.

The **aim** of the research is to analyse the perspective of export potential of competitive Latvian cluster of the forestry and wood processing industry.

The following **tasks** were fulfilled to achieve the aim:

1) to characterise Latvia's specificity of export orientation in the areas of the prior forestry and wood processing industry cluster;
2) to consider the opportunity of an innovative and more high-tech development in the areas of wood processing industry;
3) to estimate the strategic implementation potential of bio-industry and nanotechnologies favouring a competitive and innovative production of Latvia's wood processing.

Object of the research – areas of the forest and wood processing industry.

Subject of the research –innovative development problems of export-oriented wood processing cluster of Latvia's economy.

Methods and methodology of the research: monographic method, synthesis and analysis, logically-constructive method, creative combination of system and situation approaches, and analysis of the statistical data and informative Internet resources.

Results and discussion

Latvia's specificity of the forestry and wood processing cluster

It is generally known that Latvia, together with other Baltic States, Japan, and Nepal, ranks with the countries characterised by *poor natural resources*, i.e. it possesses insignificant amounts of them, which determines the dependence on imported resources, and indentifies the characteristic features in specialisation of the national economy (Гордеев, 2008). However, exactly Latvia continues to remain one of the world's countries with the richest forests. Thus, the forest area per capita equals to 1.5 ha in Latvia. The forestry experts consider that, in reality, there are more forests in Latvia than statistically accounted. It should be indicated that the forest area per capita in Norway, Sweden, and Finland accounts to 1.95 ha; 3.06 ha, and 4.23 ha, respectively, i.e. the index is considerably higher than in Latvia (Соколов, 2009, 03.09; Татарчук, 2009; Петрова, 2007; Резник-Мартов, 2007; Дунда, 2004). Sometimes a concern that Latvia's forest resources may be exhausted has been expressed by the society of Latvia due to the rapid development of forestry and wood processing, and the increase of export of its products (Рылеева, 2008). However, in reality in the framework of a sufficiently strict legislation, regulating the cutting of woods, a full reproduction of the logged wood was provided during the period of independence of the Republic of Latvia. According to some estimates of authoritative experts, the annual woodcutting in Latvia is about 40% lower than the reproduction. According to other estimates, if the average annual cutting is 11-12 million cubic metres, the natural growth of wood is even 20-25 million cubic metres. According to the data provided by J. Bikis, the president of Latvian Federation of Wood Processors, in the period of 1930-1983 the amount of forests in Latvia has increased from 24% to 41%; and in 2008, they covered over 56% of the territory of the country. Therefore, the continuous propositions of the "greens" that Latvia is engaged in a ruthless woodcutting, which may lead to a full wood

extinction, have nothing in common with the reality (Бикис, 2009; Деревообработка скоро может зачахнуть, 2010).

The wood resources play an extremely important role in coping with demand of the society on local, national, regional, and global level. It is not only the source of numerous ecologically pure products, but it predetermines the environment quality in diverse ways. At the beginning of the 21st century, the idea that exactly the ecological functions of the forests of particular countries determine the global importance of maintaining and enlargement of the world forest reserves became more and more dominant (Смирнов, 2008).

The structure of the cluster of forestry and wood processing industry include cutting, mechanical processing, and chemical processing of wood. The mechanical processing includes sawing, production of plywood, construction details, furniture, and others. The chemical wood processing is carried out by wood chemistry, with a wide use of production waste. Especially, it takes place in the woodpulp and paper industry. Products of the considered cluster of forestry and processing industry encompass: 1) wood, including commercial wood (sawlog, pulpwood, and chips); 2) sawn timber, i.e. the wood undergone a certain processing; 3) board-materials (plywood, chip boards, and fibre boards); 4) production of woodpulp and paper; 5) wood is a high-quality building material that may be used in production of furniture, toys, paper, pencils, safety-matches, and others (Родионова, 2005: Фаминский, 2007; Колыхалов, 2010).

As it is generally known, the competitiveness obtains a common, global character in all areas of the world economy in the 21st century. The countries, as a rule, try to succeed in international competitiveness not in separate areas, but in a group of areas, connected by horizontal and vertical ties (Гордеев, 2008). It should be mentioned that the well-known American economist M. Porter in his theory on competitive advantages of the world economies, including also on the level of companies, gave the leading role directly to the clusters, especially underlining that the clusters are creating the critical mass for unusual competitive success in certain business areas. According to M. Porter, it may be a group of geographically proximal interrelated companies and related to them organisations, acting in a certain sphere and characterised by common activities and inter-supplementing each other. Sometimes, the fixing of frontiers of a cluster turns out as being a rather complicated task, requiring a creative process based on the understanding of the most important connections between different areas in it (Портер, 2000). However, it is doubtless that the development of some clusters is promoted by those that determine the export specialisation of a certain country. In the context of the considered cluster, it should be especially indicated that in Sweden 50% of total export contains the production of related clusters, together with the production of transport facilities and metallurgy, directly related to the wood processing industry. In Italy, 40% of export falls on the clusters, related to the production of food, fashion clothing, footwear, commodities, and furniture (Фаминский, 2001).

Furthermore, a sufficiently recognised precondition of increase of competitiveness in Latvian wood processing cluster is the doubtless combination of rich forest resources with developed wood processing industry as well as the absence of considerable differences in quality of the Western and Latvian forestry and wood processing production. According to A. Plezers, a deputy director of the Association "Latvijas koks", "presently, we are able to compete abroad based on of a high-quality production, timely supply and prices that are lower than the prices of the products of other countries" (Коляко, 2010). According to a competent viewpoint of Esben Kalhoja, a member of the Chamber of Commerce of Denmark in Latvia, the furniture produced in Latvia may be attractive to the Scandinavians, including Danes, and have a large demand, since "the quality and design of Latvian products are competitive in comparison with similar ones offered by other countries" (Петрова, 2010).

On the one hand, according to the data of the Ministry of Economics of the Republic of Latvia, especially the production of wood and its products is the most competitive export area of Latvia. Before the crisis, Latvia was the 10th country in the world by the amount of export of wood and its products per capita. In general, Latvia is on the 35th place in the world by the amount of wood export and on the 81st place by the export of wood products as well as on the 60th place by the average market diversification. **On the other hand**, specialisation in the production of the considered cluster is insufficiently wide. As regards the level of specialisation,

Latvia is only on the 103 place among the 114 exporters of the wood. Moreover, it experiences a relatively low ability to adapt to the changes in the world's demand related to the products of wood processing industry. In accordance with this index, Latvia is on the 105th place among the 114 exporters of the wood production (Latvijas eksporta veicināšanas programma 2005. – 2009.gadam).

Furthermore, thanks to its convenient geographical situation, Latvian wood processing industry possesses a potential competitiveness related to several parameters and being even higher than that in Finland, to say nothing about Russia. For example, Latvia can supply with the production of the considered cluster the EU countries in two days, while Finns need four days, and Russians – even more. Moreover, Latvian producers do not need to ship the production of wood processing, unlike the Finns, and there is no need to go through the rather long custom procedures like Russians. Therefore, it is possible to guarantee a rapid supply. However, during the crisis, Latvia hardly succeeded in improvement of the relatively low cluster indices related to the output of end production per cubic metre of wood. In addition, Latvian wood processing companies manufactured production of EUR 152 per cubic metre of wood. For comparison: in Germany, this figure was EUR 600, in Austria – EUR 400, in Finland – EUR 364. Latvia's wood processing problem is narrow specialisation and a necessity not only for learning how to compete, but also how to interact. Presently, such kind of cooperation is developed insufficiently (Резник-Мартов, 2007).

In the context of intensifying crisis in the economy of Latvia in 2009, the government of the Republic of Latvia, based on the recommendations of the Ministry of Economics, has decided that exactly the wood processing industry, together with food and chemistry industries, production of electronic and optic equipment, engineering industry, metal manufacturing, and transit, was one of the 5-6 prior areas of the national economy. Hence, a special support is planned from the beginning of 2010 for this industry (Соколов, 2009, 21.09; Коляко, 2009). However, some well-known Latvian economists (for example, R. Karnite, U. Rutkaste), under pretext that, traditionally, wood processing is an area with a low value added, did not appreciate this choice as a priority of Latvia's economy (Коляко, 2009; Князева, 2010).

On the contrary, the authors' opinion is that the prior role of the forestry and wood processing industry cluster might be maintained not only during the period of overcoming the deep crisis in Latvia's economy, but also in the future. In reality, more and more economists and experts underline that the crisis in Latvia's economy, including the areas of the considered cluster, is gradually elapsing. For example, the attention should be paid to the viewpoint of Fabio Mucci, an authoritative Italian expert of transnational banking group UniCredit, on the subject that in the middle of 2010 in all Baltic States there may be seen some features of economic recovery. Moreover, in Latvia together with Estonia, a growth of GDP of 3.9% in 2011 is forecasted, while in Lithuania – 3.7% (Киртовская, 2011).

More impressive were the data provided by K. Klaus, a deputy director of Latvian Federation of Wood Processing Industry. According to K. Klaus, the export of Latvian wood processing production has increased by 46% in 2010 and reached LVL 1,022 billion, i.e. approximately equalling to the pre-crisis level of 2007. The main export markets of the wood production were Sweden, Great Britain, and Germany: 15.7%, 11.4%, and 10.9% of exported wood production respectively (Коляко, 2011). However, in 2010, the export of furniture, totalling to LVL 55.1 million, remained on the level of 2009. The export of furniture to Germany reached LVL 13.442 million, to Denmark – LVL 4.37 million, and to Great Britain – LVL 5.88 million (Коляко, 2011). The most conspicuous tendencies showing a certain recovery of export related to wood processing cluster are included in Table 1.

However, such recovery, strictly speaking, is falling seriously behind the growth of Latvian export in general. Most importantly, it is not to be found in such areas of the cluster that are characterised by a relatively higher value added, such as woodpulp, paper, cardboard, and furniture.

At the same time, the desired long-term priority of wood processing industry cluster is predetermined not only by the circumstance that it employs exactly not less than 40 thousand people. Yet, taking into account the people employed in related areas, this number accounts

for even 90-100 thousand (Бикис, 2009; Николаев, 2009). The point is that the areas of the considered cluster maintain a systemic nature according to the majority of regions in Latvia. The indicated cluster determines, in a great deal the level of employment and welfare of the rural population that is especially important, when the disproportion between the so-called centre, i.e. Riga and Pierīga, and the other territory of Latvia remains inadmissibly high. It may be possible to contribute to the welfare of rural areas in Latvia's regions using corresponding features of the elements of the structure of the cluster or regional sub-clusters.

Table 1

General changes in foreign trade of Latvia and in relation to wood processing before and after Latvia's accession to the EU (LVL million, %)

		2000	2004	2007	2008	2009	2010*
Export and import, total	Export	1131.3	2150.0	4040.3	4428.9	3602.2	4666.5
	Import	1933.9	3805.3	7780.2	7527.7	4700.8	5840.8
	Export vs. import, %	58.5	56.5	51.9	58.8	76.5	79.9
	Balance	**-802.6**	**-1655.3**	**3739.9**	**-3098.8**	**-1107.6**	**-1174.3**
Forestry and wood processing, including	Export	473.6	831.4	1028.7	812.6	685.2	1022.0
	Import	105.0	298.3	320.0	325.1	200.6	148.6
	Export vs. import,%	451.0	278.7	321.3	250.0	341.6	687.7
	Balance	**+368.6**	**+533.1**	**+708.2**	**+487.5**	**+484.6**	**+873.4**
Woodpulp, paper, cardboard	Export	14.1	44.1	55.7	69.9	64.3	No data
	Import	82.4	126.3	185.9	180.0	134.6	No data
	Export vs. import,%	17.1	34.9	30.0	38.8	47.8	No data
	Balance	**-68.3**	**-82.2**	**-130.2**	**-110.1**	**-70.3**	**No data**
Furniture	Export	50.3	86.4	98.2	87.8	69.4	54.6
	Import	22.6	57.3	117.8	93.4	45.5	20.0
	Export vs. import,%	222.6	150.8	83.4	71.4	157.9	273.0
	Balance	**+27.7**	**+29.1**	**+19.6**	**+33.7**	**+23.9**	**+34.6**

Note: ** preliminary data. In brackets: from different sources*
Source: Latvijas Statistikas gadagrāmata, 2010; Latvijas Statistikas gadagrāmata, 2009; Latvijas Statistikas gadagrāmata, 2008; Latvijas Statistikas gadagrāmata, 2005; Latvijas Statistikas gadagrāmata, 2001; Laganovska L., 2010; Коляко Н., 2010

Among the companies concentrated in regions and oriented to export, sometimes also the companies specialised on wood processing are dominating; yet, together with producers of food, electronics, building materials, chemicals, sewing articles, and hardware. It is typical that even under the circumstances of the crisis of 2008-2009, in the majority of regions (including Latgale) exactly the companies (about 3-5 in every region) related to wood processing cluster were included into the 20 most profitable companies of the region with an annual turnover about LVL 6-35 million and the number of employees of 54-231. As it is well known, the business people prefer towns and regions of Latvia that are attractive to the entrepreneurs - Ventspils, Liepāja, Ogre, Jelgava as well as Tukums, Jēkabpils, Rēzekne, Valmiera, and Dobele. Besides, Jelgava is especially attractive to entrepreneurs, including foreigners, thanks to its proximity to the capital Riga, the developed industrial territories, and intellectual potential provided by Latvia University of Agriculture (TOP 500, 2011; Николаев, 2008).

Considerably, that the forestry and wood processing industries continue to take important, but sometimes also prior places in the economy of different industrially developed countries that possess rich wood resources. Europe and the North America are the leading countries in the world trade with wood and paper products. The first five countries include Canada, the USA, Germany, Finland, and Sweden. These five countries account for more than 50% of all wood export. The efficiency and high wood trade profit are determined by the assortment of wood to be traded and a deeper chemical-mechanical processing of wood. On the contrary, the countries that export unprocessed round timber gain rather low profit (Фоминский, 2007; Колыхалов, 2010).

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Potential innovations in the forestry and wood processing cluster

Presently, the idea of a "high tech area" becomes interpreted on an increasingly wide scale. Sometimes it is said that the high tech is as part of the technological basis in all areas of the present economy (Оболенский, 2007). The authors believe that, on conditions of globalisation processes going on in the development of production and trade, including the considered forestry and wood processing cluster, but, mainly of growing necessity for innovative activities to increase the international competitiveness of its production on international and regional markets, it might be agreed with the viewpoint that a certain tendency of its formation even in traditional areas, new sub-areas and kinds of economic activities that enrich the structure of such traditional areas as a result of using the joint industrial innovative potential becomes visible (Куренков, 2008).

Of course, such wide interpretation does not change the goods, recognised generally (Клинов, 2006) as being technologically on a low-level (textile, clothing, toys, simple metals, plastic-ware, footwear, products of tobacco, food, printing and publishing, wood processing industry, and so on), automatically into a high tech level goods. They are not changed even into capital-intensive products of a middle technological level, to which usually relate the majority of industrial engineering industry, automotive industry, simple electronic, and chemicals (Ломакин, 2007). The authors think that the so-called new economy of knowledge related to intensive implementation of innovations and new methods of business administration influencing the increase of productivity and the quality of products (Гордеев, 2008), are not excluded in relation to a part of wood processing cluster areas. High tech structures, including, for example, the production of clothing, textile, or furniture may function in several traditional areas. Moreover, it is generally recognised that some important innovations are sometimes not based on expensive researches and studies (Пахомова, Рихтер, 2009).

Regarding Latvia's wood processing, it may be agreed with the opinion of such authoritative expert as R. Stripinieks, the Head of the Board of the joint stock company "Latvijas Valsts Meži", that although Latvia was able to use for a long time the opportunity provided by its location in a low cost zone, it shall be recognised that today the situation is changing. Accordingly, a strategic aim has emerged that defines the necessity to increase twice the value added provided by every cubic metre of wood. It may be achieved thanks to innovations. Latvia possesses a potential to become a leader in technologies applied in wood processing (Петрова, 2007). In this context, one should mention the half a century long experience of the USA, Finland, and Sweden obtained in relation to intensification of forestry and implementation of innovative technologies, furthering the increase in efficiency of using the wood in all stages of its cutting and processing. The current technological progress has provided not only the possibility to produce ecologically pure wood boards, but it is coming close to the solution of the problem of creation of ecologically friendly wood-pulp and paper industry on account of abandoning chlorine and other detrimental materials in combination with a gradual increase of the proportion of repeated raw materials in the mentioned production (Смирнов, 2008).

The results of long-term effective activities of the wood processing sector in the USA, Canada, Finland, Sweden, and of late years also in China substantiate the fact that directly the woo-pulp and paper industry with a high level of value added determines the efficiency for the usage of renewable forest resources. It is possible to process wood of every kind and wood waste, especially in the context with the development of the recent biotechnologies, forming the basis for high tech wood processing in the near future. Moreover, all over the world exactly the woodpulp and paper industry companies are usually distinguished by high financial-economic results, and showing the highest profitability per 1 cubic metre of processed wood (Пискулов, Бурдин, 2010).

Therefore, notwithstanding the competence of environment protection component, active discussions in the society of Latvia, the failed long-term difficult negotiations of several governments of Latvia, leading after all to the rejection of Finnish company's Metsaliitto Group proposal to invest about USD 1 billion into construction of a modern wood-pulp factory with the capacity of 0.6 million tons in the vicinity of Jēkabpils, restricted, evidently, a strategically wide

potential of efficiency increasing in foreign trade of the considered cluster that might be provided based on modern innovations. The authors believe that, in a foreseeable perspective, such approach will hinder the implementation of the opportunity to form a large specialised, high-technological area, which might become a logical end-stage of production in the chain of wood processing in Latvia, with possession of secured enough marketing segments and niches not only on the European, but also on the global markets (Юданов, 2003; Космачев, 2005).

Wide opportunities for the implementation of the latest biotechnologies exist also in the area of renewal and increasing of the productivity of forests. It is typical that even in the West European countries the proportion of improved seed prepared by forestry-seminal objects accounts for about 20%, which is unlike the Scandinavian countries, where the respective percentage approaches to 90% (Зубков, 2010). A special attention should be paid to the dynamic China - an obvious example of purposeful policy oriented to the development of innovations in wood processing production and its export. It is interesting that, without large wood resources, exactly China carries out a government programme related to the creation of springing up forest species. If annually, about 2 million ha forest areas were created during the period of 1990-2000 then in 2008, the figure reached already 4.8 ha. More imposing is the fact that in the area of production of paper and cardboard, exactly China has outpaced the USA. Moreover, during the period of 2001-2008, the annual increase of Chinese production of paper and cardboard reached 12.5%. China is also the biggest producer of wood-board materials in the world. During the period of 1990-2008, the production of plywood increased 27.8 times, while chipboard and fibreboard production – 23 and 6.6 times respectively (Пискулов, Бурдин, 2010).

Latvia's neighbouring country Finland should be mentioned as a typical example, since there the wood cluster, together with the information and telecommunication spheres, is the most important area of the economy, providing an important proportion of the country's GDP. Woodpulp and paper industry companies of Finland are carrying out a global development strategy for a long time. Finland has one of the highest productivity both in its own country and on the global scale (Миндалин, 2009).

Opportunities of bio-industry and nanotechnology in the cluster of forestry and wood processing industry

It may be gone along with the viewpoint that it is very important to try to develop innovative cooperation with foreign investors in a way of production-technological cooperation based on the creation of "bio-industry". Many future tendencies of a deeper processing of wood resources may be created. For example, further processing may be performed by small and middle-sized companies after cellulose separation done by a big company. Hence, end-products would be polymers, sugar, health stimulators, medicine, organic acids, food products, cosmetics, covering materials, plastic, composite materials, qualitative new paper, wood products, and bio-fuel (Пискулов, Бурдин, 2010).

The increasing impact of the recent biotechnologies on the world's economy comprises a big potential to provide a decrease in the widespread dependence on non-renewable mineral resources. As it is generally known, the production of bio-fuel may be based on the majority of all kinds of biomass that is produced from renewable agricultural and wood raw materials, including wood and wood waste, herbage, cereals as well as the by-products of cattle-breeding. However, exactly the wood biomass turns out as the most effective. Special species of young forest with periodical cutting every 3-10 years and ability to resume the growing from the roots shall be used to produce biomass (Флегонов, 2009).

The authors' opinion is that, under circumstances of extending globalisation and regionalisation, the formation of the competitive Latvian cluster of wood processing areas is potentially connected with foreign direct investments. Before Latvia's accession to the EU, among the other industrial areas, the wood processing, together with food and light industry, and production of non-metal products, was one of the most attractive areas to foreign investments. Traditionally, up to 2008, the wood processing was characterised by the highest proportion of foreign direct investments, reaching LVL 110 million (Ziņojums par Latvijas tautsaimniecības attīstību, 2009).

Therefore, the development of scientific-technological progress will, probably, favour the maintaining of strategically prior positions of the cluster of forestry and wood processing in Latvia's economy. According to its preconditions, it should be important to mention (Дынкин, 2007):

- the clearly observable structural changes in the world economy related to wood processing in the way of a sharp increase of the proportion of progressive composite wood materials with improved consumption characteristics;
- the increasing depth of processing of the production of the area, its functional completeness and degree of maturity for end-users;
- the implementation of more rational, innovative systems of building constructions, a relatively more effective combination of different wood materials and constructions, subjected to a progressive processing, for example, fire-proof, antiseptic, and so on.

In this context, a special attention should be paid to strategic perspectives of the so-called nanotechnologies, representing the totality of methods of manipulation with the material on the nano-level (where the parameters are measured in billions of parts of metre), i.e. on the level of micro-parts. More and more the nanotechnology becomes regarded as the basis to create new technologies and even a full change of working in all basic sectors of industry (Суетин, 2007; Суетин, 2008). Many foreign experts have recognised that nanotechnology is a modernisation remedy for many different areas. Therefore, the nanotechnology is applied in production processes, as a minimum, of 80 groups of consumption goods and more than 600 kinds of raw materials, completions, and industrial equipment. Achievements in nanotechnologies include practically all areas of economy that, as a rule, make difficult the precision of a quantitative estimation of their market (Мировой рынок нанотехнологий, 2009). Therefore, the strategic perspective of nanotechnologies in relation to the considered here sector is doubtless. Moreover, a certain part of the Western researchers suggest that according to the scale of impact on the economy exactly the nanotechnology in length of time may stay in the line with information and bio-technologies. It is important to mention that in relation to the globalisation tendencies in the world economy, a convergence of the nanotechnologies, biotechnologies, and informative technologies may be possible within 20-30 years. It may be possible in a form of visible technological revolution that would allow moving the industrial technologies synergetic to a great extent, including also in traditional areas, and in association with the processes of renewing of natural resources and environment (Дынкин, 2007; Березина, 2010).

G. Mežinskis, the director of the Institute of Silicate Materials of Riga Technical University, explains the practical usefulness of the development of nanotechnologies in the economy based on Finland's example, where about a decade ago the government decided to invest a large sum of money into the development of nanotechnologies. Thus, presently the number of factories, created based on the studies of Finland's scientists, has increased ten times compared with the initially involved 5-8 companies. The advantages of their business are to be sought in the circumstance that even small companies may create products with higher value added (Телеграфов, 2010).

In fact, for such a small country as Latvia, Finland's experience in support of a high-level competitiveness has not only an informative significance, but also an application importance. It is generally known that, in the beginning of the 21st century, Finland was four times on the first place according to the index of competitiveness of the World Economic Forum. Besides, Finland's wood processing industry has demonstrated with certainty the opportunity (using different technological approaches, transition of economy, depending on resources), to an economy determined by investments into knowledge (Леонова, 2010). It is typical that even during 2007, the last pre-crisis year, Latvia, regarding the proportion of total expenses on scientific and research elaborations, accounting for 0.59% of the GDP, was close to the outsiders in the area of development of sciences among the EU Member States. Only Cyprus, Slovakia, Bulgaria, Romania, Greece, and Poland, with their respective expenses ranging from 0.45 to 0.57% of GDP, fell behind Latvia, while the index of Malta matched with that of Latvia. However, a serious concern is created by Latvia's falling behind Lithuania (0.82% of GDP) and Estonia (1.14% of GDP). It is not doubtful that, among the Baltic States, exactly Latvia was

the one that inherited the most advanced scientific-technological potential in the framework of the USSR. To strengthen the scientific-education potential, especially in the area of increasing the quality and international competitiveness in strategically priority areas, including the analysed cluster, it is necessary to follow the example of the neighbouring country Finland. Finland's index accounts for 3.47% of GDP, which is presently close to Sweden, with its expenses on scientific researches and elaborations of 3.60% of the GDP (Latvijas Statistikas gadagrāmata, 2010).

More than once, the authors have referred, including in the context of growing interdependence among the countries on conditions of the globalisation of the world economy, to Finland, being a lecturing positive example to Latvia (Гришин, 2008; Кейш, Гришин, 2010). In the beginning of the 21st century, Finland together with Sweden, Ireland, and Denmark was also among the leaders in the integral innovative development and in the sphere of education, among the EU Member States. At the same time, it has one of the first places in the world in the creative activity, falling behind only Japan, the USA, and Germany (Клавдиенко, 2007). It is interesting that, in the rating of innovative development, calculated by the European Commission for 2008, Finland is on the third place of 32 European countries, falling behind only Switzerland and Sweden. On the contrary, Latvia is on one of the last places, the 30th, overtaking only Bulgaria and Turkey. For comparison is should be mentioned that Estonia and Lithuania are on the 15th and 27th places respectively (Ziņojums par Latvijas tautsaimniecības attīstību, 2009).

Although in relation to elaboration and implementation of innovative technologies, Latvia takes one of the last places in the EU, and, according to the opinion of J. Ekmanis, the President of Latvian Academy of Sciences, the situation will not change until an additional financing for scientific research will be provided (Телеграфов, 2011). However, certain opportunities for a serious development of bio-technologies and nanotechnologies exist. Moreover, Latvia, as a EU Member State, and taking into consideration human and intellectual capital, may have all opportunities for the participation of national scientists in the competition to get a part of large funds (EUR 4 billion), assigned from the European budget for scientific researches in seven directions, including nanotechnologies, healthcare, informative technologies, support to small and middle-sized businesses, creation of new products, ecology, and so on (Глухих, 2010). It is planned to create 10 state research centres in the near future in Latvia, investing in this project LVL 102.7 million from the European Regional Development Fund resources. Long-term use of wood resources, wood and technologies for its processing, nano-structured, and multifunctional materials, constructions and technologies belong to the analysed industry (Коляко, 2010).

Conclusions and recommendations

1. Further elaboration of the development strategy of the national economy is vitally necessary. Therefore, the research results, perhaps, may be taken into consideration as a kind of a statement version in the industrial and innovative policy in the context of the most potential prior export areas of production clusters. The forestry sector and wood processing are one of the most important and priority competitive clusters in the economy of Latvia. Latvia, unlike the majority of national industrial areas and agriculture, has not only maintained, but also significantly increased the production of foreign trade economic potential during the two decades after the restoration of independence of the Republic of Latvia. Despite an intensive development of this cluster, Latvia continues to remain one of the countries, with highly rich forest resources: the annual cutting of wood is by 40% lower than its renewal.
2. The key role in export orientation (nearly 70%) of Latvian forestry and wood processing cluster, including the related regional production, was made difficult, yet, not destroyed by the heavy implications of the upsets of the recent global crisis. A growing recognition of the fact that qualitative parameters of its production are not characterised by great differences in comparison with the Western requirements, and the convenient geographical situation of Latvian wood processing area provides some positions even with certain comparative

advantages, especially in the context of international logistics on global and regional levels is an important precondition of increasing of competitiveness in the considered cluster.

3. The prior, strategic importance of Latvian cluster of forestry and wood processing shall be maintained also in the future, not only due to its systemic nature for the majority of Latvian regions, but also due to the unquestionably enlarging opportunities of present technologies in the increase of effective renewal in the forest exploitation with the aim to maintain and increase the natural renewable resources, and to increase the quality of environment and the activity of population.
4. The decline of export amounts of Latvian wood processing production in 2011 to the pre-crisis level of 2007 requires a special attention, since strictly speaking; it falls behind the long-term growth trends of Latvian export in general. Relatively high value added, as production of woodpulp, paper, cardboard, and furniture shall be considered as important factors of the forest industry.
5. The long-term foreign experience of the most developed countries with rich forest resources (the USA, Canada, Finland, Sweden), and lately also China with relatively smaller amounts of such natural resources, demonstrates the effectiveness, high profit in foreign trade with wood and wood products. It is created in a great deal by the assortment of timber materials to be exported, yet mainly by a higher chemical-mechanical processing of wood and a wider use of higher biotechnologies. Exactly, the competitive woodpulp and paper industry with its high-level value added and with the help of the latest technologies determine the efficiency of the use of renewable forest resources, including stricter requirements to the ecological component. Therefore, the well known break, taking place on the basis of pretext of environment protection, of a practically concluded transaction with Finland on of creation a modern wood-pulp factory with the capacity of 0.6 million tons in the vicinity of Jēkabpils, restricted a strategically wide innovative potential for the increase of foreign trade economic efficiency of the considered cluster.
6. However, it is especially important to continue the development of the innovative cooperation with foreign investors, related scientific institutions in the framework of the EU, using different possible forms of production and technological cooperation to create a today "bio-industry", not only in relation to agriculture, food, and pharmaceutical industry, but also in relation to the most important areas of the considered cluster. Taking into consideration the wide opportunities of accelerated development of biotechnologies, a special attention should be paid to the strategic perspective related to active development of the so-called nanotechnologies, representing a total of manipulation methods with materials on nano-level, i.e. on the level of micro-parts in many developed as well as in new industrial countries. The achievements of widely developing nanotechnologies include, practically, all areas of present economy of knowledge, related to an intensive implementation of innovations and new methods of business administration that in a certain degree do not exclude the relation to a part of the cluster of forestry and wood processing.
7. The experience of Finland shows that even small companies may create products with higher value added based on nanotechnologies. Topically that, in the beginning of the 21st century, exactly Finland was on the first place among the indices of competitiveness prepared by the World Economic Forum. Finland's wood processing production demonstrated strictly the opportunity, with the use of different technological approaches, of transition from the resources dependent economy to an economy based on the investment into knowledge.
8. Although, Latvia takes one of the last places among the EU Member States in the development and implementation of innovative technologies, it has certain opportunities for a serious development of biotechnologies and nanotechnologies. Taking into account the human and intellectual capital, Latvia has all opportunities to acquire a part of the large funds, advanced by the EU, to develop the mentioned recent biotechnologies and nanotechnologies. In addition, Latvia possesses lots of unused opportunities related to the scientific-technological and production potential, which on conditions of a favourable situation, yet, mainly on political will of the governing elite, as it is in other successful

countries, will let Latvia to take a more leading position in the area of implementation of the recent technologies in the cluster of the forestry and wood-processing.

Bibliography

1. Latvijas Statistikas gadagrāmata. 1999. – Rīga: LR CSP, 1999, 188, 214 lpp.
2. Latvijas Statistikas gadagrāmata. 2008. – Rīga: LR CSP, 2008, 354, 355, 394 lpp.
3. Latvijas Statistikas gadagrāmata. 2010. – Rīga: LR CSP, 2010, 449. - 452. lpp.
4. Latvijas Statistikas gadagrāmata. 2005. – Rīga: LR CSP, 2005, 220. – 223. lpp.
5. Latvijas Statistikas gadagrāmata. 2001. – Rīga: LR CSP, 2001, 183. - 187. lpp.
6. Latvijas Statistikas gadagrāmata. 2009. – Rīga: LR CSP, 2010, 465, 466. lpp.
7. Laganovska L. Foreign Trade of Latvia Increased by 26.4% in 2010. Statistics Latvia. // Baltic-course. Retrieved: http://www.baltic-course.com/eng/good_for_business/?doc=37290. Access: 15 February 2011.
8. Latvijas Statistikas gadagrāmata. 2009. – Rīga: Latvijas Republikas Centrālā statistikas pārvalde, 2010, 632 lpp.
9. Ziņojums par Latvijas tautsaimniecības attīstību. – Rīga: Latvijas Republikas Ekonomikas ministrija, 2009. gada jūnijs, 60, 97, 98 lpp.
10. Ziņojums par Latvijas tautsaimniecības attīstību. – Rīga: Latvijas Republikas Ekonomikas ministrija, 2008. gada jūnijs, 21, 27, 28 lpp.
11. Линдерман Д. Лес встал на пути в Египет. // Бизнес & Балтия. (2011, 7 февраля).
12. Линдерман Д. Лесопилки помогут Японии. // Бизнес & Балтия. (2011, 15 марта).
13. Гордеев В.В. Мировая экономика и проблемы глобализации: Учебное пособие. – М.: Высшая школа, 2008, с. 72 – 76, 231, 232.
14. Соколов Д. Пора пилить сук. // Бизнес&Балтия. (2009, 3 сентября). http://www.bb.lv/index.php?p=1&i=4372&s=1&a=159629.
15. Деревообработка скоро может зачахнуть. // Бизнес & Балтия. (2010, 11 ноября). Retrieved: http://arhiv.bb.lv./inde[.php?p=1&i=4693&s=31&a=170793&v.
16. Татарчук А. Мебельная отрасль оживает. // Бизнес&Балтия. (2009, 24 сентября). Retrieved: http://www.bb.lv/index.php?p=1&i=4389&s=31&a=160224.
17. Петрова. Чем дальше в лес, тем больше прибыль. // Телеграф. (2007, 12 ноября).
18. Резник-Мартов К.. О чем недоговаривает Банк Латвии. // Бизнес & Балтия. (2007, 18 октября). Retrieved: http: // www.bb. lv.
19. Дунда А. Страна обрастает деревьями. // Бизнес & Балтия. (2004, 17 июня).
20. Рылеева Е. Бизнесмены обидились на президента. // Бизнес&Балтия. (2008, 14 июля).
21. Юрис Бикис: реформы нельзя навязывать сверху. // Телеграф. (2009, 23 ноября).
22. Смирнов Е.И. Введение в курс мировой экономики:Учебное пособие. – М.: КНОРУС, 2008, с. 108, 111, 112.
23. Родионова И.А.Мировая экономика: Учебное пособие. СПб.: Питер, 2005, с. 440, 442.
24. Фаминский И.П. Мировое хозяйство: динамика, структура производства, мировые товарные рынки (вторая половина XX – начало XX1в.). Учебное пособие. М.: Магистр, 2007, с. 518, 527.
25. Колыхалов И.А. Мировой лесопромышленный комплекс: состояние, адаптация к глобальному кризису, тенденции эволюции. // Международная экономика, 2010, №6, с. 47.
26. Портер М.Э. Конкуренция. / Пер. с англ. - М.: Вильямс, 2000, с. 205 - 208.
27. Международные экономические отношения. Учебник / Под ред. И.П.Фаминского. М.:Экономистъ, 2001, с. 167.
28. Коляко Н. Оборот деревообрабатывающих предприятий в Латвии вырос за полгода на 48%. // БК, Рига, 05.08.2010). Retrieved: http://www.baltic-course.com/rus/drugie_otrasli/?doc=30052.
29. ПетроваО. Латвия может заинтересовать скандинавов мебелью. Телеграф, (2010, 19 мая). Retrieved: http://www.telegraf.lv/tags/proizvodstvo/news/latviiskie-stulyya-i-krovati-dlya-datchan.
30. Соколов Д. Премьер узнал, какому экспортеру жить хорошо. // Бизнес&Балтия. (2009, 21 сентября). Retrieved: http://www.bb.lv/index.php?p=1&i=4385&s=1&a=160091.
31. Коляко Н. Кампарс: экономика Латвии должна базироваться на экспорте. БК, Рига, 17.08.2009. Retrieved: http://www.baltic-course.com/rus/_analytics/?doc=17039.
32. Коляко Н. Латвийские экономисты сомневаются в правильности выбора приоритетных отраслей. // БК, Рига, 05.08.2009. Retrieved: http://www.baltic-course.com/rus/_analytics/?doc=16562.
33. Князева О. Кризис позади. Как работать, чтобы заработать. // Деловые Вести. (2010, 25 октября,№ 42). Retrieved: http://www.ves.lv/article/146076.
34. Киртовская М. Латвийские проблемы и решения стоит изучить. // Бизнес & Балтия. (2011, 1 февраля).
35. Пелена-Кудрина И. Фанера летит в Европу. // Бизнес &Балтия. (2010, 2 ноября). Retrieved: http://www.bb.lv/index.php?p=1&i=4685&s=1&a=170512.
36. Коляко Н. Экспорт лесной продукции в 2010 году вырос на 46% и составил 1,022 млрд. латов. // БК, Рига. Retrieved: http://www.baltic-course.com/rus/good_for_business/?doc=38000. Access: 3 March 2011.
37. Коляко Н. В 2010 году показатели экспорта мебели из Латвии остались на уровне 2009 года. // БК, Рига Retrieved: http://www.baltic-course.com/rus/drugie_otrasli/?doc=38067. Access: 4 March 2011.
38. Николаев Ю. Пришло время вырубать государственные леса. // Телеграф. (2009, 8 января). Retrieved: http://www.telegraf.lv/index.php?act=archive&date=20090108&gid=33&id=43060.
39. TOP500. Latvijas lielākie uzņēmumi. – Rīga: Dienas bizness, 2011, 138 – 142 lpp.

40. Николаев Ю. Регионы работают на экспорт. // Телеграф. (2008, 6 августа). Retrieved: http://www.telegraf.lv/index.php?act=archive&date=20080806&gid=33&id=40446.
41. Оболенский В. Россия на мировых рынках готовой продукции: что впереди?// МЭ иМО, 2007, №8, с. 16.
42. Куренков Ю. РФ-интегация в глобальное хозяйство: инновационный императив. // МЭ иМО, 2008, №10, с. 108.
43. Клинов В.Г. Мировой рынок высокотехнологичной продукции. Тенденции развития и особенности формирования конъюнктуры и цен. – М.: «Экономика», 2006, с. 20, 21.
44. Ломакин В.К. Мировая экономика. – М.: ЮНИТИ-ДАНА, 2007, с. 213.
45. Пахомова Н.В., Рихтер К.К. Экономика отраслевых рынков и политика государства: Учебник. – М.: Экономика, 2009, с. 437.
46. Пискулов Ю.В., Бурдин Н.А. Международная конкурентоспособность лесопромышленного комплекса России. // Международная экономика, 2010, №10, с. 56, 57, 61.
47. Юданов Ю. Балтийский регион: особенности формирования благоприятного климата для прямых иностранных инвестиций. // МЭ и МО, 2003, №3, с. 109.
48. Космачев К. Что уругвайцу хорошо, то латвийцу очень вредно. // Телеграф. (2005, 9 февраля).
49. Зубков В. Роль государства в развитии лесного комплекса России. // Вопросы экономики, 2010, №6, с. 122.
50. Миндлин Ю.Б. Зарубежный опыт функционирования кластеров в экономически развитых странах (Дания, Германия, Австрия, Финляндия, Италия, Франция). // Экономические науки, 2009, № 12, с. 461.
51. Флегонов К. Биоэкономика, основанная назнаниях. // Международная экономика, 2009, №2, с. 52, 57.
52. Мировая экономика: прогноз до 2020 года. Под ред. Дынкина А.А. – М.: Магистр, 2007, с. 100, 102, 158.
53. Суэтин А. Биосфера и человечество: логика выживания. // МЭ и МО, 2007, №5, с. 121.
54. Суэтин А.А. Мировая экономика. Международные экономические отношения. Глобалистика. - М.: КНОРУС, 2008, С. 216.
55. Мировой рынок нанотехнологий. // БИКИ, 2009, №92, 15августа. С. 10.
56. Березина А.А. Структурные изменения в мировой экономике и смена технологических укладов. // Международная экономика, 2010, №9, с. 30 -31.
57. Телеграфов П. Латвия теряет миллионы и Нобелевскую премию. // Телеграф. (2010, 17 сентября). Retrieved: http://www.telegraf.lv/tags/nauka/news/latviya-teryaet-milliony-i-nobelevskuyu-premiyu.
58. Леонова Т. Национальная инновационная система Финлядии: модель построения экономики знаний. // Проблемы теории и практики управления, 2010, №11, с. 93, 94.
59. Гришин А. Взаимозависимость экономик стран мирового хозяйства в условиях глобализации. / Актуальные проблемы психологии, бизнеса и социальной сферы общества: теория и практика. Международный сборник научных трудов. Том. 5. Часть1. – Рига: ВШП, 2008, с. 103 – 132.
60. Кейш С., ГришинА. Западный опыт приоритетности сферы высшего образования в условиях глобализации. // Professional Studies: Theory and Practice, 7, 2010, pp. 73-74.
61. Клавдиенко В. Стимулирование инновационной активности в странах ЕС: национальный и наднациональный аспекты. // Проблемы теории и практики управления, 2007, №10, с. 61, 63.
62. Телеграфов П. Академик: инновации в Латвии – это иллюзия. // Телеграф. (2011, 3 февраля). Retrieved: http://www.telegraf.lv/tags/nauka/news/akademik-innovacii-v-latvii-eto-illyuziya.
63. Глухих А. Ученым выделят гигантский грант. // Телеграф. (2010, 25 июля). Retrieved: http://www.telegraf.lv/news/uchenym-vydelyat-gigantskii-grant).
64. Коляко Н. В Латвии будет создано 10 исследовательских центров государственного значения. // БК, Рига. Retrieved: http://www.baltic-course.com/rus/education/?doc=30479. Access: 17 August 2010.

Consumer Assessment on Whole Grain Products in Latvia

Daiga Kunkulberga, *associate professor*
Latvia University of Agriculture
Valdis Seglins, *professor*
University of Latvia

Abstract. Current consumer consumption patterns show that whole grain foods are becoming more popular, also in areas where there is no tradition of consuming whole grain foods. However, this process is slow and takes more time for the countries like Latvia, where there are strong consumption historical traditions with attention paid to producers (bakers) brand name and specific quality of bread. Market and consumers surveys do not indicate whole grain presence and admixtures as bread quality increasing measure, yet knowledge and awareness regarding healthy products still do not reach consumers expectations and are not driving the choice in the market. This indicates that the society of Latvian needs diverse and wider information on whole-wheat products and their positive qualities. It is possible that preparation of that kind of information is conjunctive with health authorities, and regular market studies will support the necessary impacts on local market conditions.
Key words: whole grain products, consumer expectations, Latvia.

Introduction

Today over the world, foods made with whole grain are recognised as important sources of nutrients including fibre, trace minerals, and certain vitamins. The health benefits of whole grain are well documented by a number of studies. The current consumer consumption patterns show that whole grain foods are becoming more popular also in the areas, where there is no tradition in consuming whole grain foods. This is in line with the current and projected consumer trends in which a growing awareness of the importance of a healthy gut is present. In addition, an increasing interest in ancient grain and search for new textures sustains this development. Whether, this will be a long-term change in consumption patterns will depend on different factors. Hence, some countries have set up ambitious long-term stimulation programmes for whole grain foods; yet the availability of fair priced and tasting bread products will be at least as important. There are several definitions of whole grain products on place and this strongly dampens the development of market activities and producers interests in new activities, including new products development. In contrast, the whole grain, fibre, and bioactive components can be recognised as an integral platform for the advancement of grain and health industry. In this respect, a considerable research may explore the biological, consumer, and technological aspects of grain foods throughout the continents. In this frame, the consumer attitude to whole grain products was studied in Latvia based on several individual consumer surveys. The research aim reported here is to determine consumer attitudes to bread choices and their affecting factors. The following tasks are set to achieve the aim:

- to find out the bread consumption trends;
- to analyse factors that influence purchasing choices;
- to survey whole grain bread reputation and habits.

Materials and methods

The following research methods have been used in the paper - general research methods, sociological research method, logically constructive, and statistical research methods.

For the study based on limited number of public and market surveys, reaching certain data validation and number of respondents exceeds a statistical significance level. There are only four individual consumer surveys in Latvia regarding bakery products that have been carried out since 2007. A quantitative research - conduct of an opinion poll of Latvian residents was carried out in December 2007. The survey covered more than 0.1% of households in the country (n = 1009), and the respondents represented the population aged 15-74 years. A

qualitative research - focus group discussion and qualitative research – survey was carried out in December 2008, where more than one thousand respondents (n = 1063) aged 15-74 years participated in the study. In 2010 a survey was carried out on whole grain products use in the assortment of consumers (n = 133) and it involved the interviews with eight producers (mills and bakeries) manufacturing whole grain products.

Results and discussion

Latvia is a country with very strong traditions of bread baking, with special rye bread baking recipes. Always partially processed grain has been used for the rye dough. Grain could be crushed, broken, or very coarse meal of paddy grains. This type of bread is called rough rye bread and the production technology takes up to 30 hours. First, there are economic reasons- mill services are expensive, and refined flour is harder to obtain than meal. It is nowhere mentioned whether the bread was used to improve the health or as a treatment of diseases.

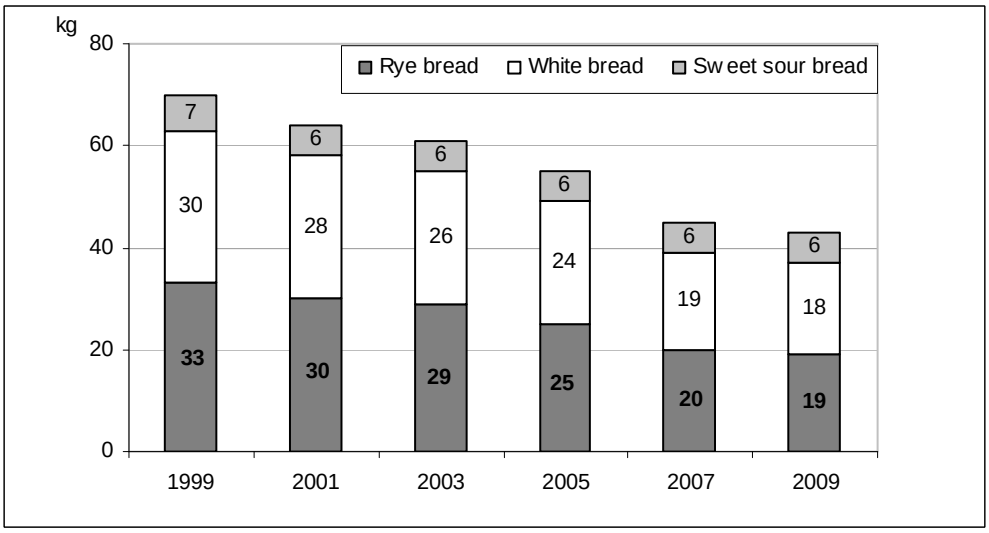
During the previous century mass food production influenced consumer choice and advertised fine meal products; while whole grain products or whole grain flour was not required and they were made only on specific demands, for example, those of health authorities. During the Second World War the whole grain products were actively used in the absence of flour, bread was available only on special food cards and rye bread (Figure 1) was baked using only dough of whole grain rye flour. This bread was called "poor bread" and this derogative name is still very robust in earlier-generation population in Latvia.

Nowadays, nearly 60 companies are manufacturing bread in Latvia. Together they produce about 400 tons per day of different type of bread production; yet only 8 companies produce more than 10 tonnes per day. The rest of the companies are small. More than half of all bread producers are producing various wholegrain products and they are located all over Latvia. However, the quantity of whole grain production is not significant and these products do not form a stable and dynamically growing segment. Latvian manufacturers of whole grain products are characterised as typical niche producers.

Fig. 1. **Typical Latvian rye bread**

The consumer attitude is significant for producers, and there have been done many various researches on different products and product groups in Latvia. However, most of them are done by various institutions and companies with different methodologies. Therefore, it is impossible to compare the results directly and this is a reason why various local marketing researches have a limited usage. In addition, a number of non-governmental organisations perform assessments of the healthy lifestyle advertisements and various student surveys (for health training classes) etc. are available. Unfortunately, even the official statistical surveys cannot be used for the analysis, since whole grain products are not individually assessed, and the manufacturing companies are not creating that type of statistics themselves.

Total bread consumption in the country and its dynamics. This is a matter of a context, where one can overlook the placement of wholegrain products and the possibilities of development. Overall, bread and bakery products consumption in Latvia is decreasing (Eglite A., 2010).



Source: Eglite A., 2010

Fig. 2. **Consumption of bakery products per capita, kg/year**

If in 1999 one person consumed 70 kilograms a year, then in 2007 – the consumption reduced to 45 kilograms, and it has decreased to about 43 kilograms in 2009 (Figure 2). There are multiple reasons for this, but the main reason refers to eating traditions and price availability (Kunkulberga D., Seglins V., 2010). However, the total reduction in consumption has not led a group of bakery products market to an internal restructuring. It is conservative and is characterised by the following key indicators.

Source: Analītisko pētījumu un stratēģiju laboratorija SIA, 2008

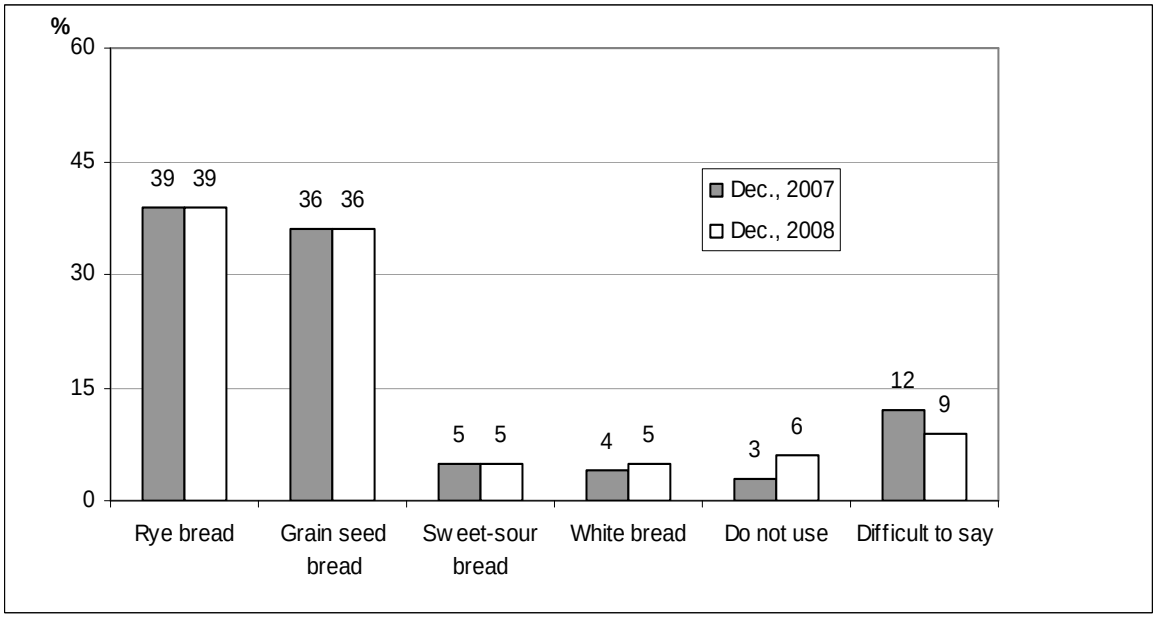
Fig. 3. **Bread consumption changes in Latvia, consumer response (+1 = increase; -1 = decrease). FGD in Riga and Bauska (18-65 years), n=1063**

The data show that the consumption of bread differs in urban and rural areas, but if one compares the historical data until the year 2005, then it may be seen that the part of market

share for wheat bread has increased. The current statistics do not separate the whole grain product consumption individually and they are included into grain bread and other bread category. Producers' interviews and everyday observations show that whole grain bread is more popular among consumers in cities.

Surveys indicate a change in nuance. All respondents indicate the decrease in consumption of bread in their households, but the intensity of the reduction is different (Figure 3). The rye bread consumption has decreased just a little (1%), white bread consumption has gone down by about 19%, sweet-sour bread - by 25%, and grain bread – by about 15%. Often in surveys people approve choices based on emotional desire as well as they want to show themselves from a brighter side. In that way, the question about the health and using various types of bread has been answered significantly different from what one sees on the bread market.

In most of the surveys, approximately 38-40% of the respondents agree that rye bread is healthier. It is followed by 36% of respondents, who say that grain / seed bread is healthier, and only about 5% of respondents say that sweet-sour bread and white bread is healthier (Figure 4). These data do not show the real bread type volume ratio in the country.



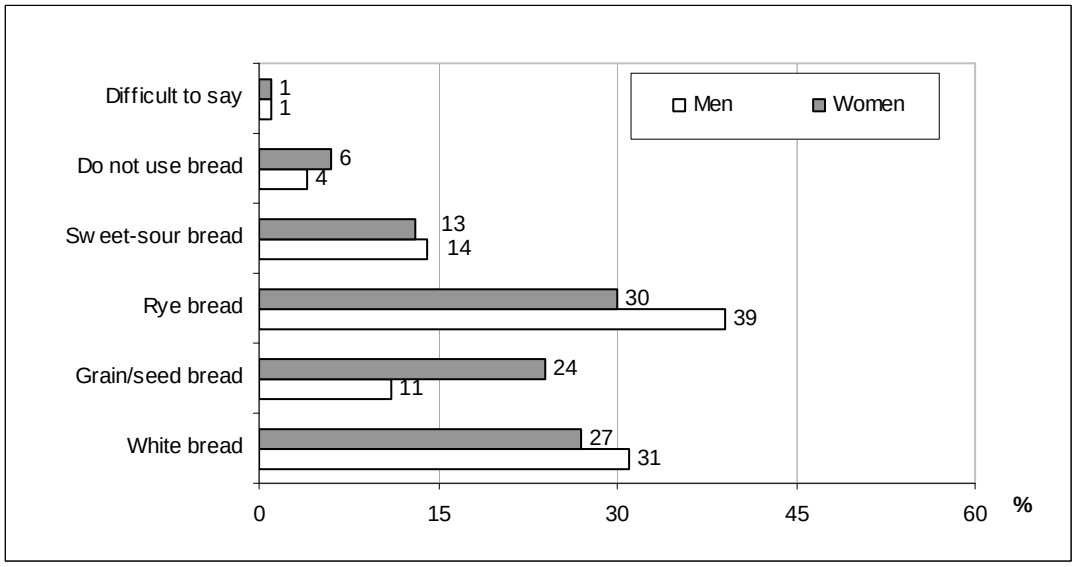
Source: Analītisko pētījumu un stratēģiju laboratorija SIA, 2008

Fig. 4. **Healthy bread. Consumer response regarding the healthiest bread, respondents numbers: Dec.07=963; Dec.08=1062**

It is typical that grain and seed bread selection is very stable throughout all ages of respondents. The differences are only in the range of 2-5%, with the main respondents in the age group of 55-74 years. It is a tendency and it is also addressed to rye bread, which is mainly due to consumers dental quality, since people choose mushy white bread or rye-wheat mixed bread baked in the form.

Relatively reliable differences have been found between bread selections of respondents by gender (Figure 5). The biggest differences have been observed directly in grain / seed bread selection – it is more than two times more likely to be chosen by women. These trends have been noticed in many recent years' surveys.

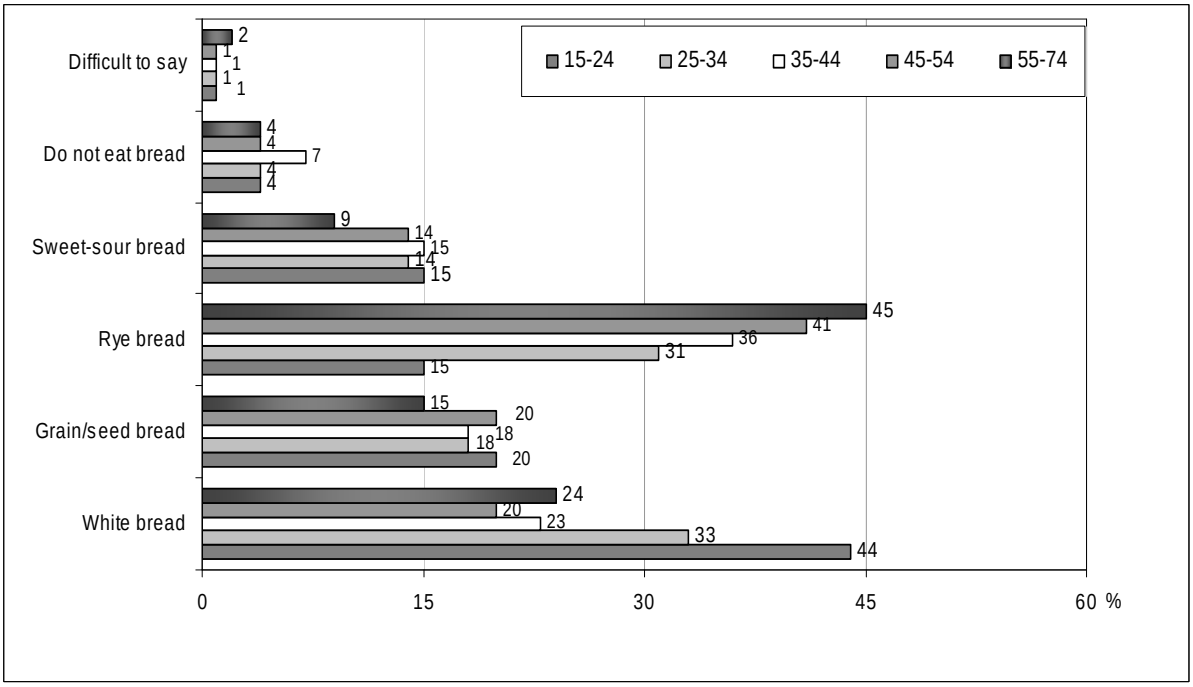
The age structure of grain / seed bread consumers is very contrasting - with the highest consumption in the group of 45-54 year old respondents and the lowest consumption - in the next group 35-44 year old respondents (Figure 6). It is a group, which prefers white bread.



Source: Analītisko pētījumu un stratēģiju laboratorija SIA, 2007

Fig. 5. **Bread consumption of men and women in Latvia, respondents numbers: Dec.07=1009**

People up to 35 years consume rye bread more than two times less than older respondents. Overall, rye bread is more popular among men, young people (15-24 years), Latvians, and people with a primary education. Among ethnic groups, this difference does not exist. Grain / seed bread is better acknowledged among women, and Latvians. There is no difference in choice between education groups in this question.



Source: Analītisko pētījumu un stratēģiju laboratorija SIA, 2007

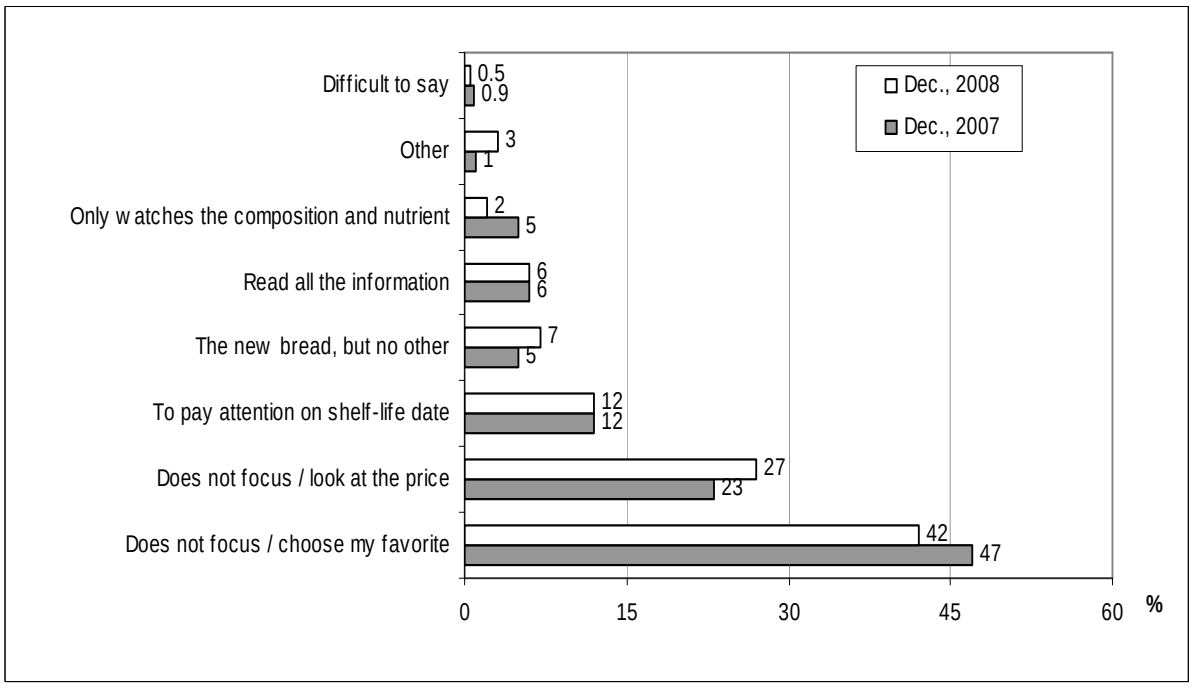
Fig. 6. **Bread consumption in different age groups in Latvia, respondents numbers: Dec.07=1009**

The perception of bread healthiness in the society is contrasting. The analysis by the age groups shows that the older the person, the more often s/he names rye bread as the

healthiest. In contrast, young people are increasingly recognising grain / seed bread as the healthiest diet (41% of respondents aged 15-24 years and 40% of respondents aged 26-34 years). The authors have noticed that rural residents choose their own favourite bread, and do not pay attention to what is written on the label (53% - in rural areas, 46% - in other urban areas, and 42% - in Riga). People who live in rural areas are more sensitive to price of a product than people living in urban areas (26% and 21% respectively). Unfortunately, the nutrient composition and the ingredients are important for 2% of respondents living in rural areas, and 6% of urban population. It is not surprising, since almost half of Latvian population (47%) admit that they do not pay attention to labels (Figure 7). All the information is read only by 6% of the bread users, but the prices are important for only 24% of respondents. Recent surveys indicate that only 55% of respondents are interested in more detailed information about bread as product.

In addition, the authors would like to stress that during recent years, bread shopping places are being changed and in the beginning of the year 2010 more than 53% of respondents were buying bread in supermarkets; while 47% of respondents do not pay attention to bread they buy.

Representatives of the companies, who participated in the survey, noted that at least three or more new products have developed and sold over the previous year. One of the major lines of new product is less expensive products; it is noted by 50% of the interviewed producers; while one third of them indicate on the need to manufacture products with high nutritional value.



Source: Analītisko pētījumu un stratēģiju laboratorija SIA, 2008

Fig. 7. **Focus on bread packaging, respondents numbers Dec.07=963; Dec.08=1063**

Less than half of the interviewees of grain processing products and bread producers are considering manufacturing products of whole grain flour. The majority does not consider it necessary, and recognise that it is not specifics of a company.

Conclusions

The survey data show that 95% of Latvian residents use bread daily. The majority (80%) of Latvian residents choose bread that tastes also to family members, while 24% are looking at the price.

The survey indicates that bread choices remain contrasted in Latvia and the choice of high quality grain/ seed and meal bread products is not popular. In all age groups, the choice of women does not depend on the place of residence. Unfortunately, the authors have to point out that buyers are uninformed and they are not willing to find out more about qualities of the product and its healthiness. Almost half of Latvian population recognises that they do not read information on the bread packaging; though it is read by only 6% of bread users.

Indirectly, this indicates that the society of Latvia needs diverse and wider information on whole grain products and their positive qualities. It is possible that preparation of that kind of information is conjunctive with health authorities, since the food impact on people's health is very poorly recognised among the respondents. Totally, 40% of respondents thought that the healthiest was rye bread, and 36% of respondents named the grain / seed bread as healthy.

However, there is a lack of adequate knowledge about the characteristics of products and alteration in public opinion now to plan particular activities. To fulfil this, there is a need for a more diverse and prioritised whole wheat bread product research and possibilities to vary the relatively uniform and standardised production. The authors believe that such kind of research would be more effective in cooperation between researchers from different countries at least within the EU and bread manufacturing companies as responsible partners.

Bibliography

1. Analītisko pētījumu un stratēģiju laboratorija SIA. (2007). Maizes produktu uzturvērtības nozīme un ietekme pirkuma veikšanas brīdī. Kvantitatīvs pētījums, LVAEI/2007/56; 56 lpp.
2. Analītisko pētījumu un stratēģiju laboratorija SIA. (2008). Maizes patēriņa izmaiņas Latvijā. Kvantitatīvs pētījums, LVAEI/2008/038; 28 lpp.
3. Dean, M., Shepherd, R., Arvola, A., Vassallo, M., Winkelmann, M., Claupein, E., Lähteenmäki, L., Raats, M.M., Saba, A. (2007). Consumer Perceptions of Healthy Cereal Products and Production Methods. *Journal of Cereal Science*, Volume 46, pp. 188-196.
4. Eglite, A. (2010). Maizes patēriņš. *Seminārs "Mūsu dienišķā maize", 9.12.2010., LLU.* Retrieved: http://www.llu.lv/getfile.php?id=27048. Access: 10 January 2011.
5. Kunkulberga, D., Seglins, V. (2010). *Maizes ražošanas tehnoloģija*. Rīga: Rīgas Tehniskās universitātes izdevniecība, 292 lpp.
6. EDO CONSULT SIA (2008). Aggregated Information on the Food Industry Needs and Opportunities in the Latvian Food Industry in the Context of the Strategic Science Plan. p. 25.
7. Saba, A., Vassallo, M., Shepherd, R., Lampila, P., Arvola, A., Dean, M., Winkelmann, M., Claupein, E., Lähteenmäki, L (2010). Country-wise Differences in Perception of Health-related Messages in Cereal-based Food Products. *Food Quality and Preference*, Volume 21, pp. 385-393.
8. SKDS. (2010). *Latvian Population Survey*, January 2010.

Impact of Taxes on the Budget of Latvia's Households

Solvita Laivina, *Mg.oec., lecturer School of Business Administration Turība*
Aija Eglite, *Dr.oec., associate professor, Latvia University of Agriculture*

Abstract. Government decisions in the field of fiscal policy affect any household. On the one hand, taxes reduce the disposal money of households, their consumption, and savings. On the other hand, households may gain income in the result of redistributing the government budget. The present paper provides a short insight into the basic principles of Latvia's tax system; it assesses, which taxes affect the budget of Latvia's households most. Latvia's tax burden and effective tax rates were analysed, the impact of taxes on households in Latvia, Estonia, and Lithuania, and the average indicators of 27 European Union countries were compared in the present research.
The tax burden in Latvia is not relatively heavy, but the proportion of revenues gained from consumption taxes in Latvia in the total tax revenues is significantly higher than in the EU on average. In addition, the proportion of revenues gained from labour taxes is slightly above the EU average level. Such trends in the tax revenues significantly affect the net income of Latvia's households.
Key words: household, taxes, income, expenditure, structure.

Introduction

Taxes are a compulsory payment to the central government budget or municipal budgets, thus, government decisions on the issues of fiscal policy relate to the budget of any household. A national tax policy might both increase and decrease the wellbeing of households. Taxes can be interpreted both as a factor decreasing the disposable income of households and as a factor increasing the purchasing power of population by gaining additional incomes in the result of redistributing tax revenues. The income structure of Latvia's population, tax rates, the taxable object, and the procedure of applying taxes determine a situation that the largest proportion of the government budget consists of revenues of taxes – personal income tax, state mandatory social insurance contributions, and value added tax – that significantly affect households. Significant changes have taken place regarding the personal income tax and the value added tax in Latvia in 2009, 2010, and 2011. Since 1 January 2009, the basic rate of value added tax was increased from 18% to 21%, but on 1 January 2010, it was increased to 22% (LR Saeima „Par pievienotās vērtības nodokli", 1995). Since 1 July 2009, the non-taxable minimum was reduced from LVL 90 to LVL 35, which raised the personal income tax paid to the government budget (LR MK Nr. 924, 2008; LR MK Nr. 531, 2009). Since 2011, the non-taxable minimum was increased to LVL 45, but the tax relief per dependent was set at LVL 70 (LR MK Nr. 1097, 2010). It has to be noted that the rate of personal income tax has been reduced from 25% to 23% since 1 January 2009. Such a positive trend did not continue for a long period, as a new rate of personal income tax of 26% came into force on 1 January 2010 (LR Saeima "Par iedzīvotāju ienākuma nodokli", 1993). The rate of personal income tax was reduced by 1 percentage point to 25% in 2011 (LR Saeima "Par iedzīvotāju ienākuma nodokli", 1993), but the proportion of state mandatory social insurance contributions paid by employees was increased from 9% to 11% (LR Saeima „Par valsts sociālo apdrošināšanu", 1997). The minimum wage was increased to LVL 200 in 2011 (LR MK Nr.1096, 2010). Since 1 January 2010, the tax base of personal l income tax has also been extended by including income gained from capital; a rate of 10% was applied to dividends (LR Saeima "Par iedzīvotāju ienākuma nodokli", 1993). The significant changes in the fiscal policy affected the budget of Latvia's households. The statistical information available during the preparation of this research does not allow assessing completely the effect of these tax changes on the budget of households according to the average statistical indicators, but it allows to identify the situation before the mentioned changes in the legislation and to compare it with a situation in other EU Member States.

The research aim is to investigate the effect of Latvia's tax system on the income and expenditure in the budget of households. Research tasks: 1) to provide a theoretical insight

into the basic principles of Latvia's tax system; 2) to analyse the effect of taxes on the budget of Latvia's households; 3) to compare the tax burden and the effective tax rates in Latvia, Lithuania, Estonia, and the average indicators in the EU-27 countries.

Topicality. A fiscal policy that is implemented in time and is appropriate for the economic situation is an essential prerequisite for achieving sustainable development in the national economy and a high standard of living for the population. The effect of fiscal policy of Latvia's government on households is little researched. Decisions on raising taxes and consolidating the government budget are often made in a rush without a careful assessment of effects. A part of the society believes that the tax burden is already too heavy, thus, they expresses dissatisfaction with the tax system and the changes in taxes that negatively affect the population. It is necessary to assess the effect of taxes on Latvia's households before the tax changes of 2009-2011 in order to be able to discuss the economic justification and affectivity of tax changes in a long-term.

The following research methods were used to elaborate the paper: monographic method, grouping, analysis, synthesis, comparative analysis, graphic analysis, statistical analysis, and generalisation.

Results and discussion

The tax system in Latvia

In the law "On Taxes and Fees" of the republic of Latvia, the term tax is interpreted as a compulsory payment made to the government budget or municipal budgets (basic budget or special budgets) that is not a payment for purchasing a certain commodity or service, not a penalty payment and a late payment as well as not a payment for using state capital or a share of it (LR Saeima „Par nodokļiem un nodevām", 1995).

Presently, the tax system that is in force in Latvia is based on the tax laws passed as a result of the 1995 tax reform, which were significantly amended and supplemented as well as passed again over the next years.

Totally, 12 taxes are collected in Latvia (LR Saeima „Par nodokļiem un nodevām", 1995). Experts of the International Monetary Fund admitted "Latvia's tax system has many positive features: the tax burden is relatively low; the tax rates are also low; the tax base is quite extensive, although a few exceptions exist (for instance, income from capital), and the degree of progressiveness is not too high. In general, we do not think that significant reforms are required" (Starptautiskais Valūtas fonds, 2008).

Taxes are classified into various categories by type and economic function.

Taxes by type are classified into the following categories: 1) indirect taxes are the taxes on output and imports. Their collection relates to the production and import of goods and services, the ownership or use of buildings, or other assets used in production. The following taxes in Latvia belong to indirect taxes: value added tax, excise tax, customs tax, tax on automobiles and motorbikes, and tax on electric energy. A specific feature of indirect taxes is that these taxes are "transferred" on consumers by including a tax in the price of a commodity or service; 2) direct taxes are the taxes, the taxable object of which (most often income or property) belongs or relates to a taxpayer itself. The following taxes in Latvia belong to direct taxes: corporate income tax, personal income tax, state mandatory social insurance contributions, real estate tax, and micro-enterprise tax; 3) other taxes: natural resource tax, and tax on lotteries and gambling (LR FM „Nodokļu un nodevu sistēmas …..").

Taxes by economic function are classified into earned income taxes are collected on earned income. These taxes are paid both by employees themselves (personal income tax and state mandatory social insurance contributions paid by employees) and by their employers (state mandatory social insurance contributions paid by employers). Taxes on capital income that are applied to an increase in capital gained by enterprises, households, and self-employed individuals as well as to accrued wealth. Capital income is understood as the profit and income gained from a property. Consumption taxes that are applied to all transactions made between buyers and sellers. In fact, consumption taxes are applied to what individuals consume, not to what they earn (LR FM „Nodokļu un nodevu sistēmas …..").

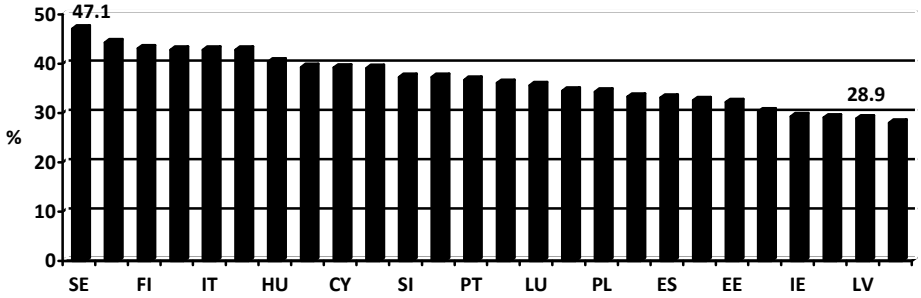
The national tax system is established for performing the following functions: 1) fiscal function - taxes have to provide sufficient funds for performing the state's functions and

supplying public goods and services; 2) social function - taxes have to provide a redistribution of the national income that is acceptable for the society and among various social groups; and 3) regulatory function - the burden and structure of taxes, within limits, have to make as small negative effect as possible on the economic activity, while at the same time developing the most important industries of the country (Lukašina O.).

The functions of tax system determine that taxes are both an item of household expenditure and an item of possible income. Therefore, by analysing the impact of taxes on the budget of Latvia's households, two aspects will be targeted – budgetary social support payments as an income source of population and taxes as a factor reducing the disposable income of consumers.

Taxes as a factor reducing the disposable income of consumers

Tax burden indicates a share of Gross Domestic Product that is redistributed by means of taxes (Dārziņa L., 2008). If analysing tax revenues as a percentage of Gross Domestic Product, one of the lowest tax burdens in the EU is observed in Latvia.



Source: European Commission data, 2010

Fig. 1. **Tax revenues as a percentage of GDP in the EU Member States in 2008**

Over the period from 2004 to 2007, Latvia's tax system was harmonised with the EU tax system; as a result of it, the rates of several indirect taxes were raised as well as the economic boom produced large tax revenues, thus, increasing the total tax revenues as a percentage of GDP. This indicates that the population wishes to pay taxes in good faith if the largest part of population admits the taxes to be adequate in the respective economic situation. With the beginning of the economic recession and decrease of the private consumption faster than the GDP in 2008, the proportion of value added tax revenues to GDP significantly decreased, which caused a decline up to 28.9% in the proportion of total tax revenues to GDP (30.4% in 2006 and 30.5% in 2007) (European Commission, 2010). Therefore, the tax burden in Latvia in 2008 was the second lowest in the EU. Taking into consideration the tax policy changes that came into force in 2009 and 2010, the Ministry of Finance of the Republic of Latvia forecasts that the proportion of total tax revenues in GDP will increase in 2010 (LR FM 2010.gada valsts budžeta projekts, 2009). It is possible that at the end of 2009 when this forecast was made, the effects of the unstable business environment, the decrease in domestic consumption, and the population's dissatisfaction caused by the raised taxes on both the GDP and the tax revenues were not completely assessed.

The proportions of several taxes in the total tax revenues have to be found to analyse the effect of relatively low tax burden on households.

The direct taxes in Latvia account for the largest proportion in the total tax revenues. In 2008, when the largest proportion of direct taxes in the total tax revenues was observed, it accounted for 65.37% of total tax revenues (social insurance contributions – 33.33% and other direct taxes – 32.04%). In 2008, the indirect taxes accounted for 33.38% of total tax revenues. The decrease in the proportion of direct taxes in 2009 can be mainly explained by a decrease in the revenues of corporate income tax and an increase in the proportion of excise tax.

Table 1

Tax revenues of the consolidate government budget between 2005 and 2009 (% of total tax revenues)

	2005	2006	2007	2008	2009
Direct taxes	**59.49**	**59.2**	**61.21**	**65.37**	**63.34**
Personal income tax	19.77	19.67	19.84	20.57	19.82
Social insurance contributions	30.31	29.94	30.78	33.33	36.16
Corporate income tax	7.02	7.6	8.93	10.06	5.36
Real estate tax	2.39	1.99	1.66	1.41	1.98
Indirect taxes	**39.6**	**39.85**	**37.9**	**33.88**	**35.9**
Value added tax	26.29	27.85	26.88	22.33	21.7
Excise tax	12.19	10.96	10.01	10.81	13.7
Tax on automobiles and motorbikes	0.37	0.41	0.37	0.19	0.07
Tax on electric energy			0.01	0.02	0.02
Customs tax	0.75	0.62	0.62	0.53	0.41
Other taxes	**0.91**	**0.96**	**0.9**	**0.75**	**0.76**
Natural resource tax	0.4	0.33	0.23	0.18	0.2
Tax on lotteries and gambling	0.51	0.63	0.66	0.57	0.56
Total	**100**	**100**	**100**	**100**	**100**

Source: LR FM Nodokļu un nodevu sistēmas attīstības pamatnostādņu projekts 2011 – 2015

According to the economic functions of taxes, the taxes of earned income dominate, accounting for 53.9% in 2008 and 55.98% in 2009 of the tax revenues. If comparing the proportions of tax revenues by economic function with other EU Member States, the proportion of consumption taxes in total tax revenues in Latvia is considerably higher than in the EU on average, the proportion of labour taxes is slightly above the average EU level; whereas the proportion of capital taxes is significantly below the EU average. A similar situation is also observed in Lithuania and Estonia (European Commission, 2010).

The income structure of Latvia's population, the tax rates, the taxable object, and the procedure of applying taxes determine that the majority of the government budget consists of the revenues of taxes that affect the population most. First, these are the direct taxes: personal income tax and state mandatory social insurance contributions, while the value added tax has the largest affect among the indirect taxes.

An effective rate of taxes is an indicator that shows the distribution of tax burden among the factors of production and consumption as well as changes in the tax burden. The effective rate of taxes indirectly reflects the specifics of the entire tax system, including tax rates, tax allowances, and deductions stipulated by laws. The effective rate of taxes is computed by dividing total revenue of a tax (or a group of taxes) by an indicator that indicates the base of this tax. The effective rate of taxes for consumption in Latvia in 2008 was 17.5%, which is 4 percentage points below the average EU rate (21.5%); lower than in Estonia (20.9%), and the same as in Lithuania (17.5%). It has to be noted that the increase in the rates of VAT and excise taxes in 2009 also raised Latvia's effective rate of taxes for consumption (European Commission, 2010).

The effective rate of taxes for labour in Latvia in 2008 was 28.2%, which is significantly below the average EU rate (34.2%) as well as lower than in Estonia (33.7%) and Lithuania (33%). In 2008, the effective rate of taxes for labour significantly decreased compared with Latvia's indicators of the previous years (31.1% in 2007, 33.1% in 2006, and 33.2% in 2005). It has to be pointed that over the period of 1995-2004, the effective rate of taxes for labour in Latvia was slightly above the average EU indicator, while during the period of 2005-2007 it was slightly below the average EU rate, yet in 2008, it was 6 percentage points lower than the average EU rate (European Commission, 2010). The decrease in the burden of earned income taxes is related to a decrease in the rate of social insurance contributions as well as to the fact that a part of social insurance contributions has been allocated to the old-age pension scheme since 2001. During the period of 2001-2006, the rate of social insurance contributions allocated to the old-age pension scheme was 2%, in 2007 it was 4%, but in 2008 – 8% (LR Saeima „Valsts fondēto pensiju likums", 2000). This part of social insurance contributions is

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

not included in the tax burden, as it indicates the capital of individuals, which is managed by them by choosing the most appropriate pension fund.

Table 2

Net monthly wages and income surplus (minimum gross wage) (EUR)

	2006	2007	2008	2009 (1 January – 30 June)	2009 (1 July –31 December)	2010	2011
Minimum gross wage	128.06	170.74	227.66	256.17	256.17	256.17	284.57
Non-taxable minimum	45.53	71.14	113.83	128.09	49.80	49.80	64.03
SMSIC (9%)	11.53	15.37	20.49	23.05	23.05	23.05	31.30
Personal income tax	17.76	21.06	23.34	24.15	42.15	47.65	46.95
Minimum net wage (A)	98.77	134.32	183.84	208.92	190.92	185.41	205.96
Cost of minimum consumer basket (B)	166.36	189.09	228.11	239.28	239.28	237.86	246.19*
A - B	-67.59	-54.77	-44.28	-30.36	-48.36	-52.48	-40.22

** forecast of the Ministry of Finance of the republic of Latvia for inflation in 2011 – 3.5%*

Source: authors' construction based on the CSB data[1], laws of the Republic of Latvia[2], the Cabinet Regulations [3]

After comparing the effective rates of taxes in Latvia with those in other EU Member States, one has to conclude that the effective rates for consumption and labour are approximately the same as in the EU.

Table 3

Net monthly wages and income surplus (average gross wage) (EUR)

	2006	2007	2008	2009 (1 January – 30 June)	2009 (1 July –31 December)	2010	2011
Average gross wage	429.71	566.30	681.56	655.94	655.94	636.02	636.02
Non-taxable minimum	45.53	71.14	113.83	128.09	49.80	49.80	64.03
SMSIC (9%)	55.02	50.97	61.34	59.03	59.03	57.24	69.96
Personal income tax	86.38	111.06	126.59	107.84	125.84	137.53	125.51
Average net wage (A)	304.65	404.28	493.62	489.07	471.07	441.25	440.55
Cost of minimum consumer basket (B)	166.36	189.09	228.11	239.28	239.28	237.86	246.19*
Average consumption expenditure per household member (C)	220.82	284.94	330.19	277.84	277.84	no data	no data
A - B	138.29	215.20	265.51	249.79	231.79	203.39	194.36
A - C	83.84	119.34	163.43	211.23	193.23		

** forecast of the Ministry of Finance of the republic of Latvia for inflation in 2011 – 3.5%*

Source: authors' construction based on the CSB data[4], laws of the Republic of Latvia [5], Cabinet Regulations [6]

To assess Latvia's tax system in relation to the population's incomes, the calculation was done using the provisions of Latvia's legislation in relation to individuals who receive a minimum monthly wage and consume the minimum basket of goods and services.

From 2006 to 2010, only in 2009, the minimum wage before tax deductions exceeded the cost of minimum consumer basket (LR CSP „Iztikas minimuma patēriņa….."; LR MK

[1] Minimum consumer basket per capita

[2] the law "On State Social Insurance", 1997; the law "On Personal Income Tax", 1993

[3] Cabinet Regulations No. 790, 2005; Cabinet Regulations No. 858, 2006; Cabinet Regulations No. 592, 2007; Cabinet Regulations No. 791, 2008; Cabinet Regulations No. 481, 2005; Cabinet Regulations No. 443, 2007.

[4] Minimum consumer basket per capita; average monthly wage of employees by quarter and from the beginning of year; composition of consumption expenditure on average per household member a month

[5] the law "On State Social Insurance", 1997; the law "On Personal Income Tax", 1993

[6] Cabinet Regulations No. 790, 2005; Cabinet Regulations No. 858, 2006; Cabinet Regulations No. 592, 2007; Cabinet Regulations No. 791, 2008; Cabinet Regulations No. 481, 2005; Cabinet Regulations No. 443, 2007.

Nr. 790, 2005; LR MK Nr. 858, 2006; LR MK Nr. 592, 2007; LR MK Nr. 791, 2008). Therefore, it is logical that the expenditure exceeds the income over the analysed period.

From 2006 to July 2009, the negative difference between the minimum net wage and the cost of minimum consumer basket gradually declines, as the non-taxable minimum was raised and the rate of personal income tax was reduced to 23% in 2009 (before it was 25%). The negative difference between the income and expenditure has increased since July 2009 when the non-taxable minimum was reduced to EUR 49.8 a month. The negative difference continued to increase after the rate of personal income tax was raised to 26% in 2010, but the cost of minimum consumer basket, compared with the previous year, declined only by EUR 1.42. The current amendments in the legislation that determine tax deductions from earned income came into force on 1 January 2011. The minimum gross wage was raised to EUR 284.57, the non-taxable minimum was raised to EUR 64.03, the tax relief per dependent was raised to EUR 99.60, the rate of personal income tax was reduced to 25%, and the proportion of state mandatory social insurance contributions paid by employees was increased from 9% to 11%. Such changes in the taxes positively affect households having low income – the negative difference between the minimum net wage and the cost of minimum consumer basket decreases compared with the previous periods. The calculations show that a single-person household may financially subsist only in case this person's income is greater than the minimum monthly wage set in the country. Otherwise, the household will be forced to reduce its expenditure under the cost of minimum consumer basket.

A comparative calculation was done in relation to an individual who receives an average monthly wage in Latvia and consumes the minimum consumer basket or has the respective period's average consumption expenditure per household member.

One can conclude that an individual whose income is equal to the average monthly wage in Latvia and whose consumption is equal to the average consumption expenditure per household member in Latvia can make savings or increase the consumption expenditure above the average indicator. However, the positive difference between the minimum net wage and the cost of minimum consumer basket decreases more and more due to the impact of changes in taxes after 2008. The changes in taxes that came into force in 2011 negatively affected individuals with average incomes – their net wage slightly decreased. Taking into consideration the fact that the average size of households in Latvia is 2.5 individuals for already several years (LR CSP „Mājsaimniecību kopējais skaits ….."), the calculation was done for a family of 3 individuals in which one individual receives a minimum wage, the other one receives an average wage, but the child receives a state benefit of EUR 11.38. The net income of this household is EUR 661.35 a month in 2010, i.e. the family is short of EUR 52.23 to reach the full cost of minimum consumer basket. In the result of the country's fiscal and social policy, a family having a child additionally received EUR 34.69 a month in 2010, i.e. a state benefit of EUR 11.38 for families with a child and a reduction of personal income tax of EUR 23.31. In 2011, the net income of such a family will increase by EUR 21.44, i.e. up to EUR 682.79 a month. At the beginning of 2011, the state support for families with one child amounted to EUR 36.28. It has slightly increased compared with the previous year due to the increase of the tax relief for a dependent child. If the recommendations of the Ministry of Welfare of the republic of Latvia for the reform of family state benefits are implemented, the state benefit for the only child in a family will not be paid from 1 July 2011. A family having one child will receive only a reduction of personal income tax of EUR 24.90, i.e. the state support will be smaller than in 2010.

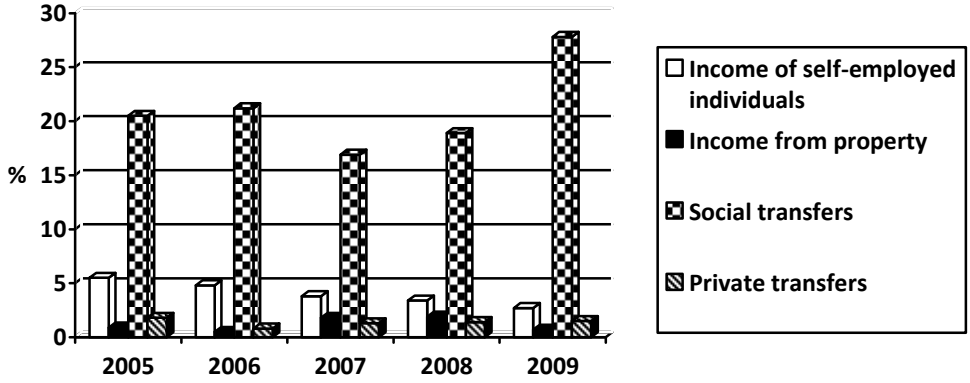
The government's intension to reduce gradually the rate of personal income tax (to 21% in 2015) and to raise the non-taxable minimum of personal income tax (up to LVL 95.00 in 2013) will decrease the tax burden for households (LR FM „Nodokļu un nodevu sistēmas attīstības…."). This intension has to be not only implemented in order to approximate the non-taxable minimum to the cost of minimum consumer basket. An increase in the non-taxable minimum raises the net wage by an equal sum for all employees, but a relatively smaller impact will be on those receiving low wages. As result of such tax changes, the tax burden on labour will decline, the tax system will become more progressive, and households with low incomes will gain relatively more. It has to be admitted that the content of complete consumer basket of goods and services approved in 1991 does not represent the minimum standard of

living accepted in the society. It is necessary to elaborate a methodology for updating the content of consumer basket of goods and services, and to approximate the non-taxable minimum to the cost of minimum consumer basket that is computed according to the new methodology.

The draft guidelines for the system of taxes and fees 2011-2015 have to be supplemented with the planned rise in the tax relief for dependent individuals. Taking into account Latvia's demographic situation, it is required to raise significantly the tax relief for a dependent child by granting the tax relief for dependent individuals until they reach the working age to both parents, or the tax relief has to be doubled in case one of the parents provides for the child. In this case, the tax relief for a dependent child would be twice as large as for other dependent individuals. It would prove that the government cares about families with children and would popularise an idea that both parents are responsible for the wellbeing of their family.

Impact of taxes on the income structure of households

The most frequent incomes of Latvia's population are wages (57.4% of the population earned wages in 2008, while 50.5% – in 2009), pensions (21.8% of the population had a pension as a source of income in 2008, and 21.5% – in 2009), benefits paid by the State Social Insurance Agency (14.6% in 2008 and 2009), and some financial support from relatives, friends, and family members (28.1% in 2008 and 32.7% in 2009) (LR CSP „Iedzīvotāju ienākumu avoti").



Source: data of the CSB of Latvia

Fig. 2. **Structure of disposable income of households within 2005 – 2009 (excluding wages)**

After assessing the structure of disposable income of Latvia's households, one has to admit that several most frequent income sources of individuals account for relatively small proportions of their total income. The majority of disposable income of Latvia's households consists of earned income. The proportion of wages accounted for 75.9% of the disposable income of households in 2008. It is by 1.5 percentage points less than in 2007, whereas more than in 2006 (73.6%) and 2005 (72.8%).

A significant share of the income of households consists of social transfers (20.5% of the disposable income of households in 2005, 21.2% – in 2006, 16.9% – in 2007, and 18.9% – in 2008). Private transfers, which are one of the income sources most frequently received by Latvia's households, account for a relatively small share of their disposable income or only 1.4% in 2008 (LR CSP „Mājsaimniecību rīcībā esošo ienākumu ……..").

As result of income redistribution, the largest share of incomes is received by the population as old-age pensions, sickness benefits, and financial support for families with children. In 2009, totally 44.6% of the expenditure on social protection was old-age pensions, 23.29% – sickness benefits, and 10.23% – child and family benefits. The rate of unemployment significantly increased compared with the previous years. Therefore, the

proportion of unemployment benefits rose to 9.36% of the expenditure on social protection (3.65% in 2007, and 4.03% in 2008) (LR CSP „Sociālās aizsardzības izdevumi …..").

Compared with 27 states of the European Union, including the Baltic States, the expenditure on social protection per capita in Latvia was EUR 665.16 in 2006, EUR 715.57 in 2007, and EUR 752.07 in 2008, which is one of the lowest indicators among the European countries. In 2008, on average EUR 5762.3 per capita were spent on social protection in the European Union Member States, but in the neighbouring states – Estonia and Lithuania – it amounted to EUR 1253.35 and 1231.98 respectively. In the European Union, only Romania (EUR 339.19) and Bulgaria (EUR 491.61) spent on social protection less than Latvia (Eurostat „Total expenditure on social protection per head of population).

One of the indicators used to compare the expenditure on social protection in various states is the proportion of expenditure on social protection of Gross Domestic Product. In Latvia, the sums spent on social protection constitute a lower proportion in Gross Domestic Product than in the European Union Member States.

Table 4

Total expenditure on social protection between 2006 and 2009. Current prices (% of GDP)

Geo/time	2006	2007	2008	2009
European Union (27 countries)	27.12	26.71	25.74	26.36
Estonia	12.55	12.12	12.29	15.05
Latvia	12.67	12.59	11.24	12.62
Lithuania	13.29	13.43	14.48	15.2

Source: Eurostat

The proportion of social payments to GDP did not significantly change also in 2009, when the GDP decreased and the rate of unemployment increased. It can be explained by the amendments in legal enactments that changed the provisions of receiving social benefits as well as by a decrease of wages. The EU Member States, which spent most on social support, as a percentage of GDP, in 2008, are as follows: France (30.76%), Sweden (29.35%), the Netherlands (28.49%), and Austria (28.18%) (Eurostat "Total Expenditure on Social Protection - Current prices (% of GDP)).

Conclusions

1. The tax burden in Latvia is relatively low. Yet compared with the other EU Member States, the proportion of consumption taxes in the total tax revenues in Latvia is considerably higher than in the EU on average, the proportion of labour taxes is slightly above the average EU level, whereas the proportion of capital taxes is significantly below the EU average. A similar situation is also observed in Lithuania and Estonia.
2. As result of redistribution of tax revenues, the incomes are mainly received in relation to social protection during the old age, in case of sickness, and as financial support for families with children. The social transfers constitute a relatively small part of the incomes of Latvia's households, the share of which had decreased during the economic boom. It shows that not only the fiscal policy implemented by the government, but also the decisions on social policy issues significantly impact the budget of households.
3. The majority of Latvia's government budget consists of the revenues collected from the taxes that largely affect households: the direct taxes such as the personal income tax and the state mandatory social insurance contributions, while the greatest affect among the indirect taxes is made by the value added tax. The financial support provided as result of the government's fiscal and social policy for households with children is small, but significant.
4. The non-taxable minimum and the tax relief for a dependent individual is a good mechanism for household support during the periods of bringing up children and unemployment. It is advisable to differentiate the tax relief by the number of children and for obtaining an education.

5. The methodology for computing the minimum consumer basket is outdated and in disharmony with the real life. It allows to identify only relative changes, but not to assess the real minimum consumer basket. The Ministry of Economics has to elaborate a methodology for updating the content of consumer basket of goods and services, and the Ministry of Finance has to approximate the non-taxable minimum to the cost of minimum consumer basket that is computed according to the new methodology.

Bibliography

1. Dārziņa L. (2008). Vai nodokļiem jāaizstāj uzņēmēja ekonomiskā lemtspēja. Komersanta vēstnesis Nr.1/2 (108/109) 09.01.2008 Retrieved: http://www.kvestnesis.lv/index.php?menu=doc&id=168953&fp_sadala=918. Access 5 December 2010.
2. Eiropas Savienības Statistikas birojs**.** Total Expenditure on Social Protection per Head of Population. ECU/EUR - [tps00099]. Retrieved: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00099&plugin=1. Access: 5 December 2010.
3. Eiropas Savienības Statistikas birojs. Total Expenditure on Social Protection - [tps00098]. Current Prices (% of GDP). Retrieved: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098&plugin=1**.** Access: 6 December 2010.
4. Europen Commission. (2010). Taxation Trends in the European Union. Retrieved: http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2010/2010_main_results_en.pdf. Access: 5 December 2010.
5. LR Centrālā statistikas pārvalde. Iedzīvotāju ienākumu avoti. Retrieved: http://data.csb.gov.lv/Dialog/Saveshow.asp. Access: 5 December 2010.
6. LR Centrālā statistikas pārvalde. Iztikas minimuma patēriņa grozs vienam iedzīvotājam. Retrieved: http://data.csb.gov.lv/Dialog/varval.asp?ma=II0010m&ti=II01%2E+IZTIKAS+MINIMUMA+PAT%C7RI%D2A+GROZS+VIENAM+IEDZ%CEVOT%C2JAM+PA+M%C7NE%D0IEM%2C+latos&path=../DATABASE/Iedzsoc/%CEstermi%F2a%20statistikas%20dati/Iedz%EEvot%E2ju%20ie%F2%E7mumi/&lang=16. Access: 20 December 2010.
7. LR Centrālā statistikas pārvalde. Mājsaimniecību kopējais skaits un mājsaimniecības vidējais lielums Retrieved: http://data.csb.gov.lv/Dialog/Saveshow.asp. Access: 5 December 2010.
8. LR Centrālā statistikas pārvalde. Mājsaimniecību rīcībā esošo ienākumu sastāvs un struktūra. Retrieved: http://data.csb.gov.lv/Dialog/Saveshow.asp. Access: 5 December 2010.
9. LR Centrālā statistikas pārvalde. Patēriņa izdevumu sastāvs un struktūra vidēji uz vienu mājsaimniecības locekli mēnesī. Retrieved: http://data.csb.gov.lv/Dialog/Saveshow.asp. Access: 5 December 2010.
10. LR Centrālā statistikas pārvalde. Sociālās aizsardzības izdevumi Latvijā saskaņā ar ESSPROS klasifikāciju (milj. latu). Retrieved: http://www.csb.gov.lv/notikumi/par-izdevumiem-socialajai-aizsardzibai-2009-gada-26153.html. Access: 5 December 2010.
11. LR Centrālā statistikas pārvalde. Strādājošo mēneša vidējā darba samaksa pa ceturkšņiem un no gada sākuma. Retrieved: http://data.csb.gov.lv/Dialog/Saveshow.asp. Access: 5 December 2010.
12. LR Finanšu ministrija (2009). 2010.gada valsts budžeta projekts. 25.11.2009. Retrieved: www.mk.gov.lv/file/files/.../prezentacija_ntsp_2511_budzets.ppt. Access: 18 December 2010.
13. LR Finanšu ministrija. Nodokļu un nodevu sistēmas attīstības pamatnostādņu projekts 2011 – 2015. Retrieved: http://www.mk.gov.lv/lv/mk/tap/?pid=40180580. Access: 5 January 2011.
14. Noteikumi par ģimenes valsts pabalsta un piemaksas pie ģimenes valsts pabalsta par bērnu invalīdu apmēru, tā pārskatīšanas kārtību un pabalsta un piemaksas. Noteikumi Nr.562 LR Ministru kabinets (2005). Retrieved: http://www.likumi.lv/google_search.php?cx=007602629882570581132%3Af2wua_haduq&cof=FORID%3A11&vf_sort_type=1&q=pabalsts+%C4%A3imenei+ar+b%C4%93rnu&sa=Mekl%C4%93t&siteurl=www.likumi.lv%252Fdoc.php%253Fid%253D45466&siteurl=www.likumi.lv%252Fdoc.php%253Fid%253D45466#1050. Access: 20 December 2010.
15. Noteikumi par mēneša neapliekamā minimuma un nodokļa atvieglojuma apmēru iedzīvotāju ienākuma nodokļa aprēķināšanai. Noteikumi Nr. 481 LR Ministru kabinets (2005). Retrieved: http://www.likumi.lv/doc.php?id=111604&version_date=02.07.2005. Access: 20 December 2010.
16. Noteikumi par mēneša neapliekamā minimuma un nodokļa atvieglojuma apmēru iedzīvotāju ienākuma nodokļa aprēķināšanai 2008.gadā. Noteikumi Nr.443 LR Ministru kabinets (2007). Retrieved: http://www.likumi.lv/doc.php?id=160143&from=off. Access: 20 December 2010.

17. Noteikumi par mēneša neapliekamā minimuma un nodokļa atvieglojuma apmēru iedzīvotāju ienākuma nodokļa aprēķināšanai 2009.gadam. Noteikumi Nr.924 LR Ministru kabinets (2008). Retrieved: http://www.likumi.lv/doc.php?id=183582&from=off. Access: 20 December 2010.
18. Noteikumi par mēneša neapliekamā minimuma un nodokļa atvieglojuma apmēru iedzīvotāju ienākuma nodokļa aprēķināšanai. Noteikumi Nr.531 LR Ministru kabinets (2009).
19. Noteikumi par mēneša neapliekamā minimuma un nodokļa atvieglojuma apmēru iedzīvotāju ienākuma nodokļa aprēķināšanai. Noteikumi Nr.1097 LR Ministru kabinets (2010). Retrieved: http://www.likumi.lv/doc.php?id=222516. Access: 20 December 2010.
20. Noteikumi par minimālo mēneša darba algu un minimālo stundas tarifa likmi. Noteikumi Nr.790 LR Ministru kabinets (2005). Retrieved: http://www.likumi.lv/doc.php?id=120089. Access: 20 December 2010.
21. Noteikumi par minimālo mēneša darba algu un minimālo stundas tarifa likmi. Noteikumi Nr.858 LR Ministru kabinets (2006). Retrieved: http://www.likumi.lv/doc.php?id=146077&mode=DOC. Access: 20 December 2010.
22. Noteikumi par minimālo mēneša darba algu un minimālo stundas tarifa likmi. Noteikumi Nr.592 LR Ministru kabinets (2007). Retrieved: http://www.likumi.lv/doc.php/body_print.php?id=162611. Access: 20 December 2010.
23. Noteikumi par minimālo mēneša darba algu un minimālo stundas tarifa likmi. Noteikumi Nr.791 LR Ministru kabinets (2008). Retrieved: http://www.likumi.lv/doc.php?id=181633. Access: 20 December 2010.
24. Noteikumi par minimālo mēneša darba algu un minimālo stundas tarifa likmi. Noteikumi Nr.1096 LR Ministru kabinets (2010). Retrieved: http://www.likumi.lv/doc.php?id=222275. Access: 20 December 2010.
25. Par iedzīvotāju ienākuma nodokli. Likums LR Saeima (1993). Retrieved: http://www.likumi.lv/doc.php?id=56880. Access: 4 January 2011.
26. Par nodokļiem un nodevām. Likums LR Saeima (1995). Retrieved: http://www.likumi.lv/doc.php?id=33946&version_date=19.10.2010. Access: 20 December 2010.
27. Par pievienotās vērtības nodokli. Likums LR Saeima (1995). Retrieved: http://www.likumi.lv/doc.php?id=34443. Access: 4 January 2011.
28. Par valsts sociālo apdrošināšanu. Likums LR Saeima (1997). Retrieved: http://www.likumi.lv/doc.php?id=45466. Access: 20 December 2010.
29. Lukašina O. Nodokļu sistēma un tās nianses. Retrieved: http://www.e-biblioteka.lv/lv/teksti/nodoklu-sistema-un-tas-nianses/3948/#/5. Access: 5 December 2010.
30. Starptautiskā Valūtas fonds (2008). Starptautiskā Valūtas fonda ekspertu misijas Latvijā 25.02.-05.03.2008. atskaite. Retrieved: http://zinas.nra.lv/latvija/17605-nodokli-spiedis-but-nabagiem.htm?cshow=1. Access: 5 December 2010.
31. Valsts fondēto pensiju likums. LR Saeima (2000). Retrieved: http://www.likumi.lv/doc.php?id=2341. Access: 21 December 2010.

Teaching Money Management in the Context of Sustainable Development

Francka Lovšin Kozina, *PhD.*
Department of Home Economics, Faculty of Education, University of Ljubljana

Abstract. Pupils have needs and wishes, and usually limited resources to meet them. One of the resources for achieving a desired quality of life is money. The aim of this article is to summarise the ongoing theoretical findings of pupils' money management and pupils' consumer behaviour, to take a closer look at Slovenian research findings to present an overview of the research on pupils' money management in Slovenia, and to give some suggestions for teaching money management in the context of sustainable development. It is necessary to define factors, which influence the development of pupils' money management and consumer behaviour to teach pupils to become responsible consumers. The analysis of researches has shown that the pupils' money management development affects the availability of money (allowance), friends, parents, school, and the media. Any purchase means a choice, also a choice for or against sustainable development. Financial education is needed to prepare pupils to live responsibly in the today's commercial society - with the future in mind.
Key words: consumer education, money management, sustainable development.

Introduction

Contemporary children have become important and influential consumers on the market. There are two reasons for this: primarily, it is their own purchasing power, which is increasing, as reported by various researchers (McNeal, 2000, Parry, 2004). According to the official statistics in Slovenia for 2007, Slovenia has 118,980 citizens ranging from 10 to 15 years. Therefore, if each child has EUR 10 per month to spend, this sum amounts to approximately EUR 1 million. Secondly, children also have a strong influential power on their parents' consumer decisions and they have become an important factor in the purchasing process of their families. Valkenburg (2004) has found that at the age from 4 to 12, children approximately express five desires for a purchase every day, whereas within the age group from 4 to 6 the number of desires is even higher – accounting for 12 desires a day.

Being a conscious consumer is strongly connected with smart planning, money management, knowing different financial products, and understanding financial terms, concepts and the consequences of their choices. Breitbard (2003) states that the best way to tackle personal financial problems is education, beginning as soon as possible (even at kindergarten). He also states that the best way to teach young people is in school classrooms; most parents are frequently bad role models because they are poorly informed about personal financial issues. Stanger (1997) also finds that individuals who learn financial management at a younger age tend to do better with financial problems than those who have no financial education.

O'Neill (2002) has described the following significant components that assure financial wellness for families: financial goals, net worth calculation, cash flow analysis, spending plan, financial ratios, credit card analysis, income tax analysis, insurance analysis, retirement analysis, investment performance analysis, asset allocation analysis and rebalancing, and estate planning analysis. Hogarth (2002) states that being financially literate means being knowledgeable, understand the basic concepts underlying the management of money and assets, and also be able to use knowledge to plan and implement financial decisions.

The financial literacy is crucial to effective consumer decision-making (Fox, Bartholomea & Lee, 2005). Financial literacy is strongly connected with consumer education. Banister and Monsma (1982) have defined consumer education as the process of gaining the knowledge in managing consumer resources and taking actions to influence the factors that affect consumer choices. Hellman-Tuitert (1999) states that the objective of consumer education at school is to:

- give pupils knowledge to act as informed, independent consumers;

- give pupils an understanding on functioning of the society and economy as a whole and the specific roles of consumers;
- develop skills to act as informed and responsible consumers;
- help pupils feel it is important to be informed consumers;
- teach pupils to act as informed, educated and responsible consumers.

Pupils can learn how to manage wisely their money and how to be responsible consumers. Lowery and Fleur (1988, cited in Bjurström 2002) define consumer socialisation as a *process by which children acquire knowledge, attitudes, and skills relevant to their functioning in the marketplace.* However, it is important also not to forget on thinking in the context of sustainable development. Pupils shall be presented the basics of sustainable development. *Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (*World Commission on Environment and Development, 1987).

In Slovenia, little research has been carried out in the area of pupils' consumer behaviour and pupils' money management. The aim of this paper is to provide an overview of relevant research on primary peoples' money management in Slovenia and provide suggestions for the implementation of sustainable development in the process of teaching money management.

Research tasks: 1) to summarise the ongoing theoretical findings of pupils money management and pupils consumer behaviour; 2) to take a closer look at Slovenian research findings; and 3) to give some ideas to teach money management in the context of sustainable development.

Methods of research: method of compilation, method of comparative literature analysis, and inductive deductive methods.

Results and discussion

Children money management

Today, pupils are accompanying their parents to shops at an early age. Gašperšič (2006) has conducted a research among 671 Slovenian parents. She found that 81.2% of pupils begin with the independent purchases until the ninth year of age. This is consistent to the findings of foreign studies (McNeal, 1992). Knowing that the general economic power of pupils is growing (McNeal, 2000; Parry, 2004), it is interesting to know the economic power of Slovenian pupils. Perčič (2010) did a research involving 206 pupils. She found out that an allowance was received be 63% of all respondents. Totally, 53% of pupils receive allowance of between EUR 10-10.9; 22.3% of pupils between EUR 11- 20, and 23.8% more than EUR 20. The average amount of an allowance that girls receive is EUR 15.88; the average amount of an allowance that boys receive is EUR 24.92. The difference is statistically significant ($t = -2.349$, $p = 0.020$).

In the Roper Youth Report (2000), which presents the situation in the USA, children were also asked how much freedom they had in their purchase decisions. It was found that they could buy food products, entertainment media, toys, books, and music. However, they had less freedom in buying magazines or video games. There is a marked trend showing that pupils have influence on purchases of expensive products, e.g. computers or software. In principle, the level of freedom in decision making in purchasing goods increases with the age of children regardless of the value of merchandise (Setlow, 2001). Benedik (2008) has conducted a research among 126 Slovenian pupils. She found that the responses of Slovenian pupils were in agreement with similar studies from the USA and the UK. In these countries, pupils spend most of their money on food, while there is also a growing trend in buying products related to body image, e.g. clothes and cosmetics (McNeal, 2000; Parry, 2004), yet there is also growing importance of brands.

Push factors to good money management practices

Allowance

Allowance has an important role in the process of economic socialisation, which offers pupils the first true experience of understanding the economic world (Furnham and Thomas in Zabukovec, 1994; Arndt, 1999). Recently, there has been a growing recognition of the importance of financial education as it relates to saving (Bayer, Bernheim & Scholz 1996; Bernheim & Garrett 1996; Greenspan 2001). Pupils (Perčič, 2010) state that an allowance has a major impact on their handling money; on scale from 1(not important) to 5 (very important) allowance was given 4.2 points on average; girls more than boys. Most pupils who receive pocket money (72.3%) agreed that since they have allowance, they give more care for what they spend money. Totally, 67.7% of pupils state that pocket money has encouraged them to save. The willingness to save increases along with the increase of pupils' age.

Parents, autonomy, and school

Managing money, collecting information, and making purchase decisions are important factors for pupils financial and consumer socialisation. Financial and consumer education starts within a family and continues through school education. Perčič (2010) lists interesting pupils' responses on the question of factors, which pupils think that affect their money management and consumer behaviour. In the three-tiered scale pupils had to choose their degree of agreement. The results showed that the most important for them was a good example of parents (2.53), the independent decision-making on the use of money (2.47), involvement in the planning of purchases (2.19), and school lessons (1.55).

Often, parents do not want to talk with pupils about money, because they expect unpleasant questions about the financial situation of family; sometimes they think that there is no need to encourage pupils' materialism. For pupils parents represent an exemplary model of behaviour. Thus, it makes sense for parents to explain to the pupils the facts of costs incurred by the family and the work by which they obtain money to cover costs. Early awareness of the use of money and consumer habits in the family will later be reflected in the effective consumer habits of an individual (Martin and Oliva, 2001).

Media

Today, pupils watch the world through the eyes of modern technologies/ media (TV, internet). Very early they are already faced with a number of interesting products and advertisements, which inspire desire to always have something new. Younger, more naive and less critical, they are more vulnerable. In Benedik (2008) research, a positive attitude towards TV commercials was expressed by younger respondents. There were more pupils among the 8th graders who did not believe the messages of the commercials than were among the 5th graders. Bujzen and Valkenburg (2003) have found that advertising is positively and directly correlated with pupils' purchase requests.

Table 1

Factors, which would, according to the opinions of the children, help them to progress in their money management skills

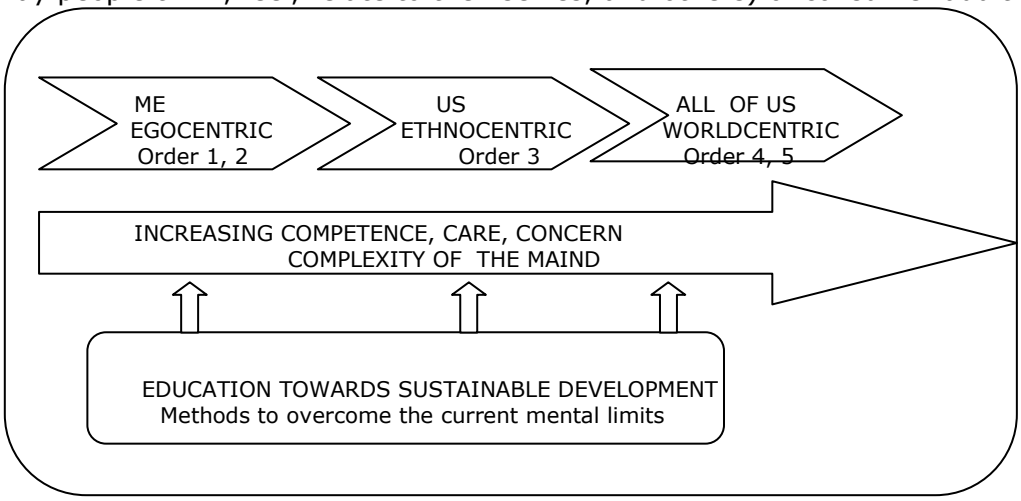
Factors	Pupils' age			χ^2	p
	10	11	12		
Media (TV, internet, radio, magazines) does not to advertise products attractive to seduce me	31.1	42.6	64.2	13.241	**0.001**
Friends who will be good role model for me – who will not spend money for sweets and other small items	33.3	40.4	59.7	9.113	**0.010**
To have a better **idea of the value of money and products**	55.6	46.8	32.8	6.121	**0.047**
A good example of **brothers and sisters**	15.6	20.2	49.3	20.966	**0.000**

Source: Perčič, 2010

Slovenian pupils state (Table 1) that media (TV, internet, etc.) have a big impact on their money management; they think that they will be better money manager, if media does not advertise products attractive to seduce them. Results also show that pupils' know that they have no real performances of money and products value.

Consumer education, money management, and sustainable development

Kegan (1994) has developed the idea of five orders (principles of mental organisation affecting the way people think, feel, relate to themselves, and others) of consumer adulthood.



Source: adapted to Kegan, 1994

Fig. 1. **Connection between consumer education and sustainable development**

Kegan (1994) states that an individual passes through five stages or orders (Figure 1):

- Order 1 (age 2-6): Impulsive;
- Order 2 (age 7-12): Imperial;
- Order 3 (age 13-30): Interpersonal;
- Order 4 (30 and onward):Institutional;
- Order 5 (age mid 40s and onward): Interindividual.

He also states that individual needs "safety nets" or holding environments, which give them feedback about where s/he is, where s/he should be, and provide them support for personal advancement. Consumers of all ages and income levels can benefit from consumer financial education. Through appropriate learning situations, people can progress to holistic perceptions of consumption in the context of sustainable development.

Proposals and recommendations

Slovenian pupils learn about money management, advertising, and consumer choices in the fifth year of primary school (10-11 years of age); there is a shorter look at production in the following years.

All of these topics are oriented primarily on pupils themselves, prompting questions like: how I can buy wisely, how I can complain effectively etc. It is important to develop the knowledge that every decision on spending the money has the consequences for the world around us.

There are different teaching techniques and methods, which encourage environment-oriented thinking to improve money management teaching and connection with some further topics like global markets, production, consumption, intergenerational solidarity, and sustainable development. There are only a few possible teaching topics and methods based on the presented research results (Table 2).It is also necessary to encourage creative thinking – searching for better ideas. De Bono (2006) developed many techniques for encouraging creative thinking; many on which may be used also at school.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 2

Connection between money management teaching and sustainable development

Money management topic	Possible teaching method	Connection with sustainable development
Saving	Project in combination with didactical game	Limiting of unhealthy consumerism: • awareness of the scarcity of resources; • thinking about the future; • thinking about another people; • thinking about the consequences of financial decisions on the environment.
Independent decision making on the use of money	Didactical games (table money management games; games with rules)	
Involvement in the planning of purchases	Simulation or guided experience (Who will benefit if I spend my money for green products?)	
Attractive advertising	Pros and cons method (making independent decisions; strengthen self-esteem)	
Rule model	Role plays (The one who does not have a T-shirt from this brand is a looser, out of our group)	
Value of money and products	Case studies	

Conclusions

Modern pupils are dropped in the world with many unknowns. As reported by various researchers, purchasing power of pupils is increasing. Allowance has an important role in the process of economic socialisation. It offers pupils the first true experience of understanding the (economic) world. Communication between pupils and parents as well as carefully designed educational system (formal and informal) is of great importance. The biggest challenge today is to prepare pupils to "survive" in today's turbulent environment, to give them the knowledge to be responsible consumers, and also to give them the tools to be creative and innovative people, which can distinguish between being and having, and to encourage them to be "world centric" oriented. The school may play an important role - partly it may play the role of "safety nest" in the process of pupils economic socialisation. One can encourage pupils to think about the implications of a specific money management practices; consumer decisions on them and on the environment (natural and social) with different active methods of learning.

Bibliography

1. Arndt, K. (1999). Denar ne pade sam z neba: Kako naučimo otroke ravnati z denarjem. Ljubljana: Kres. p.125.
2. Bayer, P. J., Bernheim, B. D. and Scholz, J. K. (1996). The Effects of Financial Education in the Workplace: Evidence From a Survey of Employers. National Bureau of Economic Research Working Paper, p. 5655. Retrieved: http://www.nber.org/papers/w5655. Access: 10 November 2010.
3. Breitbard, S. H. (2003). Jump-starting Financial Literacy: CPAs can Add the Spark. Journal of Accountancy. 196(6), pp. 56-60.
4. Benedik, M. (2008). Spreminjanje želja otrok pri nakupih. Diplomsko delo, Ljubljana: Univerza v Ljubljani, Pedagoška fakulteta. p. 102.
5. Bernheim, B. D. and Garrett, D. M. (1996). The Determinants and Consequences of Financial Education in the Workplace: Evidence from a Survey of Households. National Bureau of Economic

Research Working Paper No. 5667. Retrieved: http://www.nber.org/papers/w5667. Access: 5 December 2010.
6. Bjurstrom, E. (2002). Consumer Socialisation. How do Children Become Consumers? An Advertising Education Forum (AEF) Academic Advisory Board Discussion Paper. p. 10.
7. Boyce, L., Danes, S.M, Huddleston-Casas, C., Nakamoto, M. and Fisher, A.B. (1998). Evaluation of the NEFE High School Financial Planning Programme. Retrieved: http://www.nefe.org/pages/educational.html, Access: 5 December 2010.
8. Bujzen, M in Valkenburg (2003). The Unintended Effect of Television: a Parent-child Survey. Communication Research, 3 (5), p. 483.
9. De Bono, E. (2006). Lateralno razmišljanje: prvi slovenski prevod pregledane in prenovljene različice. Ljubljana: New Moment. p. 137.
10. Fox, J. Bartholomae, S. & Lee, J. (2005). Building the Case for Financial Education. Journal of Consumer Affairs, 39 (1), pp. 195-214.
11. Gašperšič, P. (2006). Nakupne navade otrok in njihovo nakupno vedenje. Magistrska naloga. Ljubljana: Univerza v Ljubljani, Ekonomska fakulteta. p.122.
12. Greenspan, A. (2001). The Importance of Education in Today's Economy. Remarks at the Community affairs. Research Conference of the Federal Reserve System, April 6. Retrieved: http://www.federalreserve.gov/BoardDocs/Speeches/2001/20010406/default.htm. Access: 15 November 2010.
13. Hellman– Tuitert, G. (1999). Promoting Consumer Education in Schools. Stockholm, Sweden: Katarina Tryck AB, p. 95.
14. Hogarth, J.M. (2002). Financial Literacy and Family and Consumer Sciences. Journal of Family and Consumer Sciences. 94 81 pp. 14-28.
15. Kegan, R. (1994). In Over Our Heads: The Mental Demands of Modern Life. Cambridge, MA: Harvard University Press. p. 396.
16. Martin, A., & Oliva, J. C. (2001). Teaching Children about Money: Applications of Social Learning and Cognitive Learning Developmental Theories. *Journal of Family and Consumer Sciences, 93*(2), pp. 26-29.
17. McNeal, U. James (2000). Children as Consumers of Commercial and Social Products. Retrieved: http://www.paho.org/English/hpp/hpf/adol/childcons.pdf), Access: 27 October 2010.
18. O'Neill, B. (2002). Twelve Key Components of Financial Wellness. Journal of Family and Consumer Sciences, 94(4). pp. 53-58.
19. Parry, C. (2004). The Little People with Big Pockets. London. Marketing Week. Oct 28, p. 34.
20. Perčič, T.(2009). Vloga denarja pri otrocih. Diplomsko delo, Ljubljana: Univerza v Ljubljani, Pedagoška fakulteta. p.93.
21. Setlow, C. (2001). Younger Consumer Hit the Mall. DNS Retailing Today. New York, 40 (15), p. 16.
22. Stanger, T. (1997). Future debtors of America. Consumer Reports, 62. pp. 16-19.
23. Valkengurb, M.P. (2004). Children's Responses to the Screen: Amedia Psychological Approach. NJ: Mahvah, Lavrence Erlbaum Associates.
24. Zabukovec, V. in Polič, M., (1994). Ekonomska socializacija po štirih letih. Psihološka obzorja. pp. 45–56.

Sustainable Food: Issues of Food Security in Latvia

Ligita Melece, *Dr.oec., Head of Department*
Latvian State Institute of Agrarian Economics

Abstract. Sustainable food system is an increasingly important issue, where 'sustainable food' means different things used to balance emerging food issues on various health, environmental, and social concerns. In this context, the special attention is paid to local food systems. Food security has been a major issue globally and according to the FAO, it is an issue on the individual, household, national, regional, and global levels. The paper argues that the debate is reasonable only if food security policy is based on its capability to deliver sustainability. The results of research on food self-sufficiency and import dependence ratio for the main food groups in Latvia in the recent years are listed in the present research. The latest trends of Latvia's import dependency ratio and self-sufficiency for the main food products (consumed by inhabitants) have been evaluated, where self-sufficiency levels vary widely between products. Self-sufficiency of meat and dairy products' group are operating above the 65% and 85% (respectively) self-sufficiency level compared with cereals' products that are nearly 100% self-sufficient. Only 53% of Latvia's vegetable consumption comes from Latvia's production as well as fruit production is very low at 12% of consumption.
Key words: food, security, self-sufficiency, imports, dependency.

Introduction

The Universal Declaration of Human Rights adopted by the UN in 1948 states that "everyone has the right to life, liberty, and the security of person". However, the concept of human security now encompasses economic, health, and environmental concerns as well. Human security includes seven categories of threats, where food security (physical and economic access to food) is the second most important (Annan, 2000). As Riches (2002) argues "…food is not only essential to human existence but to the quality of our lives, to cultural identity and freedom itself. To deny access to the means of life is also to deny community and democracy".

Sustainable food production and consumption is an increasingly important issue, where 'sustainable food' means different things used to balance emerging food issues on various health, environmental, and social concerns. At the same time, ongoing problems with trade and distribution of food and the looming impact of climate change, continues to exert pressure on the supply side. Food security has been a major issue globally and according to the FAO (1998), it is an issue on the individual, household, national, regional, and global levels. Furthermore, on the European Union level, the decision has been made that all the Member States will need to improve their food security policies. The paper argues that the debate is reasonable only if food security policy is based on its capability to deliver sustainability.

Considering these aspects, the **aim** of this paper is to provide a review of scholar papers regarding food sustainability, inter alia locality, security, and self-sufficiency; and to present results on the evaluation of trends of food self-sufficiency in Latvia.

The **aim** of the study is to review issues and latest considerations on food sustainability, security, and self-sufficiency; and to estimate the trends of food self-sufficiency expressed as import dependency in Latvia.

The **object** of the research is food security and self-sufficiency of the main products and its groups, and their trends in Latvia.

The key **materials** used for the studies are as follows: different sources of literature, research papers and the reports of institutions, published and unpublished data from the Central Statistical Bureau of Latvia[1] (CSB) as well as the database (2006-2008) of Household Budget Survey (HBS) done by the CSB and Eurostat[2].

1 http://www.csb.gov.lv/dati/statistikas-datubazes
2 http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

The research **methods** used in the study encompass qualitative and quantitative methods: analysis and synthesis, logical and abstract constructive, data grouping reference, statistical and expert etc. The statistical methods include ratio analysis, and historical trend and linear regression analysis done using software tools.

Results and discussion

The world food and financial crises of 2007–2009 clearly demonstrate that food security is highly dependent on non-food policies related to energy, trade, and finance (Holt-Giménez and Shattuck, 2011). The sharp spike of food prices may be attributed to factors such as high oil prices, increased biofuel production, and newly imposed export restrictions to protect food supplies.

In its 2008 World Development Report, the World Bank quietly admitted that the market liberalisation of the 1980s–1990s has not resulted in economic development for the poor, and revived its moribund loan portfolio for agricultural development (Holt-Giménez and Shattuck, 2011).

Soaring food prices pose the following problems: the poor whose ability to buy food is undermined, governments of low-income countries facing higher import bills (Wiggins and Levy, 2008), and economic performance of small farmers affected. In the author's opinion, the impact on small farmers is different: new opportunities through local marketing, direct sales and niche products; and shortage of own financial resources for food utilisation.

Vivas (2010), as representative of dissenters to previous ideas on food trade liberalisation, argues that the current food model is from top to bottom subject to a high company concentration, being monopolised by a series of transnational agribusiness interests that place their own economic interests above the good of the public and the community; food system neither longer responds to the nutritional needs of people, nor to sustainable production based on respect for the environment. Nevertheless, it is based on a model rooted in a capitalist logic of seeking the maximum profit, optimisation of costs and exploitation of the labour force in each of its productive sectors.

Sustainable food

The central aim of food policy for many countries is to identify and propose innovative solutions to improve local or state food systems, stimulating local economic development and making food systems more environmentally sustainable and socially just (Lawson and Mirosa, 2008; Harper, 2010; Roep and Wiskerke, 2010). Moreover, local food systems are often assumed to be more sustainable than industrial-type ones (Forsman and Paananen, 2002). In this context, more sustainable consumption and production of food is a major challenge for sustainable development (HM Government, 2005).

Over the last few decades, there have been many changes of food systems abroad and in Latvia. The "modern" or current food system replaces the "traditional" or old food system, which brings cardinal changes on features of food systems (Table 1).

Scholars have found that citizens and local inhabitants in both developing and developed countries have begun to influence directly the policies of their local food systems, creating a context in which equitable and sustainable alternatives for ensuring good, healthy food, are allowed to flourish (Winter, 2003; Moynihan and McDonagh, 2008; Lozano, Aguilar, 2010; Sullivan-Catlin, 2007; Vecchio, 2010). For example, in Finland various surveys have shown that Finnish consumers prefer domestic products to imported ones and often also organic to conventional food, if such products are reasonably priced (Risku-Norjaa et al., 2009). Moreover, Mathijs (2006) argues that food that is locally produced and sold directly to the consumer is increasing in response to globalisation and food crises.

Similar results to Finland were obtained in a survey done in Latvia (DnB NORD Latvijas barometrs, 2010). The results of survey show that theoretically, Latvian inhabitants prefer organic or ecological food, but after analysing answers of questionnaire, it was concluded that 70% of consumers buy food in supermarkets. When considering the food products, consumers have named price (79%) as the top reason; quality came the second (68%), but the country of origin ranked only the fourth (23%).

Table 1

Changes of food systems: from "traditional" to "modern"

Food system feature	"Traditional" food systems	"Modern" food systems
Principal employment in food sector	In food production	In food processing, packaging and retail
Supply chain	Short, local	Long with many food miles and nodal lines
Typical food consumed	Basic staples	Processed food with a brand name; more animal products
Purchased food bought from	Small, local shop or market, direct sale	Large supermarket chain
Nutritional concern	Under-nutrition	Chronic dietary diseases
Main source of national food shocks	Extreme meteorological conditions; crop failure	International price and trade problems
Main source of household food shocks	Extreme meteorological conditions; crop failure	Income shocks leading to food poverty
Major environmental concerns	Nature, biodiversity and soil degradation	Nutrient loading, chemical runoff, water demand, GHG emissions

Source: author's modification from Ericksen, 2008

Food availability, stability, access, and utilisation are essential for the well-being and productivity of all people. Global progress in ensuring food security and reducing poverty has been substantial, but not satisfactory (Fan, 2010). Significant advancements have been made in reducing hunger through intensifying staple food production, integrating people and the environment, expanding the role of markets, diversifying out of major cereals, reforming economy-wide policies, and improving food quality and human nutrition in the past five decades.

Information summarised in Table 2 shows that thinking about sustainable food development, and taking into account most important becoming food self-sufficiency, one shall evaluate and compare all impacts.

Table 2

Key features, policies and impacts of food self-sufficiency and food self-reliance

	Features	Policies	Impacts
Food self-sufficiency	All consumed food is produced within the country Advocates diets that are simple and natural, that can be produced by enterprises to support local food production	The development of small-scale enterprises to support local food development	Local food tends to be fresher, tastier and healthier (organic), while other food items are more industrialised
Food self-reliance	Food is bought wherever cheapest, using the international market to supplement domestic food supplies	International trade as a key component of food security policy (food is freely exported to and/or imported from international markets)	A wide variety of food is available, but local products can be more expensive than imported

Source: author's modification from Chandra and Lontoh, 2010

Food security and self-sufficiency

At the 1974 World Food Conference, governments examined the global problem of food production and consumption, and solemnly proclaimed (United Nations, 1975) that "every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties" (p. 5) and for the **first time was laying**

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

the foundations of a food security system, which could ensure in future the availability of adequate food to all at reasonable prices (p. 9).

After the World Food Summit in 1996 (FAO, 1998) 'Food Security' was defined as "…when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". FAO (1998) defined the objective of food security as assuring to all human beings the physical and economic access to the basic food they need. This implies three different aspects: availability, stability, and access.

At present 'food security' is a crosscutting issue with implications for health, agriculture, trade, and the environment (FAO, 2009). There have been more than 200 different definitions of food security published throughout the years (Clay, 2003).

However, Clay (2003) recognises that food security is "a flexible concept" (p. 25) and "a multi-dimensional phenomenon" (p. 33). Yet, while one can find many variations of definition of food security in the research and political papers, in the author's opinion the following definition given by the FAO (2009) is the most suitable for the present situation in Latvia, i.e. "Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".

At present, when food and oil crisis have joined the economic and financial crisis, food security has emerged as a mainstream issue not only for developing countries, but for developed countries also (Lang and Barling, 2010).

The main factors influencing the food security position of the countries are domestic food production, foreign exchange availability, population growth, and distribution of income. Among these factors, domestic food production is the most crucial.

High food prices from 2007 through mid-2008 had serious implications for food and nutrition security, macroeconomic stability, and political security (Von Braun, 2008). The unfolding global financial crisis and economic slowdown have now pushed food prices down to lower levels. Yet, the financial crunch has also decreased the availability of capital at a time when accelerated investment in agriculture is urgently needed. The food and financial crises will have strong and long-lasting effects on emerging economies and poor people. A synchronised response is needed to ease the burden on the poor and allow agriculture to face new challenges and respond to new opportunities.

Bouet and Laborde (2008) indicate that food security is one of the objectives of the European Common Agricultural Policy (CAP). This is a basic objective of economic policy for any government, and an objective around which there is broad consensus. The main concern is about the strategy by which food security should be attained. One option is to diversify sources of supply of agricultural commodities. The second option is self-sufficiency. It is based on the assumption that domestic suppliers are more reliable than foreign ones. This means that in time of war or food crisis the access of the population to food is in no way dependent on foreign suppliers. While as far as war is concerned the case is specious, the second case recently gained ground with the rush by a large number of countries around the world to adopt export taxes as result of the surge in food prices. Trade plays a major role as far as agricultural inputs are concerned, even if European agriculture is close to self-sufficiency for numerous finished agricultural products.

Other developed countries as the Japanese government has decided on a target of raising the self-sufficiency rate (Trends in Japan, 2000).

Food security is a worldwide problem that has called the attention of governments and the scientific community (Bala and Hossein, 2010). Food security is a social sustainability indicator and food production, income, total expenditure, food expenditure, share of expenditure of food, calorie consumption, and nutritional status are the most commonly used indicators in the assessment of food security conditions (Riley et al., 1999). Isaksson (1995) argues that food security is jointly determined by availability of food and access to food. Availability of food does not guarantee access to food, but access to food is, of course, contingent on there being food available. Both availability of food and access to food shall be considered when assessing the state of food security and planning policies and strategies to assure food security. Food security depends on both the supply of and demands for food. Among the major driving forces expected to influence future food consumption are population

growth, urbanisation, and income growth. The importance of these forces varies by region (Isaksson, 1995). Riely et al. (1999) argue that achieving food security requires that the aggregate availability of physical supplies of food is sufficient. DEFRA (2009) proposes that food security and ability is divided into three types: 1) global security and ability; 2) state food availability and access to food; and 3) food security on household level.

However, the issue of food security on the world and the EU level is mainly discussed in the context of aid for developing countries (European Commission, 2010). Some EU countries, for example, the United Kingdom and Italy (Defra, 2006; Barling et al., 2008) started to size up the situation and work out activities on governmental level for assuring own countries' food security. UK researcher MacMillan (2010) argue that the dominant discourse in the 20th century UK food and agricultural policies of a liberal, free trade agenda was modified at the turn of the 21st century to embrace ecological sustainability and "food security".

Despite the fact that all EU Member States (relating food security) are categorised as developed countries (European Commission, 2010), the UN Development Programme (2010), analysing the 'Real Wealth of Nations', has ranged all countries *inter alia*; non-OECD countries in different groups, where Estonia has received the status of developed country, but Latvia and Lithuania have received the status of developing country.

The definition adopted by the countries attending the World Food Summit of 1996, and reconfirmed in 2002, accepts the USAID's three key concepts: 1) food availability, 2i) food access, and 3) food utilisation (Webb and Rogers, 2003).

Food availability, food access and food utilisation are the basic elements of the USAID's food security framework (Gervais, 2004). All three pillars are necessary, and none can sustain food security by themselves. As Webb and Rogers (2003) write, food availability is necessary but insufficient to ensure food access, and food access is necessary but insufficient to ensure adequate food utilisation.

Webb and Rogers (2003) have argued that:

- total food availability from domestic sources is enhanced on the national level by net food imports (commercial or concessionary);
- food access refers to the ability of households to secure food in the marketplace or from other sources (transfers, gifts, etc.). Household purchasing power is the key to access and this varies in relation to market integration, price policies, and temporal market conditions; and
- food utilisation incorporates issues of food safety and quality, sufficiency of intake on the individual level, and the conversion efficiency of food by the body that result in sound nutritional status and growth.

Food self-sufficiency and import dependency ratio

Self-sufficiency of food is not the same as food security, because food security policy should not base on the pursuit of self-sufficiency. There are complex factors that affect food security (see above). However, the issue of food self-sufficiency is broadly discussed in research and programmatic papers. For example, Brower (2009) argues that food self-sufficiency is a very important tool for the economic development of country. The consumed imported food translates into money value leaving country and support agribusinesses elsewhere. Taking into account the multiplier effects, this amount of money would generate an estimated economy-wide impact in sales, in earnings, in state tax revenues, and jobs.

However, Blas (2009) disagrees with the drive towards self-sufficiency in response to the past year's food crisis, when a top executive at Cargill has warned, adding that the idea that countries "can be self-sufficient in every single food is a nonsense".

Although European agriculture is close to self-sufficiency for numerous finished agricultural products (Bouet and Laborde, 2008), Latvia has shortcomings in this field (see the next chapter below).

For the characteristics of self-sufficiency one can use import dependence ratio (hereinafter - IDR), which is calculated using food balances. Self-sufficiency value is opposite to IDR. These explanations have been given to show that the self-sufficiency rate (as defined above) cannot complement the 100 of the import dependency rate, or vice-versa.

IDR is an important indicator, which shows how much of the available domestic food supply has been imported and how much comes from the country's own production. The IDR answers this question.

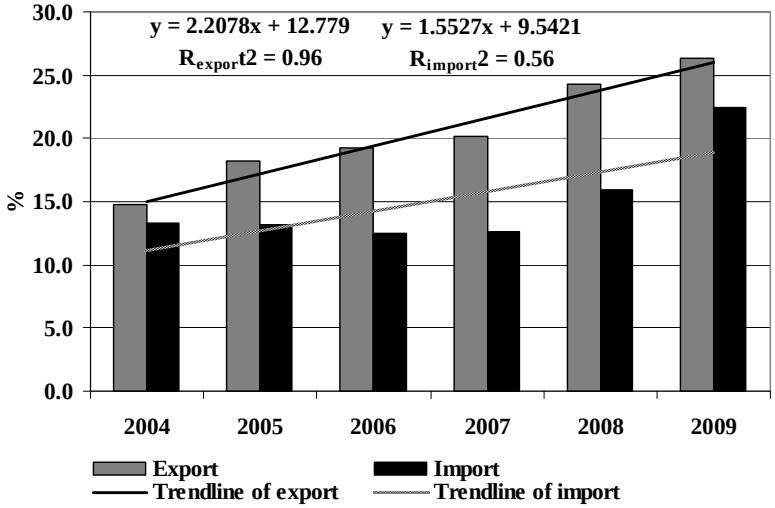
It is defined and calculated as:

$$IDR = \frac{I}{P + I - E} \times 100 \quad (1),$$

where *I* – imports; *P* – production; and *E* – exports.

Food self-sufficiency and import dependency ratio in Latvia

First of all, comparing trends of food products' imports and exports after Latvia's accession to the EU, one can see (Figure 1) that although, both import and export have increased, the food export has increased substantially (r=0.98, α=0.01).



Source: author's calculations based on the data of CSB

Fig. 1. Trends of imports and exports of food products (% of total volume in thou. of LVL[3]), 2004-2009

The food balances from 2006 to 2008 were calculated and used to evaluate the trend of self-sufficiency and IDR. The food balances were calculated using a well-known methodology of the FAO (2001). Only data on inhabitants' consumed food in monetary value were used for more detailed analyses of IRD. In the author's opinion, consumed food value in monetary value may characterise economic losses caused by failure to collect money from different sources (taxes, jobs, incomes for agri-business etc.) for the state budget, farms, enterprises, and individuals. The food IDR was calculated by several products' groups and individual main 38 products as it may be seen in tables below.

In 2008, the average IDR for group of meat products is 35% and self-sufficiency - 65%, but for milk products – 15% and 85% respectively.

Analysing the trends of main milk and meats products' IDR in the period from 2006 to 2008 (Table 3), one may see that the decrease of import dependency can be observed only for two products of milk group and one of meat products, namely, milk powder and sour cream as well as poultry meat. Nevertheless, these trends are not statistically significant.

Comparing IDR between 2008 and 2007, it can be concluded that IDR has increased for some important for agribusiness meat and milk products, e.g., pork (10 percentage points); beef (6 percentage points); cheese (6 percentage points) and fresh cheese and cottage cheese (3 percentage points).

[3] LVL - Latvian currency. EUR 1 = LVL 1.42

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 3

Trends of main milk and meat products import dependency (% of total volume in thou. of LVL) in Latvia, 2006-2008

Products	2006	2007	2008	Equation	R^2 and r [4]	Significance level, α	Trend
Whole milk	0%	0%	1%	y=0.005x-0.006	R^2=0.75; r=0.87	-	▲
Milk powder and canned milk	84%	81%	80%	y=-0.02x+0.856	R^2=0.25; r=-0.50	-	▼
Yoghurt	15%	19%	21%	y=0.03x+0.123	R^2=0.96; r=0.98	-	▲
Butter	13%	9%	27%	y=0.07x+0.0233	R^2=0.55; r=0.74	-	▲
Cheese	23%	35%	41%	y=0.09x+0.15	R^2=0.96; r=0.98	-	▲
Fresh cheese, cottage cheese	14%	16%	23%	y=0.045x+0.087	R^2=0.91; r=0.95	-	▲
Sour cream	3%	2%	2%	y=-0.005x+0.033	R^2=0.75; r=-0.87	-	▼
Fermented milk products	17%	19%	21%	y=0.02x+0.15	R^2=1; r=1	0.01	▲
Beef	12%	9%	15%	y=0.015x+0.09	R^2=0.25; r=0.50	-	▲
Pork	38%	31%	41%	y=0.015x+0.337	R^2=0.09; r=0.30	-	▲
Poultry	57%	54%	47%	y=-0.05x+0.627	R^2=0.95; r=-0.97	-	▼
Other meat and offal	65%	50%	70%	y=0.025x+0.567	R^2=0.06; r=0.24	-	▲
Sausages and processed meat	10%	13%	12%	y=0.01x+0.097	R^2=0.43; r=0.66	-	▲

Source: author's calculations based on the data of CSB

In the group of cereal products (Table 4), the main increase of IDR in 2008 was for pastry (13 percentage points) and flour (5 percentage points).

Comparing the trends of cereal products' import dependency in the period from 2006 to 2008, the author would like to stress that import dependency of rice and dry breakfast products reach 100% every year, and those products have not been included in the content of table. In the group of waters and juices, one may see that IRD of water/mineral water and juices has increased during the period from 2006 to 2008, while for juice this increase is statistically significant (r=0.99; α=0.05).

[4] R^2 - coefficient of determination, r – coefficient of correlation

Table 4

Trends of cereal products, water, and juices import dependency (% of total volume in thou. of LVL) in Latvia, 2006-2008

Products	2006	2007	2008	Equation	R^2 and r	Significance level, α	Trend
Wheat bread	5%	7%	7%	y=0.01x+0.043	R^2=0.75; r=0.87	-	▲
Rye bread	1%	2%	2%	y=0.005x+0.007	R^2=0.96; r=0.98	-	▲
Pasta	72%	73%	76%	y=0.02x+0.697	R^2=0.92; r=0.96	-	▲
Pastry	19%	20%	33%	y=0.07x+0.1	R^2=0.80; r=0.89	-	▲
Groats	14%	15%	15%	y=0.005x+0.137	R^2=0.75; r=0.87	-	▲
Flour	22%	14%	19%	y=-0.015x+0.213	R^2=0.14; r=-0.37	-	▼
Water/Mineral water	28%	31%	39%	y=0.055x+0.2167	R^2=0.94; r=0.97	-	▲
Sweetened water	49%	40%	48%	y=-0.005x+0.467	R^2=0.01; r=-0.10	-	▼
Juice	49%	60%	68%	y=0.095x+0.4	R^2=0.99; r=0.99	0.05	▲

Source: author's calculations based on the data of CSB

The average self-sufficiency of fruit is 12%, and for vegetables and mushrooms – 53% in Latvia. IDR between 2007 and 2008 has increased for apples by 4 percentage points and for strawberries – 3 percentage points (Table 4). Comparing Latvia's trends of vegetables, fruit and mushrooms IDR in the period from 2006 to 2008, the author has analysed only trends of those products that can possibly be cultivated and produced industrially in Latvia. IDR for all products has increased (self-sufficiency increased), except mushrooms and potatoes. The decrease of mushrooms IDR was statistically significant (r=-1; α=0.01). For some vegetables a very sharp growth of IDR was observed (Table 5), particularly for lettuce (20 percentage points); tomatoes (17 percentage points); cucumbers and onions (10 percentage points) etc.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 5

Trends of some of vegetables, fruit, and mushrooms import dependency (% of total volume in thou. of LVL) in Latvia, 2006-2008

Products	2006	2007	2008	Equation	R^2 and r	Significance level, α	Trend
Tomatoes	58%	70%	87%	y=0.145x+0.427	R^2=0.99; r=0.99	-	▲
Cucumbers	30%	35%	45%	y=0.075x+0.217	R^2=0.96; r=0.98	-	▲
Onions	29%	32%	42%	y=0.065x+0.213	R^2=0.91; r=0.95	-	▲
Cabbages	6%	12%	17%	y=0.055x+0.007	R^2=0.99; r=0.99	-	▲
Cauliflower	48%	54%	64%	y=0.08x+0.393	R^2=0.98; r=0.99	-	▲
Carrots	13%	14%	19%	y=0.03x+0.093	R^2=0.87; r=0.93	-	▲
Lettuce	80%	60%	82%	y=0.01x+0.720	R^2=0.01; r=0.10	-	▲
Garlic	54%	47%	78%	y=0.12x+0.357	R^2=0.54; r=0.73	-	▲
Mushrooms	19%	13%	7%	y=-0.06x+0.25	R^2=1.00; r=-1.00	0.01	▼
Canned vegetables	49%	56%	68%	y=0.095x+0.387	R^2=0.98; r=0.99	-	▲
Potatoes	3%	2%	2%	y=-0.005x+0.033	R^2=0.75; r=-0.87	-	▼
Apples	38%	38%	42%	y=0.02x+0.353	R^2=0.75; r=0.97	-	▲
Pears	79%	85%	95%	y=0.08x+0.703	R^2=0.98; r=0.99	-	▲
Strawberries	15%	19%	22%	y=0.035x+0.117	R^2=0.99; r=0.99	-	▲
Cherry	42%	53%	73%	y=0.155x+0.25	R^2=0.97; r=-0.98	-	▲
Plums	38%	80%	90%	y=0.26x+0.173	R^2=0.89; r=0.94	-	▲

Source: author's calculations based on the data of CSB

Conclusions

Food security has been a major world issue and according to the FAO, it is an issue on the individual, household, national, regional, and global levels. Moreover, on the European Union level the decision has been made that all the Member States will need to improve their food security policies. Over the past decade, the developed countries have also devoted more attention to food security, sustainable and local food system development, particularly after food and financial crises in 2007-2009.

The latest trends of Latvia's food self-sufficiency, measured on bases of trade balances, in the main foods have been evaluated in the research. Evaluation was done in monetary value. Self-sufficiency levels vary widely between sectors. Meat and dairy sectors are operating

above the 65% and 85% (respectively) self-sufficiency level, yet, cereals are nearly 100% self-sufficient. Only 53% of value of consumed vegetables is produced in Latvia, but fruit self-sufficiency is very low at 12% of consumed value. The detailed estimation of import dependency ratio of the main 38 products and their trends was succeeded in the study. Totally 33 products show an increasing trend of import dependency (statistically significant only for fermented milk products and juice). Only five products show a decreasing trend of import dependency, but statistically significant decreasing or self-efficient increasing was recognised for only one product - mushrooms.

Bibliography

Annan, K. (2000). Report of the Secretary-General on the Work of the Organisation. *General Assembly Official. Records Fifty-fifth session,* Supplement No. 1 (A/55/1). New York: United Nations. p. 4.

Bala, B.K., Hossain, A. (2010). Integrated Management of Coastal Zone for Food Security. *Environment, development and sustainability*, Volume 12, Number 4, pp. 511-529.

Barling, D., Sharpe, R., Lang, T. (2008). *Rethinking Britain's Food Security*. London: Centre for Food Policy and City University. p. 46.

Blas, J. (2009). Food self-sufficiency 'is Nonsense'. Retrieved: http://www.ft.com/cms/s/0/bad4d152-cd53-11de-8162-00144feabdc0.html#axzz1A3xiYm1p. Access: 15 December 2010.

Bouet, A., Laborde, D. (2008). The Lure of Attaining Food Security for Europe through Self Sufficiency. Retrieved: http://cap2020.ieep.eu/2008/10/28. Access: 19 December 2010.

Brower, A. (2009). Economic Multiplier Effects of Increasing Food Self-sufficiency. Retrieved: http://alohaanalytics.blogspot.com/2009/06/economic-effects-of-increasing-food.html. Access: 15 December 2010.

Chandra, A.C., Lontoh, L.A. (2010). *Regional Food Security and Trade Policy in Southeast Asia*. Series on Trade and the Food Security, Policy Report 3. Winnipeg, Manitoba: International Institute for Sustainable Development. p. 22.

Clay, E. (2003). *Food Security: Concepts and Measurement*. In: Trade Reforms and Food Security. Rome: FAO, pp. 25-34.

Defra (2006). *Food Security and the UK: An Evidence and Analysis Paper*. London: Department for Environment, Food and Rural Affairs. p. 87.

Defra (2009). *UK Food Security Assessment: Our approach*. London: DEFRA. p. 29.

DnB NORD Latvijas barometrs (2010). Pārtikas produktu patēriņš. DnB NORD Latvijas barometrs" Nr.24. Retrieved: http://www.dnbnord.lv/files/dnb-nord-latvijas-barometrs-24.pdf. Access: 12 December 2010.

Ericksen, P. (2008). Will Managing Food Systems for Resilience Make us More Food Secure? *International Conference 2-4 April 2008*, Oxford: Oxford University. p. 37.

European Commission (2010). *Annual Report 2010 on the European Union's Development and External Assistance Policies and their Implementation in 2009*. Brussels: European Union. p. 200.

Fan, S. (2010). *Achieving Sustainable Food Security: New Trends and Emerging Agenda*. New York: International Food Policy Research Institute. p. 9.

FAO (1998). Rome Declaration on World Food Security and World Food Summit Plan of Action. Rome: FAO. Retrieved: http://www.fao.org/docrep/003/w3613e/w3613e00.HTM. Access: 20 December 2010.

FAO (2001). *Food balance sheets*: A handbook. Rome: FAO, p. 94.

FAO (2009). *The State of Food Insecurity in the World: Economic Crises – Impacts and Lessons Learned*. Rome: FAO. p. 57.

Forsman, S., Paananen, J. (2002). Local Food Systems: Explorative Findings from Finland. *Proceedings of the conference „Local Agri-food Systems: Products, Enterprises and Local Dynamics"*, October 16-18, 2002, Montpellier, France. p. 14

Gervais, S. (2004). Local Capacity Building in Title II Food Security Projects: A Framework. *Occasional Paper No. 3*. Washington, D.C.: USAID Office of Food for Peace. p. 31.

Harper, A. (2010). Food Policy Councils: A Model for the Future? Food Policy in the UK. *The magazine of the Food Ethics Council*, Volume 5, Issue 2, pp. 20-21.

HM Government (2005). *The UK Government Sustainable Development Strategy*. London: The Stationery Office. p. 186.

Holt-Giménez, E.,Shattuck, A. (2011). Food Crises, Food Regimes and Food Movements: Rumblings of Reform or Tides of Transformation? *Journal of Peasant Studies*, Volume 38, Issue 1, pp. 109-144.

Isaksson, N.I. (1995). *Agricultural Production and Food Security*. Uppsala: Swedish University of Agriculture. p. 48.

Lang, T., Barling, D. (2010). Food policy in the UK. *The magazine of the Food Ethics Council*, Volume 5, Issue 2, pp. 4-8.

Lawson, R., Mirosa, M. (2008). Revealing the Lifestyles of Local Food Consumers. *Proceedings of the Australia and New Zealand Marketing Academy Conference*. Retrieved: http://www.anzmac2008.org/_Proceedings/Index.html. Access: 20 December 2010.

Lozano, C., Aguilar, E. (2010). Towards a Sustainable Rural Development from SYAL Perspective. *Proceedings of 9th European IFSA Symposium*, 4-7 July 2010, Vienna, Austria, pp. 1682-1690.

MacMillan, T., Dowler, E. (2010). Just and Sustainable? Examining the Rhetoric and Potential Realities of UK Food Security. *Journal of Agricultural and Environmental Ethics*, pp. 1-24.

Mathijs, E. (2006). *Instruments and Institutions to Develop Local Food Systems*. Brussels: Belgian Science Policy. p. 12.

Moynihan, C., McDonagh, P. (2008). Alternative Food Networks: What's Alternative? Retrieved: http://www.anzmac2008.org/_Proceedings/PDF/S19/Moynihan%20S3%20ER%20P2%20.pdf. Access: 12 December 2010.

Riches, G. (2002). Food Banks and Food Security: Welfare Reform, Human Rights and Social Policy. Lessons from Canada? *Social Policy & Administration*, Volume 36, Issue 6, pp. 648–663.

Riely, F., Mock, N., Cogill, B. et al. (1999). *Food Security Indicators and Framework for Use in the Monitoring and Evaluation of Food Aid Programmes*. Washington D. C.: Food and Nutrition Technical Assistance. p. 45.

Risku-Norjaa, H., Kurppab, S., Helenius, J. (2009). *Impact of Consumers' Diet Choices on Green-House Gas Emissions*. In: Koskela, M., Vinnari, M. (Ed.) Future of the Consumer Society. *Proceedings of the Conference "Future of the Consumer Society"*, 28–29 May 2009, Tampere, Finland, pp. 159-170.

Roep, D., Wiskerke, J. (2010). On Governance, Embedding and Marketing: Reflections on the Construction of Alternative Sustainable Food Networks. Journal of Agricultural and Environmental Ethics, pp. 1-17.

Sullivan-Catlin, H. (2007). Review of "Eat here: Reclaiming Homegrown Pleasures in a Global Supermarket". *Renewable Agriculture and Food Systems*, Volume 22, pp 75-76.

UN Development Programme (2010). *The Real Wealth of Nations: Pathways to Human Development*. New York: Palgrave Macmillan, p. 227.

United Nations (1975). *Report of the World Food Conference Rome*, 5-16 November 1974. New York: United Nations. p. 10.

Trends in Japan (2000). Food Self-Sufficiency: Government Targets Rate of 45% by Fiscal 2010. June 5, 2000. Retrieved: http://web-japan.org/trends00/honbun/tj000604.html. Access: 19 November 2010.

Vecchio, R. (2010). Local Food at Italian Farmers' Markets: Three Case Studies. *International Journal of Sociology of Agriculture& Food*, Volume 17, Number 2, pp. 122–139.

Vivas, E. (2010). Food crisis: causes, consequences and alternatives. International Viewpoint, October. Retrieved: http://www.internationalviewpoint.org/spip.php?article1774. Access: 19 December 2010.

Von Braun, J. (2008). *Food and Financial Crises: Implications for Agriculture and the Poor*. Washington, DC: International Food Policy Research Institute. p. 12.

Webb, P., Rogers, B. (2003). Addressing the "In" in Food Insecurity. Washington, D.C.: Academy for Educational Development (AED). p. 32.

Wiggins, S., Levy, L. (2008). Rising Food Prices: Action Needed now to Avert. *Food Policy: Trade & Industry Monitor*, Volume 39, pp. 79-84.

Winter, M. (2003). Embeddedness, the New Food Economy and Defensive Localism. *Journal of Rural Studies,* Issue 19, pp. 23–32.

Availability Assessment of Physician Practices in Latvia

Anita Racene, *Mg.oec., PhD student*
Faculty of Economics, Latvia University of Agriculture

Abstract. Health is the most important factor affecting the quality of life of individuals. In health care, individuals, first, meet their family physician. Therefore, availability of family physicians is of great importance.
The paper includes the results of a study on the availability of physician practices from the point of view of provision of social infrastructure. The research object is physician practice services in Latvian regions. A survey of patients was conducted to achieve the research aim. During the survey, the opinions and knowledge of patients on primary health care, its funding procedure and availability were ascertained as well as the opinions of patients were identified on the availability of guaranteed health care services. The respondents were selected from all the regions of Latvia to identify, as much as possible, the real situation in the whole territory. The paper ends with the conclusions and recommendations for the present situation.
It was concluded that, in general, physician practices are available from the point of view of patients; though it is necessary to improve the present situation with their availability by prolonging their working hours and the attitudes of patients and physicians to each other as well as to solve the financial aspects, so that patients can be sure that they would receive quality health care services when it is necessary.
Key words: patient, health care, physician practice.

Introduction

It is assumed to believe that the condition of health care system is evaluated according to three criteria:

1) public health indicators;
2) protection of individuals from financial risk;
3) satisfaction of individuals with health care.

These criteria were used in a study of the World Health Organisation (WHO) in the year 2000. Protection of individuals from financial risk is the second most essential function of health care system, and this protection of the WHO is regarded as good if an individual's material position is not an obstacle for buying health care services. The problems of availability of health care services is not a surprise in Latvia due to the relatively high inequality in income distribution and the extreme dependency of Latvia's health care system on private payments. According to the WHO data, Latvia's population make private payments accounting for 40-48%; whereas citizens of the West European countries have spent only 16% of their total expenditure on health in the period of 1998-2004. Health care has never been the government's priority in Latvia, it is affirmed by the fact that never more than 10-11% of the government's total expenditure was allocated for health care. Thus, there are several features indicating that Latvia's health care system presently does not perform its basic functions satisfactory, and the pretence that all is serene can endanger Latvia's sustainable development. The economic situation in the country impacts patient visits to a doctor for prevention purposes. Maybe in some cases the cost of visit is not large, but individuals plan their daily income and expenditure, and see that their expenditure on medical care can be postponed for a while, as there are expenditures on food and children's schooling.

In general, studies on health care were conducted in various ways, but no studies on the social infrastructure of physician practices were done and no publications in the specialised literature or newspapers are available. Therefore, a new topic of research is initiated. Legislations of the Republic of Latvia and the EU as well as the data of a survey of patients conducted by the author were used in the present research. The survey data were modelled and adjusted to the minimum requirements set by Latvia's legislation for physician practices, and concrete suggestions were made afterwards.

The paper was based on the study of various physician practices, surveying patients from July to September 2010.

The research aim is to provide a theoretical and partially empirical insight into the availability of physician practice services from the point of view of patients.

The research tasks are as follows:

- to expand a theoretical discussion on the availability of physician practices;
- to analyse the opinions of patients on the availability of physician practices.

The research object is physician practice services in Latvia's regions. A survey of patients was conducted to achieve the research aim.

The legal and informative frameworks – laws of the Republic of Latvia and other regulatory enactments, directives and reports of Latvian national institutions, research results and other materials, statistical data, theoretical literature, and survey data – were used to achieve the research aim and to execute the research tasks. The general research methods: abstract and logical methods, the monographic method, analysis and synthesis, and calculation and constructive methods were applied to study the legal framework and to make suggestions for its improvement. Statistical analysis methods – descriptive statistics and correlation analysis – were applied to analyse statistical data. A sociological method – questionnaire surveying – was applied to identify the problems of social infrastructure of physician practices.

Theoretical discussion

There are several instruments for providing the social infrastructure of physician practices, and one of them is a body of legal acts. These are laws of the Republic of Latvia and regulations of the Cabinet of Ministers, various important government programmes, and other documents.

Health is a state of physical, mental, and social wellbeing, and a natural basis for the existence of a state and its population. Health care is a complex of measures implemented by providers of health care services to ensure, maintain, and restore the health of a patient. Physician practices are regulated by the law "On Physicians' Practices" that was passed on 24 April 1997. This law stipulates that a practicing physician is a certified physician who has registered the physician practice in accordance with the law and practices medicine; a physician practice is a special workplace where a practicing physician performs medical activities. Practicing physicians can be Latvian citizens, non-citizens, and foreigners who have obtained a residence permit, a physician certificate issued by the Latvian Physicians Association, and have registered their physician practice in accordance with the law. Practicing physicians perform personally and directly. Medical treatment cannot be performed by means of mass media and communications or correspondence. Physician practices are certified in accordance with the laws. The goal of Latvia's "Medical Law" (1997) is to regulate public relations in the area of medical treatment to ensure qualified prevention and diagnostics of sicknesses or traumas as well as qualified medical treatment and rehabilitation for the patient. Physician practices have to be insured in accordance with the Cabinet Regulations No. 177 "Compulsory Insurance of Civil Liability of Practising Physicians" (1998). This Regulation stipulates that practising physicians have to insure themselves against possible damages that can be caused to the health of patients because of medical performance of practising physicians as well as their trainees or resident physicians. By taking care of staff, the Cabinet Regulations "Regulations regarding the Distribution of Resident Physicians and their Funding" (2009) have to be taken into account; they stipulate the procedures of distributing and funding resident physicians from the government budget.

The Cabinet Regulations No. 193 "Regulations regarding the Certification Procedure for Medical Support Staff and the Professions of Certified Medical Support Employees" (2009) stipulate the procedure of certifying medical support employees and the professions of certified medical support employees. The Regulations relate to employees that work at a medical institution and are directly involved in ensuring the health care process. The Cabinet Regulations No. 581 "Procedures of Registering, Verifying, Distributing, Exploiting, and Technically Controlling Medical Equipment" (2005) stipulate the procedures of registering any medical equipment, verifying its compliance with the standards as well as of distributing, exploiting, and technically controlling any medical equipment. A competent institution responsible for registering and verifying any medical equipment is the National Agency of

Medicine. The National Health Inspectorate provides control over production, distribution, and exploitation of medical equipment.

The Cabinet Regulations No. 60 "Regulations regarding the Compulsory Requirements for Medical Institutions and their Structural Units" (2009) set the compulsory requirements for medical institutions and their structural units.

These Regulations set both the general and the compulsory requirements for the practices of family physicians regarding the material infrastructure of health care.

General requirements for:

1) a patient waiting-room with a wardrobe;
2) a room or a place for registration of patients;
3) a reception room (cabinet) for patients;
4) a room for non-invasive, invasive manipulations, or medical procedures;
5) water closets for patients and staff. If an outpatient medical institution is located in a residential house, the institution's toilet facilities have to be constructed separately from the residential house's toilet facilities;
6) water closets for patients and staff that are suited for individuals with disability;
7) an outpatient medical institution having three or more medical or diagnostics cabinets:
   a) a room for storing equipment of patient care;
   b) a room or a place for a staff wardrobe.
8) an outpatient medical institution has to have available for emergency medicine:
   a) a phonendoscope;
   b) equipment for indirect measurement of arterial pressure. If a medical institution serves also children, the equipment has to have bracelets of all sizes for all age groups;
   c) equipment for parenteral injection of medicine and solutions;
   d) equipment for stopping external bleeding and dressing wounds;
   e) equipment for artificial ventilation of lungs manually and transparent or semitransparent breathing masks of at least three sizes;
   f) equipment for keeping air flow through respiratory organs (tracheae of at least three sizes);
   g) equipment for emptying and flushing stomachs (except dentist offices);
   h) lighting equipment (according to the medical specifics of institution);
   i) medical couch, a table and a bed or a chair for medical procedures, chairs (according to the medical specifics of institution);
   j) equipment for immobilisation and movement of patients (except dentist offices);
   k) equipment meeting the basic requirements for hygiene and anti-epidemics, including equipment for individual protection of medical employees;
9) an outpatient medical institution having three or more medical or diagnostics cabinets. It has to be available in addition to emergency medicine:
   a) oxygen equipment;
   b) a sterile set of equipment for child-bearing;
   c) equipment for prevention of constipation;
   d) equipment for prevention of retention and incontinence of urine.
10) requirements for a cabinet of medical specialist (physician, including family physician, functional specialist, physician assistant, midwife, medical nurse):
   a) a medical specialist cabinet is an outpatient medical institution in which a medical employee provides outpatient medical care, including medical, preventive, and health promotion procedures or manipulations;
   b) a medical specialist cabinet meets the general requirements for outpatient medical institutions set by these Regulations;
   c) in a medical specialist cabinet, in which invasive medical technologies are used, in addition to what is stipulated in Paragraph 29 of these Regulations, a separate room has to be provided for exploiting invasive medical technologies. A separate place for aseptic manipulations and a separate place for septic manipulations are available in the room or a separate room for aseptic manipulations and a separate room for septic manipulations are available.

The laws of the Republic of Latvia and the Cabinet Regulations determining the operation of physician practices are summarised in Table 1 by type of infrastructure.

Table 1

Types of social infrastructure of physician practices and their legal Framework in Latvia

Types of infrastructure		
Material infrastructure	Institutional infrastructure	Personnel infrastructure
24 April 1997, the law "On Physicians' Practices"		
20 March 2001, the Cabinet Regulations No. 133 "Procedures of Certifying Medical Institutions and their Structural Units"		
07 December 1984, the law "Latvian Codex of Administrative Offences"		
15 September 2008, the Cabinet Regulations No. 746 "Procedure of Founding, Updating, and Maintaining the Register of Patients with Certain Sicknesses"		
28 June 2005, the Cabinet Regulations No. 468 "Procedures of Accepting Technologies Used in Medicine and of Introducing New Medical Technologies"	4 April 2006, the Cabinet Regulations No. 265 "Procedure of Keeping Medical Official Records at Medical Institutions"	12 June 1997, the law "Medical Law"
20 January 2009, the Cabinet Regulations No. 60 "Regulations regarding the Compulsory Requirements for Medical Institutions and their Structural Units"	8 March 2005, the Cabinet Regulations No. 175 "Regulations regarding Producing and Storing Prescription Forms as well as Writing and Storing Prescriptions'	25 August 2009, the Cabinet Regulations No. 972 "Regulations regarding the Distribution of Resident Physicians and their Funding"
The Cabinet Regulations No. 581 "Procedures of Registering, Verifying, Distributing, Exploiting, and Technically Controlling Medical Equipment""	3 April 2001, the Cabinet Regulations No. 152 "Procedure of Issuing Sick-Leave Certificates"	23 December 1997, the Cabinet Regulations No. 431 "Procedure of Certifying Medical Staff"
8 March 2005, the Cabinet Regulations No. 170 "Regulations regarding the Register of Medical Institutions"	24 February 2009, the Cabinet Regulations No. 192 "Procedure of Founding, Updating, and Maintaining the Register of Medical Staff and Medical Support Staff"	24 February 2009, the Cabinet Regulations No. 193 "Regulations regarding the Certification Procedure for Medical Support Staff and the Professions of Certified Medical Support Employees"
	23 March 2000, the law "Personal Data Protection Law" ("LV", 123/124 (2034/2035), 6 April 2000)	2 May 1998, the Cabinet Regulations No. 177 "Compulsory Insurance of Civil Liability of Practising Physicians"
		24 March 2009, the Cabinet Regulations No. 268 "Regulations regarding the Medical Competencies and Theoretical and Practical Knowledge of Medical Staff and Students of First or Second Level Professional Higher Medical Education Programmes"
		20 June 2001, the law "On Regulated Professions and Recognition of Professional Qualifications"

Source: author's construction based on legal enactments of the Republic of Latvia

Results and discussion

The paper includes the results of a study on the availability of physician practices from the point of view of provision of social infrastructure. The research object is physician practice services in Latvia's regions, a survey of patients was conducted to achieve the research aim. The goal of the survey is to ascertain the opinions and knowledge of patients on primary health care, its funding procedure and its availability as well as their opinions on the availability of guaranteed health care services. During the survey, the equipment of physician offices, the suitability of these offices and their location, their working hours, the availability of physicians, physician assistants, data bases, and means of communication were ascertained, and an assessment of and recommendations for the present situation were made afterwards.

The respondents were selected from all the regions of Latvia to identify, as much as possible, the real situation in the whole territory. The survey questions were based on the minimum requirements set by Latvia's legislation, so that the basic services of guaranteed primary health care are available for the individuals who need them. The patients questioned were randomly selected by sending an e-mail offering to take part in the survey; besides, the respondents could participate in the survey at their own initiative on an Internet site. The survey's questionnaires were developed using the Internet site www.visidati.lv, which significantly facilitated the process of surveying. The surveying of patients was conducted from 19 July to 12 September 2010 by sending e-mails, placing information in the social network www.draugiem.lv as well as all the other advertisement sites in Latvia: www.pilseta24.lv, www.reklama.lv, www.ventasbalss.lv, and by sending e-mails to randomly selected individuals; totally 605 valid responses were received. Two different questionnaires were developed in the survey. The two questionnaires were developed using the matrixes of questionnaires available on the website www.visidati.lv, so that it is easier for respondents to fill in the questionnaire. The data obtained in the survey were processed using the method of grouping, descriptive statistics, MS Excel, and SPSS 18.00.

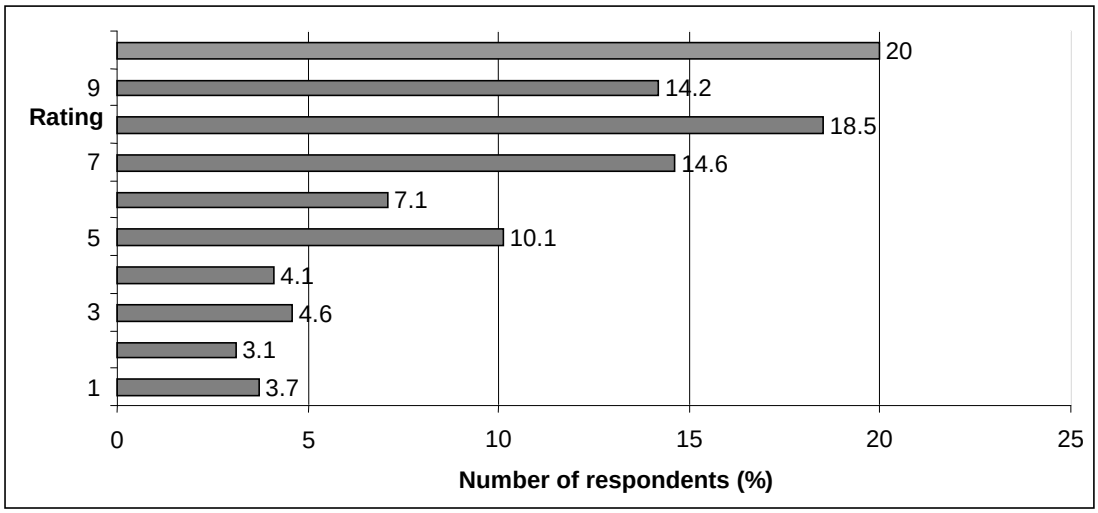
Characteristics of the respondents-patients

After analysing the respondents' age and gender, it was identified that women are the most active among the respondents, their proportion accounts for 81%, while men were 19% of respondents. According to the data on the respondents' age structure, one can conclude that the youngest respondent was 14 years old, while the oldest – 74 years old, but the average age was 40 years. The difference in the age of the youngest and oldest respondents was 60 years. The number of observations was 605.

The majority of the respondents represent Vidzeme region – 26.8%, followed by the regions of Kurzeme – 25.5%, Zemgale – 17.9%, and Riga – 14.9%. It is possible, that the respondents' distribution by regions can be explained by the availability of the Internet as well as the social activity of individuals themselves.

Since 1997, any individual has to voluntarily choose a family physician and get registered at the family physician's office in order to receive health care services that are paid by the government. A question was included in the survey whether the respondents are registered with a family physician, as it impacts the price of health care services provided. Of the respondents, 94% were registered with a family physician, while 6% admitted that they do not know whether they are registered at all.

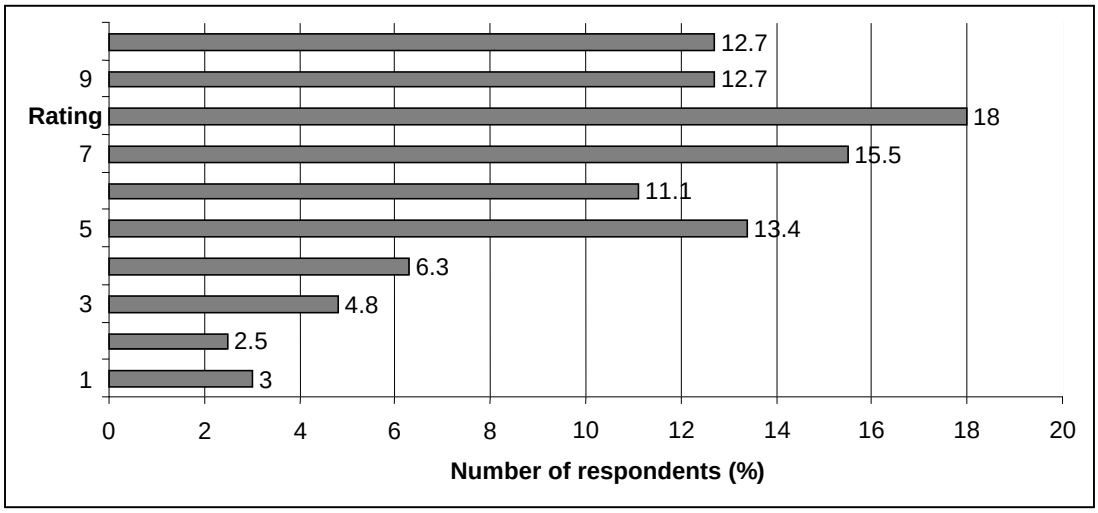
In the survey, the patients were offered to rate their family physician's attitude to and interest in them as a patient according to the scale from 1 (poor) to 10 (good).



Source: author's construction based on the study data

Fig.1. **Rating of the respondents regarding family physicians' attitude to and interest in them as patients (n=605)**

According to the data of Figure 1, one can see that only 20% of the respondents rate the attitude of their family physician with 10, 18.5% - with 8, 14.6% - with 7, and 14.2% - with 9. In the survey, the patients were also offered to rate the convenience of their family physician practice according to the same scale.

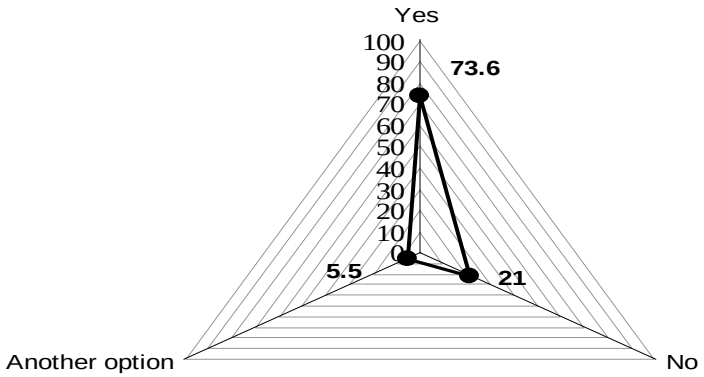


Source: author's construction based on the study data

Fig.2**. Rating of the respondents of the convenience regarding family physician practices (n=605)**

According to Figure 2, one can see that 18% of the respondents rate the convenience of family physician practices as 8, 15.5% - as 7, 13.4% - as 5, 12.7% - as 10 and 9, 11.1% - as 6, 6.3% - as 4, 4.8% - as 3, 2.5% - as 2, and 3% - as 1.

A very subjective question was included in the survey – to gain an impression on the patients' opinion on the length of their visits. When the respondents were asked whether the length of their visits is sufficient, 73.6% answered yes, 21% - said no, and 5.5% of respondents chose other answer options, for instance, "could be longer, too long, depends on patient, physician enjoys blabbering, sometimes it takes an hour to wait, and an attitude that you are a young individual and it is normal that you leave the office sooner" (the distribution of answers is shown in Figure 3).

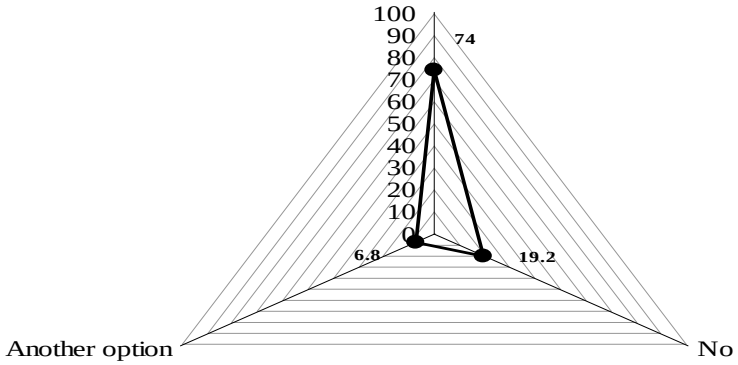


Source: author's construction based on the study data

Fig.3. **Rating of the respondents regarding their length of visits to their family physician (%) (n=605)**

The respondents were asked whether their family physician's office was convenient and meet the needs of patients. Of the respondents, 74% said yes, 19.2% said no, and 6.8% mentioned another answer option, for instance:

- small office rooms;
- cosmetic repair has not been done for a long time;
- a frosted glass door;
- good audibility;
- reminds my private apartment (the distribution of answers is shown in Figure 4).



Source: author's construction based on the study data

Fig.4. **Rating of the respondents regarding the convenience of their family physician's office and whether it meets the needs of patients (%) (n=605)**

The respondents were asked whether a vehicle is available at their family physician's office for its needs in case it is necessary to deliver family physician services home; 40% of the respondents said yes, 23% said no, and 37% mentioned another option, for instance, "I do not know, no information". It can be explained by the fact that family physician offices do not provide information on the availability of a vehicle and do not offer such a service to patients.
The respondents were asked whether their family physician's office is located in a convenient place (it is easy to get to it by car, public transport, or on foot); 92% of the respondents answered yes, 6% said no, and 2% mentioned another option, for instance, "toll parking, not enough space to leave a car, individuals with disability are not able to get to the office due to steep stairs, located far away from a bus stop el al."

One of the indicators of the availability of family physicians is their working hours and the length of visits to them. The Cabinet Regulations No. 1046 "Procedure of Organising and Financing Health Care" stipulates that the duties of family physicians are as follows:

- length of patient visits to family physicians – not less than 20 hours a week;
- working hours – not less than 40 hours a week; during this period, a family physician or a nurse or a physician assistant are available at the family physician's office;
- a period when patients visit the family physician – both in the morning (from 8 a.m. to 1 p.m.) and in the evening (from 1 p.m. to 7 p.m.) hours;
- a certain period for visits of patients who did not notify their visit (acute patients) – not less than one hour a day;
- a certain period for visits of patients who notified their visit;
- provision of primary health care services five weekdays long. To provide it five weekdays long, family physicians if necessary prolong their working hours.

The respondents were asked whether the working hours of their family physician and the length of their visits are sufficient; 70% of the respondents said yes, 27% said no, and 3% mentioned another option, for instance, "working hours should be in evenings – which is convenient for working individuals, after 5 p.m.; at least once a week working hours have to begin at 7.30 in the morning and last till 7.30 in the evening".

Family physicians have to satisfy certain requirements and provide health care services to patients at their office, at workplaces of patients, as well as places of residence of patients. One of the requirements is home visits. The Cabinet Regulations No. 1046 "Procedure of Organising and Financing Health Care" stipulate that a duty of family physicians is to provide home visits on weekdays – at least until 3 p.m.. To ascertain whether patients know about home visits, a question was included in the survey on the availability of home visits. The respondents were asked whether home visits by their family physicians are available; 76% of the respondents said yes, 3% said no, and 21% did not know – it means that family physicians do not give information to their patients about home visits or are reluctant to doing it.

Conclusions

The health of individuals and the problems related to it have to be a priority in the state's policy. It is necessary to solve the problems that exist in relations between family physicians and patients, as presently, according to the author's experience and research results, one can conclude that patients are not satisfied with the work, attitude, and availability of family physicians, and family physicians themselves are not able to cope with their duties due to insufficient government funding. To increase the availability of primary health care, it is necessary to:

- extend the working hours of physician practices (including weekends);
- increase the number of medical specialists who patients can turn to without their family physician's recommendation;
- improve the work organisation of physician practices (by employing additional physicians and physician assistants, by introducing and observing the times of appointment, or by implementing joint physician practices);
- introduce an electronic system of contacts for receiving prescriptions, test results, and other services if there is no urgency to see a physician;
- develop a system for eliminating queuing; there is a possibility to register visits on the Internet, the maximum length of a visit of patient has to be set;
- reconstruct the reception room of family physician offices, so that it is available to patients with disabilities and older patients;
- provide home visits by contracting transportation companies or by purchasing a car for this purpose;
- establish more outpatient institutions, so that a choice is provided for patients.

It is necessary first for patients themselves to take care of their health and, second, the social infrastructure of physician practices and their culture of service are to be improved to ensure quality primary health care.

Bibliography

1. Apinis P. (2008). Latvijas veselības aprūpe – Divdesmit gadu ārstu biedrības skatupunktā. NRA 16.09.2008.
2. Arhipova I., Bāliņa S., (2003) Statistika ekonomikā. Risinājumi ar SPSS un Microsoft Excel., Datorzinību centrs, 349 lpp.
3. Ārstniecības likums (1997). LR likums. Retrieved: http://phoebe.vm.gov.lv/misc_db/web.nsf/bf25ab0f47ba5dd785256499006b15a4/f79712a4165aa2ddc22574650032fb88/$FILE/arstn_likums2008.pdf . Access: 15 January 2011.
4. Ārstniecības personu sertifikācijas kārtība (1997). Ministru kabineta noteikumi Nr. 431. Retrieved: http://www.likumi.lv/doc.php?id=52959&from=off. Access: 15 January 2011.
5. Noteikumi par ārstniecības iestāžu reģistru (2005). Ministru kabineta noteikumi Nr. 170. Retrieved: http://www.likumi.lv/doc.php?id=103605&from=off. Access: 15 January 2011.
6. Noteikumi par ārstniecības atbalsta personu sertifikācijas kārtību un sertificējamo ārstniecības atbalsta personu profesijām (2009). Ministru kabineta noteikumi Nr. 193. Retrieved: http://www.likumi.lv/doc.php?id=188667&from=off. Access: 15 January 2011.
7. Par prakses ārstiem: LR likums (1997). Retrieved: http://www.likumi.lv/doc.php?id=43338. Access: 15 January 2011.
8. Paparde, I. (2010). Samazinās agrīni atklāto audzēju skaits. // Neatkarīgā Rīta Avīze, 29. aprīlis.
9. Veselības aprūpes organizēšanas un finansēšanas kārtība (2009). MK noteikumi Nr.1630. Retrieved: http://www.vnc.gov.lv/files/MK_1046_grozijumi_speka_ar_01012010_pamatte.pdf. Access: 15 January 2011.
10. Prakses ārsta civiltiesiskās atbildības apdrošināšanas kārtība (1998). MK noteikumi nr.177. Retrieved: http://www.likumi.lv/doc.php?mode=DOC&id=48117 . Access: 15 January 2011.
11. Noteikumi par obligātajām prasībām ārstniecības iestādēm un to struktūrvienībām (2009). MK noteikumi Nr. 60. Retrieved: http://phoebe.vm.gov.lv/misc_db/web.nsf/bf25ab0f47ba5dd785256499006b15a4/6ae79475581b83acc2257444002560fc/$FILE/obligatas_prasibas.pdf. Access: 15 January 2011.

Policy Challenges in Reducing Age Imbalances in the EU Agriculture

Aldona Zawojska, *Dr.oec., researcher*
Department of Economics and Economic Policy, Warsaw University of Life Sciences

Abstract
The paper shows the present situation and trends in age disparities between young and older farmers in the EU Member States regarding their share of farm holders and land use. It also reviews the existing Community support programmes aimed at improving age structures with focus on their implementation and effectiveness. Early retirement and Setting up of young farmers measures have mixed usage across the EU Member States. Those instruments have mainly contributed to acceleration of the process of intergenerational succession of agricultural holdings. However, there is still a tendency towards ageing of the farm holders. In the EU, overall young people (under 35 years) accounted only for 6% of the farm holders and occupied about 9% of the total UAA in 2007. About 1/3 of all farm holders were in the age of 65 and over. The politicians should look with urgency for additional instruments if young people are to be encouraged to take up a career in farming.
Key words: economics of ageing, farmers, EU, Common Agricultural Policy.

Introduction

During the past decades, scientists as well as public officials have increasingly directed attention to social and economic consequences of depopulation, especially of young people, in rural areas of the European Union (EU). There is a general feeling that in the Community as a whole, too many senior people are staying in farming and not enough young people are entering the sector.

A stress upon human capital as a source of growth and development has given birth to investigation of the economic effects of labour mobility, education, changes in structure of the occupation, and differences in productivity by age and other demographic variables (Brennan M.J. et al., 1980). One of the largest changes in the occupational composition of labour force, especially in the developed countries, is a substantial reduction in the proportion of farmers[1]. Farming is one of the major occupations in which an older worker should have a good chance of remaining in labour force. If farming does provide a major source of employment for older people, employment they could not obtain elsewhere, then a large decline in a number of farming jobs available contributes to the older worker's problem.

The question of how to attract younger people to agriculture to overcome generation gap has been the subject of numerous debates conducted for several years on both the EU and national levels. The age profile of farm holders is a significant element for changing farm structures, particularly in the context of the EU support. According to some stakeholders, like youth farm organisations, for example, young farmers are not regarded a priority in agricultural and rural development policy in a number of the EU Member States. Also specialists in the subject area (e.g. Shucksmith M., 2010) think that the present EU rural development regulation remains focused almost entirely on agricultural producers to the neglect of territorial rural development. Greater attention should be given to the promotion of the role of young people in rural areas and their economic and social integration.

The aim of this paper is to present up-to date picture of young farmer's position in the European agriculture sector compared with that occupied by the oldest farmers as well as to review actually existing and wished-for support programmes, which are likely to encourage and help young entrants forge farming career. In the framework of the research, the following tasks were undertaken: 1) to determine factors explaining the age structure within agriculture,

[1] In 15 old EU Member States, in 2009 agriculture accounted for 3.4% of total employment compared with 5% in 1995. For the EU-27 those shares were 5.6% and 8.6% respectively.

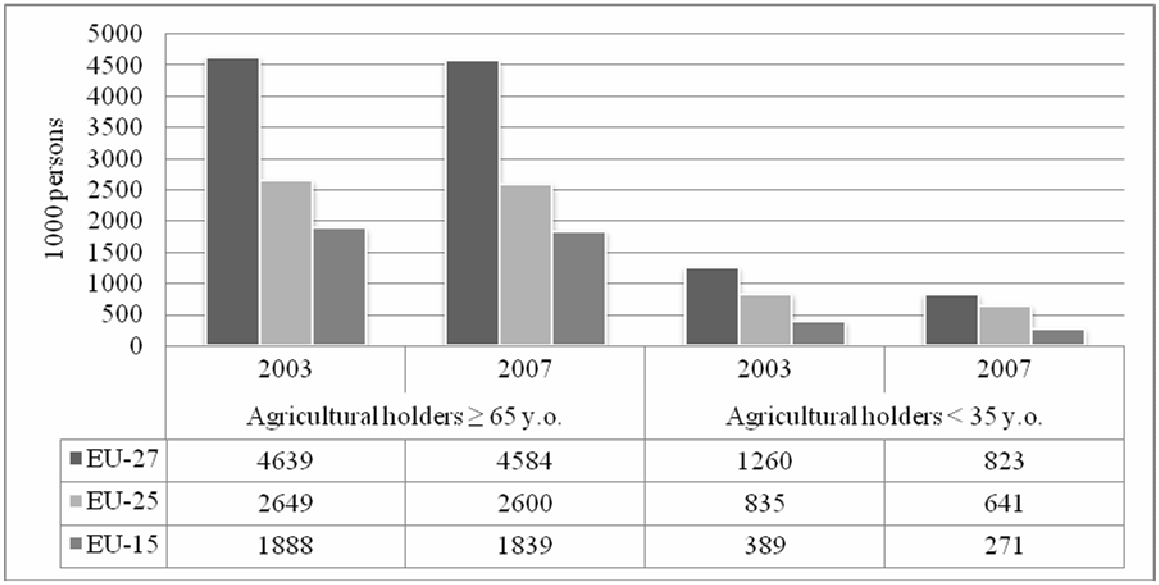
especially factors affecting the young people decisions on entering or not entering farming; and 2) to examine success and failure of the national and European policies directly or indirectly addressed to farm-related young and adult people.

The study is based on the review of legislation, national Rural Development Programmes (RDP) and literature as well as on statistical data available from the EU Labour Force Survey (LFS) and Farm Structure Surveys (FSS) conducted in 2004 and 2007[2]. A descriptive method and secondary data analysis was applied in the study. In the presentation of the statistical data, young farmers mean persons aged under 35, while old farmers are those at least 65 years old. Typically, people aged 65 and over, i.e. above ordinary retirement age, are not active members of the labour force[3].

Results and discussion

1. Young and older people in the EU agriculture: some statistical evidence

Ageing or the increase over time of the share of people aged 65 and over in the total population in the EU agriculture is generally influenced not simply by the increase of the number of old people but by the sharp decrease in the numbers of the young. Figure 1 illustrates the ageing of farm holders in the EU; although both age groups have declined in number since 2003, the drop in the youngest group was by 35%; while in the oldest group the decline was by 1.2%.



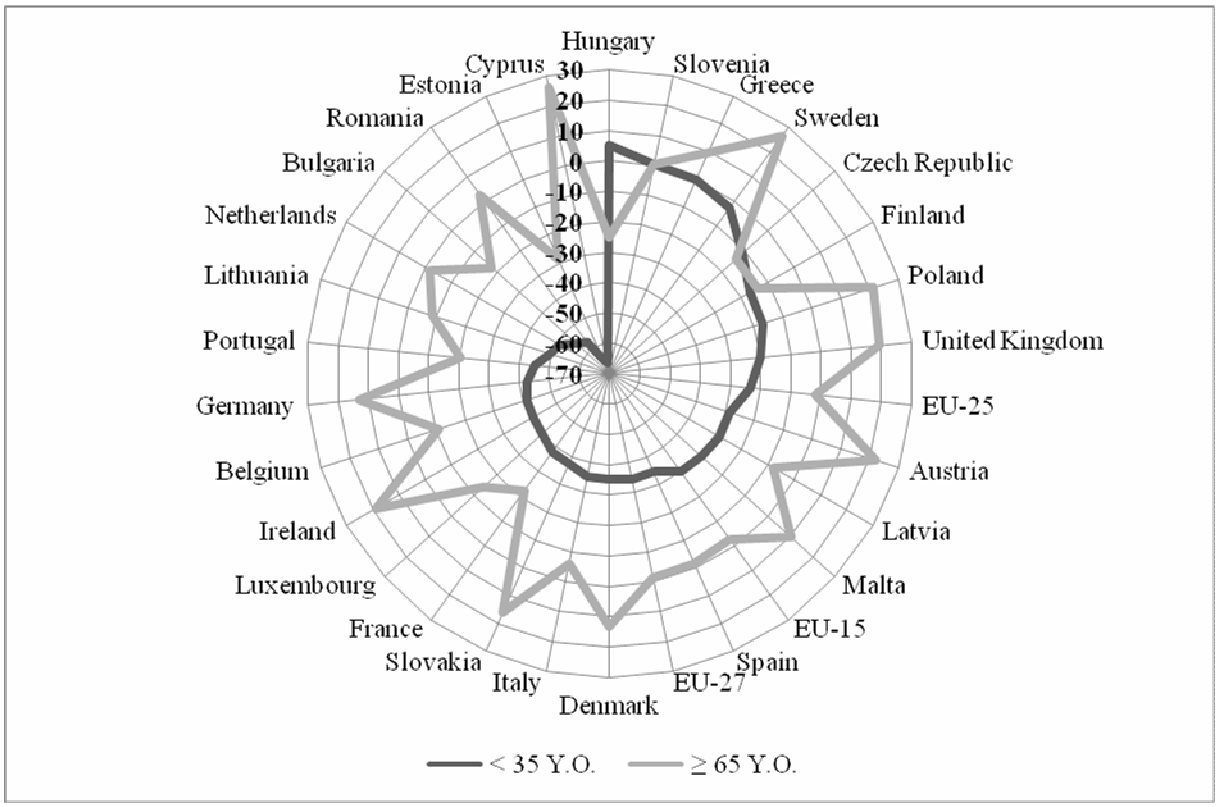
Source: Eurostat, Farm Structure Survey

Fig. 1. **The number of agricultural holders by age in 2003 and 2007**

[2] More updated data are not available, as the next agricultural census (2009/2010) has been conducted and the first results will be available probably in the summer of 2011.

[3] According to Eurostat (LFS), in 2008 the average exit age from the labour force was 61.4 years in the EU-27 (61.5 years in 15 old Member States and 60.4 years in 10 new Member States).

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011



Source: author's construction based on Eurostat, Farm Structure Survey

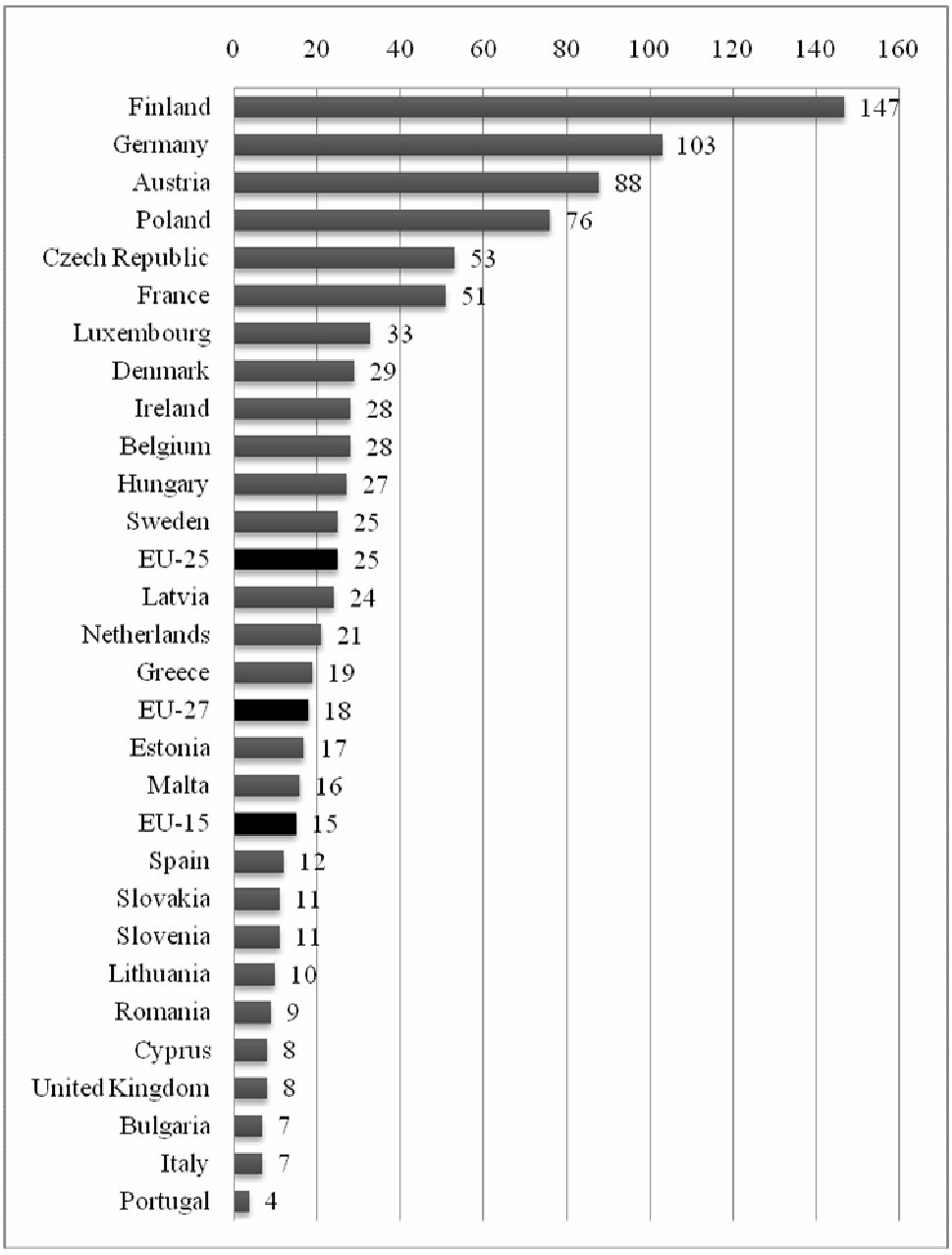
Fig. 2**. Trends in the number of agricultural holders by age, 2007/2003 (% change)**

A rapid decrease (of more than 50%) in the number of young holders over four-year period has occurred in Cyprus, Estonia, Romania, Bulgaria, and the Netherlands. In the same period, a big increase (by 20% and more) in the number of old holders was observed in such countries like Sweden, Cyprus, Austria, and Poland (Figure 2). Table 1 gives an overview on the shares of the two age groups for 2007 in the total number of agricultural holdings and land use.

Merely 6% of farm holders in the EU as a whole were under 35 years and 34% were at least 65 years old. Young people farmed 8.6% of the total UAA, while their oldest counterparts used 14% of agricultural land.

The differences between the percentage of the holders aged 65 and over and the holders aged less than 35 years were the biggest (more than 40 percentage points) in Portugal, Bulgaria, Italy, and Romania. This difference was negative only in two Member States (Finland and Germany) indicating the absence of age-structured problems. Relatively large presence of young holders was also in Austria, Poland, France, and the Czech Republic. In 2007, in the EU on average there were 18 holders under 35 years old on every 100 holders of 65 years of age or older (Figure 3). This proportion has just deteriorated, as it was as 27 on 100 in 2003.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011



Source: author's calculations based on Eurostat, Farm Structure Survey

Fig. 3. **The number of holders under 35 years on every 100 holders at least 65 years old, 2007**

In the majority of the EU Member States (except for Poland, France, Finland, Austria, Luxembourg, Slovakia, Germany, the Czech Republic, and Estonia), the share of UAA farmed by old holders was higher than that of the young holders, with the prominent difference (more than 20 percentage points) in Romania, Portugal, and Italy. Presented gaps between the two age groups in respect to their shares of holders and agricultural land are especially important in the case of Romania and Bulgaria, which did not include Early retirement measure in their rural development programmes for 2007-2013. It seems that this measure would facilitate the access of young farmers and would-be farmers to land, and consequently contribute to improving age structure due to the Common Agricultural Policy (CAP) instruments.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 1

Agricultural holders, utilised agricultural area and average size of holding by age, 2007

Member States	Share of total holders (%)		Share of total UAA (%)		Average farm size (ha UAA)	
	< 35 y.o.	≥ 65 y.o.	< 35 y.o.	≥ 65 y.o.	< 35 y.o.	≥ 65 y.o.
Belgium	5.9	21.2	7.4	8.8	34.8	12.9
Bulgaria	3.1	45.3	8.3	13.3	16.5	1.8
Czech Republic	9.8	18.5	6.7	5.6	62.3	29.0
Denmark	6.0	20.3	8.4	14.9	84.6	44.8
Germany	7.7	7.5	6.8	4.8	40.3	29.5
Estonia	5.6	33.3	10.6	10.6	66.6	13.2
Ireland	6.9	24.9	9.0	19.8	36.2	25.7
Greece	7.0	37.4	11.6	23.8	8.0	3.0
Spain	4.5	36.6	7.5	18.4	34.8	12.7
France	7.9	15.4	11.6	2.9	74.9	11.9
Italy	2.9	44.5	6.8	27.2	16.7	4.7
Cyprus	2.5	29.5	4.8	22.6	7.3	2.8
Latvia	7.2	29.4	10.4	16.2	24.1	9.0
Lithuania	4.2	40.7	7.5	21.7	19.9	6.1
Luxembourg	5.3	15.9	9.3	4.9	71.2	17.9
Hungary	7.6	27.8	7.5	9.7	6.7	2.4
Malta	4.2	25.4	5.8	18.1	1.1	0.7
Netherlands	3.9	18.2	3.9	11.8	24.7	17.1
Austria	9.7	11.0	11.1	5.0	19.4	8.9
Poland	12.3	16.2	16.5	5.7	8.7	2.3
Portugal	1.9	48.3	6.0	30.4	34.9	8.1
Romania	4.3	45.0	4.5	30.8	3.6	2.4
Slovenia	4.0	35.0	6.4	26.2	10.4	4.9
Slovakia	3.6	32.9	7.2	4.7	53.3	4.1
Finland	9.1	6.2	11.5	3.8	42.0	20.9
Sweden	5.5	21.6	7.1	12.0	51.2	25.4
United Kingdom	2.6	32.6	4.7	18.0	70.2	31.5
EU-27	6.1	34.1	8.6	14.0	17.3	5.3
EU-25	7.1	28.8	8.9	12.5	20.8	7.5
EU-15	5.0	33.8	8.2	13.5	33.8	9.1

Source: author's calculations based on Eurostat: Farm Structure Survey

In 2007, the average farm size of young farmers in the EU-27 was 17.3 ha, significantly (more than 3 times) larger than that of farmers who were at least 65 years of age (Table 1). Compared with the elderly, young people tend to manage bigger farms in all individual Member States, but the ratios between age groups vary significantly. In Slovakia, Bulgaria, France, and Estonia the average UAA per young holder's farm was from 13 to 5 times bigger than that per old farmer. On the contrary, in Germany, Ireland, the Netherlands, Romania, Malta, and Denmark this ratio was below 2.

2. Selected factors explaining the age structure within agriculture

Central importance in the determination of agricultural structure and total number of farmers and farm families is held by the entry into farming by the next generation (Gale H. F., 1994). According to Pesquin C. and his colleagues (1999), the family farm sector relies heavily on intra-family succession, which enables the family to realise benefits from intergenerational risk-sharing. Intergenerational succession allows parents to rely on the farm for old-age support (Kimhi A. and Lopez R., 1997). The study of Glauben T. et al. (2002) has found that the likelihood of having a succession plan increases with the expected government farm programme payments, farm wealth, and age. However, Kimhi A. (1994) as well as Breustedt G. and Glauben T. (2007) have found the negative relationship between age and the probability of succession at advanced ages of the farm operator. This might suggest that a farmer who postpones succession will have more problems in finding a successor within the family, as his /her children will have started looking for alternative work in the non-farm sector.

Additionally, the decision to exit the farm sector by older farmers is negatively related to the size of farm holding; the larger the farm size, the lower is the exit rate from farming (Breustedt G. and Glauben T., 2007). Bigger farms are more likely to provide a sound income for the farm operator and his/her family, thus opportunity costs for exiting farming are higher in those farms.

Exits from farming caused by financial stress occur most likely among farm holders that are in the early or middle phases of their career. However, according to Gale H.F. (2003) most exists within European farming are voluntary and not due to bankruptcy.

As concerns the old persons, the attractiveness of keeping farm is based upon the same reasons given for self-employed in other sectors: they are allowed to adapt their working conditions to suit their personal needs as they aged. As the relative demand for different levels of skills changes, older people are simply unable to adapt themselves to the changes as rapidly as are the younger persons. The former might fail to find positions in other occupations, so they might decide to stay in farming or to retire. On the contrary, the young are more educated, more mobile, and adjust more rapidly to technological change and labour market requirements. Young, especially well educated people from farm families are either likely to move to the city or from farming to other careers within rural community. One of the most important factors discouraging old people to leave agriculture is the lack of adequate financial resources including magnitude of pension or retirement income. For those who cannot afford to retire comfortable, withdrawn from labour force might present economic hardship. However, in the EU countries many farms take the retirement payments as an opportunity to leave the sector.

The observed underrepresentation of young people in the EU farming results from many factors, which can be either similar or different in various Member States and regions. They are not described here in detail due to page restriction. Among the most important obstacles facing young farm beginners and would be farmers seem to be the following: perception of agriculture as hard work for low remuneration, relatively low income from farming compared with alternative careers or low profitability of agricultural production, difficult access to land (high land prices[4] and rents) and financial capital, unpredictability and uncertainty in agriculture, bureaucratic burden on beneficiaries of national and the EU support programmes, strict environmental and other requirements imposed on farms, which create additional costs to farm business, and low level of life quality in several (but not all) rural regions of the EU, especially compared with that in the urban areas (ex. lack of social infrastructure such as childcare, leisure, health care etc.).

Succession as a way of young people's transition into farming is more likely on larger, more viable farms. According to Shucksmith M. (2010), young people might stay on the farm and ultimately succeed their parents because of an emotional tie to the land rather than in the expectation of a better return for their labour. On the contrary, Rosenzweig M.R. and Wolpin

[4] For example, in the UK agricultural land prices have more than doubled in value between 1995 and 2009, and are expected to nearly double again between 2010 and 2012 (Agricultural.., 2009)

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

K.I. (1985) who focused on the transfer of human capital across generations, assume that the existence of returns to land-specific experience generates incentives for children to work on the family farm when young. Human capital, acquired in childhood as a by-product of growing up, increases the value of the transferred physical assets; the young thus are the highest market bidders for their parents' agricultural holdings.

3. Policy measures affecting or facilitating age-structural adjustments in agriculture

National and Community public support has an essential impact on structural change in agriculture. Generally, it is observed that both high subsidy payments and agricultural prices lead to an increased profitability of farming, which lowers the farm exit rate and leads to a slowdown of structural change in agriculture (Happe K., 2004; Breustedt G. and Glauben T., 2007).

The European institutions have looked carefully on the situation facing young farmers under the ongoing reforms of the CAP, leading to a resolution of the European Parliament (2008) with the purpose of making it easier for young people to enter the agri-foods sector. This resolution has drawn attention to the continuing difficulties stemming from high setting-up or installation costs (ex. agricultural property prices and rental prices) and the need to invest continuously in tangible and human capital in order to make technological and logistical improvements. The resolution has recommended the introduction of instruments enabling priority in respect of agricultural land transfers to be given to young farmers setting up in business rather than to existing farmers wishing to increase their holdings' size (provision should be made for incentives for owners who rent farms to young farmers and/or for rent support). The resolution was also taken on the importance of access to financial capital for young and beginning farmers given the high level of their indebtedness and high installation costs that reduce ability of young farmers to establish a good competitive position.

During the Financial Perspective 2007-2013 the CAP can directly contribute to the improving age-related structures in agriculture through the two main instruments: Setting up of young farmers (Measure 112) and Early retirement (Measure 113), both included in Axis 1 - Improving the Competitiveness of Agricultural Sector. Those measures are aimed at improving human resources in farming. Early retirement scheme is expected to promote a transfer of resources (land, production rights) from the exiting farmers to those who continue farming and will use the resources more efficiently. The setting up support is expected to make it easier for young farmers and reindeer entrepreneurs to establish themselves. Estimated number of beneficiaries of the Early retirement in the EU-27 for 2007-2013 equals to 81.5 thousand persons; while the number of assisted young farmers is likely to reach 191 thousand persons (Wehrheim P., 2010).

The implementation of both measures has never been and still is not mandatory for the Member States. Therefore, Setting up of young farmers has been included in the RDPs 2007-2013 by 24 Member States and not selected by Malta, the Netherlands, Slovakia, the majority of the German Länder governments, and Wales. Ireland and Latvia have suspended the measure because of the financial crisis. Early retirement has been included in the RDPs of 17 Member States. Bulgaria, Estonia, Luxembourg, Malta, the Netherlands, Austria, Sweden, Slovakia, Romania, the majority of the German Länder governments, Wales, and Scotland did not choose to implement this measure; while Ireland suspended it to new applicants. The European Parliament proposed that the CAP should include aid for young farmers among the compulsory measures of future Rural Development Programmes. In addition, it called for a land bank to be created to reallocate land vacated through early retirement (Shucksmith M., 2010). The European Parliament takes the view that national early-retirement arrangements should apply only where the retiring farmer's holding is taken over by a young farmer, or alternatively, that the retiring farmer should be entitled to better pension where this happens (European Parliament..., 2008).

The open question is to what extent the setting up aid and early retirement aid under the Financial Perspective 2000-2006 have contributed to the earlier transfer of holdings (ex. to

relatives versus non-relatives). The evaluation method for those measures needs farm accounting and farm structure data as well as information on farmers' investment behaviour.

Previously, aid to early retirement and to assisting new entrants had not been offered in England and Wales in their RDP, since a history of lack of success, ex ante appraisals that suggested low additionality and high deadweight costs (the expectation being that much spending would be absorbed by people who would have retired anyway) (Cahill C. and Hill B., 2004).

Caskie P. et al. (2008), using the FADN data and a separate survey of 350 farmers (aged 50 - 65) from the Northern Ireland, have explored whether the introduction of Early retirement scheme is likely to represent good value for money. Their conclusion is that almost a quarter of all payments would incur deadweight losses, i.e. go to farmers who would be retiring anyway.

For some governments (the Flemish Government as an example) setting up aid together with investment aid were the main tools of their rural policy in 2000-2006, and those measures enjoyed wide recognition. In addition, France for many years has enthusiastically implemented programmes favouring the setting-up of young farmers and the early retirement of older ones, often in parallel. The general conclusion in the literature is that the combined effect of the support for early retirement and installation of young farmers has been mainly to accelerate the process of intergenerational succession of agricultural holdings (mainly within families), which would have happened anyway, i.e. in the absence of the intervention, bur later (Cahill C. and Hill B., 2004; Copus A. et al., 2006).

It is important that in Poland, for example, setting up of young farmers seems to be a good tool relevant for the current semi-subsistence farming as the aid is offered even for very small-area farms if they increase to the national (or regional) average within 3 years. In such situation those farms are provided with the possibility to improve their potential to develop into commercially viable businesses.

Regrettably, among the opinions for the European Rural Development Network in the context of the public consultation on the CAP after 2013, one can find a view that Early retirement scheme and Setting up of young farmers should be abandoned or downsized drastically, and priority should be given to measures that aim to improve food-processing and marketing of products (for example, Greek standpoint in the National Rural..., 2010).

Conclusions and recommendations

The EU has undertaken several policy measures to prevent the emergence of strong demographic imbalances in agriculture. Amongst the most important incentives put in place are those encouraging the installation of young farmers and the exit of older farmers. Early retirement and setting up of new entrants have mixed usage across the EU Member States. In some countries, they are not applied since suggested low additionality or net impact on retirement, ineffective aid for new entrants, relatively favourable age structure of agricultural holders, and the shortage of national financial resources to co-finance those measures. Other countries (like France and Poland) implemented those measures vigorously with a view to improving farm structures and maintaining viable population levels in rural areas.

The politicians shall act with urgency if young people are to be encouraged to take up a career in farming. In terms of policy relevance, it seems that the EU and national agricultural policies are to some extent responsible for keeping older people in the farming as they create disincentives for them to leave the sector (such as, for instance, direct payments capitalised into the farmland). Succession arrangements (especially those involving parties who are not family members) should be facilitated in order to enable the young educated in farming to become farmers. Additionally, young farmers and new entrants should be given preferences in other policy measures both those included in the national or regional RDPs (such as aid for modernisation of agricultural holdings) and national support (ex. preferential loans or farm insurance schemes in favour of young farmers).

Agricultural and rural policies can never substitute incomplete general policies, such as tax policy, employment policy, social policy, education policy, gender policy etc., which influence the behaviour of each economic agent, including farmers.

Bibliography

1. *Agricultural Land Prices are Expected to Nearly Double in Value between 2010 and 2012*. UK land directory. Retrieved: http://www.uklanddirectory.org.uk/land-price-boom.asp. Access: 28 December 2010.
2. Brennan, M.J., Taft, P., Schupack, M.B. (1980). *The Economics of Age.* Ayer Publishing.
3. Breustedt, G., Glauben, T. (2007). Driving Forces behind Exiting from Farming in Western Europe. *Journal of Agricultural Economics*, No. 58(1), pp. 115–127.
4. Cahill, C., Hill, B. (2004). *Policies Affecting or Facilitating Resource Adjustment in Agriculture in the European Union*, IAPRAP\IATRC Summer Symposium, Adjusting to Domestic and International Agricultural Reform in Industrial Countries, June 6-7, 2004, Philadelphia, PA 15764, International Agricultural Policy Reform and Adjustment Project (IAPRAP). Retrieved: http://ageconsearch.umn.edu/bitstream/15764/1/cp04ca01.pdf. Access: 28 December 2010.
5. Caskie, P., Davis, J., Wallace, M. (2008). How Effective is Farmer Early Retirement Policy? *EuroChoices*, Vol. 7, Issue 3, pp. 38-44.
6. Copus, A., Hall, C., Barnes, A., Dalton, G., Cook, P., Weingarten, P., Baum, S., Stange, H., Lindner, Ch., Hill, A., Eiden, G., McQuaid, R., Grieg, M., Johansson, M. (2006). *Study on Employment in Rural Areas*. *Final Deliverable*. Retrieved: http://ec.europa.eu/agriculture/publi/reports/ruralemployment/sera_report.pdf. Access: 7 January 2011.
7. European Parliament Resolution of 5 June 2008 on the Future for Young Farmers under the Ongoing Reform of the CAP (2007/2194(INI).
8. Eurostat Statistics Database. Retrieved: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database. Access: 18 and 20 December 2010.
9. Gale, H.F. (1994). Longitudinal Analysis of Farm Size over the Farmer's Life Cycle. *Review of Agricultural Economics*, No. 16, pp. 484–487.
10. Gale, H.F. (2003). Age-specific Patterns of Exit and Entry in US Farming; 1978–1997. *Review of Agricultural Economics*, No. 25(1), pp. 186–186.
11. Glauben, T., Tietje, H., Weiss, Ch.R. (2002). *Intergenerational Succession on Family Farms: Evidence from Survey Data*. Paper prepared for presentation at the Xth EAAE Congress "Exploring Diversity in the European Agri-Food System", Zaragoza (Spain), 28-31 August 2002. Retrieved: http://ageconsearch.umn.edu/bitstream/24918/1/cp02ti74.pdf. Access: 28 December 2010.
12. Happe, K. (2004). Agricultural Policies and Farm Structures. Agent-based Modelling and Application to EU-policy Reform. *Studies on the Agricultural and Food Sector in Central and Eastern Europe*, Vol. 30, Halle (Saale): IAMO, p. 267.
13. Kimhi, A. (1994). Optimal Timing of Farm Transferral from Parent to Child. *American Journal of* Agricultural *Economics,* No. 76, pp. 228-236.
14. Kimhi, A., Lopez, R. (1997). *Retirement Planning and Succession Considerations of Maryland Farmers*. *Evidence from a Household Survey*. Paper presented at the 11th Annual Conference of the European Society for Population Economics.
15. *National Rural Network Rural Development Programme 2007-2013 – Greece*, May 2010. Retrieved: http://enrd.ec.europa.eu/app_templates/filedownload.cfm?id=FE5694F4-0A88-45BE-184A-A4A98E66ED70. Access: 3 January 2011.
16. Pesquin, C., Kimhi, A., Kislev, Y. (1999). Old Age Security and Inter-generational Transfer of Family Farms. *European Review of Agricultural Economics*, No. 26(1), pp. 19–37.
17. Rosenzweig, M.R., Wolpin, K.I. (1985). Specific Experience, Household Structure, and Intergenerational Transfers. Farm Family Land and Labour Arrangements in Developing Countries. *The Quarterly Journal of Economics*, No. 100, pp. 961-987.
18. Shucksmith, M. (2010). *How to Promote the Role of Youth in Rural Areas of Europe?* Note PE 438.620, European Parliament, Directorate General for Internal Policies, Policy Department B: Structural and Cohesion Policies, Agriculture and Rural Development.
19. Wehrheim, P. (2010). *The Mid-term Evaluation in the Context of the Post-2013 Policy Debate*. Presentation at seminar on "Evaluating rural development policies", SLU, Uppsala, Sweden, 15 January 2010.

2. Education and Rural Science

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Latvian Roadmap of National Level Research Centres

Irina Arhipova, *Dr.sc.ing., professor*
Director of the Department of Science, Technology and Innovation, Ministry of Education and Science of the Republic of Latvia, Latvia University of Agriculture

Abstract. Latvian national roadmap is a long-term planning instrument that lists research infrastructures on national importance, either new or in need of upgrading. The development of national roadmap, connected to the European Strategy Forum for Research Infrastructures (ESFRI) Roadmap is helping develop the required overall coherent policy by evaluating and prioritising national resources dedicated to the existing research infrastructures (both national and pan-European) as well as by assessing the option of attracting or supporting new pan-European research infrastructures.
Informative Report on Latvia National Level Research Centres (NLRCs) has been approved by the Cabinet of Ministers on 17 August 2010. NLRC is the framework for cooperation among scientific institutions and for concentration of scientific resources to ensure European-level research in the national research priorities. The research aim is to analyse the NLRC scientific excellence, its concentration of research infrastructure (prevention of its fragmentation), and commercialisation of science.
Key words: research infrastructures, scientific excellence.

Introduction

On 17 June 2010 the European Council formally approved the EU 2020 Strategy for smart, sustainable and inclusive growth and the Integrated Guidelines. The aim of the EU-2020 Flagship initiative "Innovative Union" is to improve framework conditions and access to finance for research and innovation to ensure that innovative ideas can be turned into products and services that create growth and jobs. By 2015, the Member States together with the Commission should have completed or launched the construction of 60% of the priority European research infrastructures currently identified by the European Strategy Forum for Research Infrastructures (Annual Report on Research …, 2010). The potential for innovation of these (and ICT and other) infrastructures requires the increase. The Member States are invited to review their Operational Programmes to facilitate the use of cohesion policy money for this purpose.

The Guidelines in Research and Technologies Development for 2009-2013 were approved according to the Cabinet of Minister Decree No. 631 of 16 September 2009 to make closer cooperation between R&D and innovation policy. The main objective of the research and technological development policy is to develop research and technology as a civil society, economic and cultural development long-term basis, thus providing the knowledge economy, its sustainable implementation, and growth. Four integrated actions for the promotion of R&D and innovation are planned in the Guidelines:

- to promote renewal and development of scientific intellectual potential and research infrastructure;
- to ensure relevant increase of the state investment for research and technology also achieving private funding increase;
- to promote competitiveness of scientific activities on international level thus promoting international cooperation in the field of research and technologies;
- to promote transfer of knowledge and technologies thus forming favourable environment for innovative actions, and to promote public and private partnership.

In order to achieve the policy objectives stated in the guidelines it is necessary to upgrade research infrastructure in at least 30 research institutions, concentrating research and applied science in excellent research centres. Ten Latvia National Level Research Centres (NLRCs) have been developed according to the Cabinet Decree No. 243 "For Research and Technology Development Guidelines Implementation Action Plan 2010 to 2011" of May 5, 2010. NLRC is the framework for cooperation among scientific institutions and for concentration of scientific

resources to ensure the European level research in national research priorities. The objective of the NLRC is scientific excellence, concentration of research infrastructure (prevention of its fragmentation), and commercialisation of science and industry-science partnership.

On 17 August 2010, the Cabinet approved the Informative Report on National Level Research Centres (NLRCs). The Ministry of Education and Science (Ministry) of the republic of Latvia has created the system based on scientific institutions operating strategies, which determines the hierarchy of scientific institutions:

- regional level scientific institutions (about 20);
- national level research centres (about 10);
- ESFRI road map level research centres (about 4-5).

Latvian national roadmap is a long-term planning instrument that lists research infrastructures on national importance, either new or in need of upgrading. The development of national roadmaps, connected to the ESFRI Roadmap,

- helps develop the required overall coherent policy by evaluating and prioritising national resources dedicated to the existing research infrastructures (both national and pan-European);
- as well as assesses the option of attracting or supporting new pan-European research infrastructures.

The research hypothesis – the focus on R&D and innovation policy to scientific excellence will improve the framework conditions for research and innovation to ensure that innovative ideas can be turned into products and services creating growth and jobs. The aim of the paper is to analyse the NLRC scientific excellence, its concentration of research infrastructure (prevention of its fragmentation) and commercialisation of science. The following objectives were set in order to achieve the aim:

- to analyse Latvia's government policy of higher education and research in the field of research infrastructure development;
- to analyse Latvia's research focus and centres of excellence;
- to propose Latvia's participation in the potential ESFRI objects.

Development of the national level research centres

According to the law "On Scientific Activity" scientific institutions are scientific institutes, institutions of higher education, commercial companies as well as other institutions in the articles of association, by-law or constitution of which scientific activity and participation in the process of acquiring and improving scientific qualification is provided for and which are registered in the Register of Scientific Institutions. On 1 December 2010 totally 136 scientific institutions were registered on the Register of Scientific Institutions (Table 1).

Table 1

Distribution of scientific institutions by legal status

No.	Scientific institutions	Number	%
1.	**Scientific institutes**	**82**	**60.3**
1.1.	Public agencies (state agencies and municipal agencies), including	16	11.7
	agencies of state institutions of higher education	*14*	*10.3*
1.2.	Derived public persons	13	9.6
1.3.	Structural units of state institutions of higher education	53	39.0
2.	**Institutions of higher education**	**9**	**6.6**
2.1.	State institutions of higher education	7	5.1
2.2.	Private institutions of higher education	2	1.5
3.	**Commercial companies**	**19**	**14.0**
4.	**Other scientific institutions**	**26**	**19.1**
	Total	**136**	**100.0**

The attainment of cost efficiency in the provision of scientific institutes is now a well-established objective of the state government's policy for higher education and research (Glass J.C., McKillop D.G., Hyndman N., 1995).

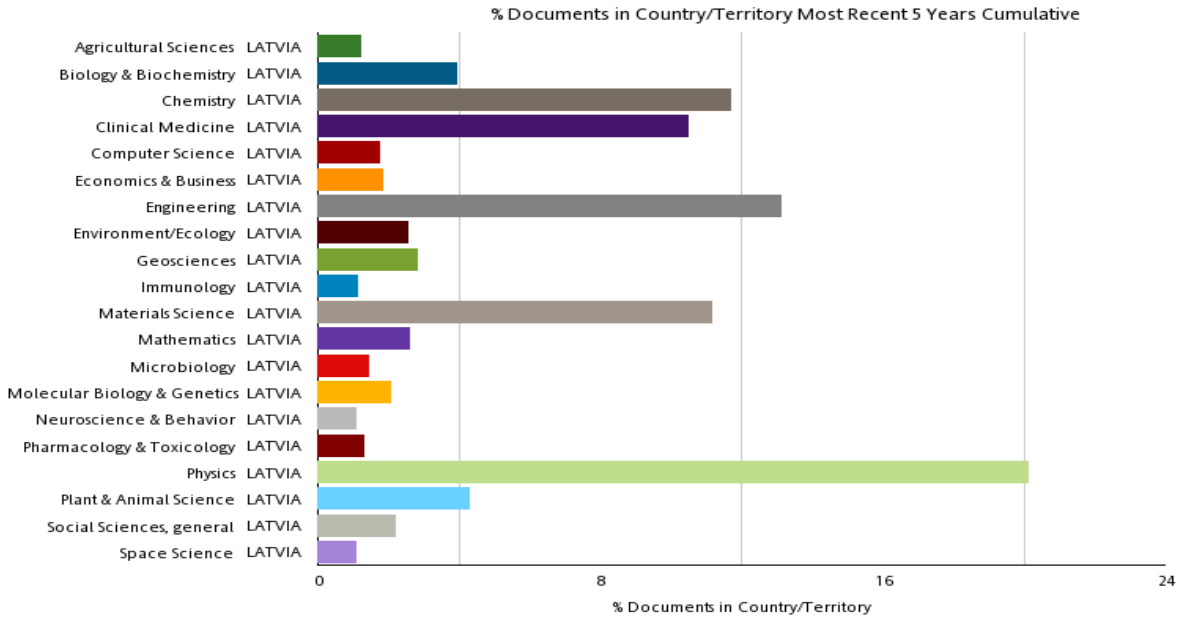
Table 2

Distribution of Latvia National Level Research Centres by the prior research fields

No.	Prior research fields	Latvia National Level Research Centres
1.	Energy and environment (technologies of producing and use of renewal energy resources, technologies reducing climate change, biological multiform)	NLRC on the extraction and sustainable use technologies of Energy and Environmental Resources (including Transport and Mechanical Engineering Centre)
2.	Sustainable use of local resources (entrails of the Earth, forest, food and transport) - new products and technologies	NLRC on the Use of Agricultural Resources and Food Technologies
		NLRC on the Use of Forest and Water Resources
3.	Innovative materials and technologies (IT, information and signal processing technologies, nanostructured multifunctional materials and nanotechnologies)	NLRC on ICT and Signal-Processing Technologies (including Space Data Processing Centre)
		NLRC on Nanotechnologies and Nanomaterials
4.	Social health (prevention, medical, diagnostic means and methods, biomedical technologies)	Pharmacy and Biomedicine NLRC (including Pharmaceutical Technology Study and Research Centre and Biopharmaceutical Centre)
		NLRC on Health and Clinical Medicine
5.	National identity (language, history, culture and social security of Latvia)	NLRC on the Latvian Language, Latvian Cultural Heritage and Creative Technologies
		NLRC on Social Economy and Public Administration

After 2008, a period of retrenchments ensued as a result of intensified budget cutting in Latvia resulted in budget rescissions for public scientific institutions in the fiscal years of 2009 and 2010. A study of internal resource allocation in public research institutions is important as the patterns of expenditures and revenues at public institutions after a period of substantial change (Santos J.L., 2007).

Latvia National Level Research Centres (Table 2) are defined according to the Cabinet Decree No. 594 "On Prior Research Fields for Financing of Fundamental and Applied Research in 2010-2013" of August 31 2009, and according to the priority sectors of the economy, which are



Source: Thomson Reuters. Web of Knowledge. October 10, 2010

Fig.1. **Latvian Research Focus in 2005-2010**

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

stated in the "Informative Report on the Economic Recovery Policies in the Medium Term" and approved by the Cabinet on 10 November 2009. The scientific institutions, which are involved in NLRC, shall develop the common Cooperation Strategy, including the following information:

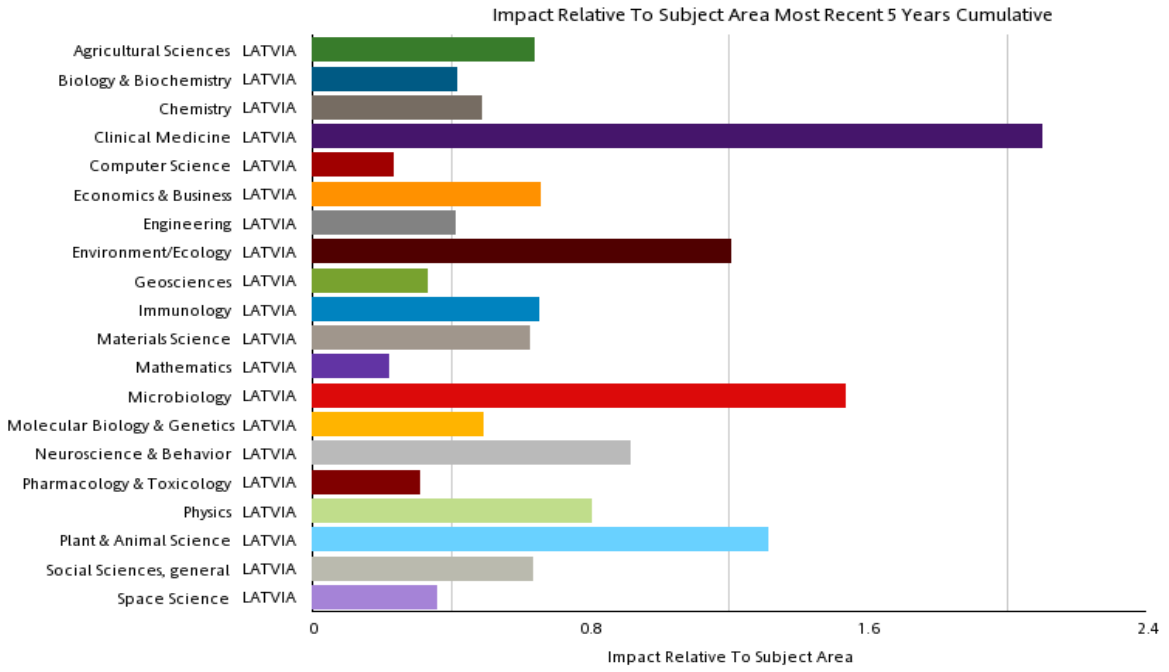
- NLRC mid-term and long-term strategic goals;
- existing and planned scientific and technological cooperation between scientific institutions of NLRC and other R&D organisations;
- information on the leading scientific institution, which will be responsible for the implementation of the NLRC Cooperation Strategy;
- existing and planned cooperation with an industry that justifies the ability of NLRC to commercialise its research results;
- access to the research infrastructure of NLRC for other scientific institutions;
- the European Regional Development Fund (ERDF) funding allocation between research institutions of NLRC;
- maintenance and development of NLRC infrastructure in the mid-term and long-term;
- Territorial Development strategy of each scientific institution of NLRC describing the existing research infrastructure and investment plans under the ERDF.

The evaluation of research institutions' development strategy is based on the following research quality criteria: participation in international and national level research projects, cooperation with industry, scientific publications included in international databases (Figure 1), patented inventions and protected plant varieties, and the number of young scientists, and PhD students employed in the scientific institution.

NLRC shall consist of at least two State scientific institutions with a definite quality of their research activities, their scientific potential, and international competitiveness (quality level is expressed as a coefficient which shall be achieved). NLRC shall be based on a single Cooperation Strategy, which is approved by the Ministry of Education and Science.

Results

According to the initial analysis of internal resource allocation in public research institutions it is expected that Latvia's centres of excellence are concentrated in different fields of natural and engineering sciences as well in social sciences (Figure 2).



Source: Thomson Reuters. Web of Knowledge. October 10, 2010

Fig.2. **Latvian Centres of Excellence**

According to the Ministry's research institutions' development strategy, it is expected that twenty eight research institutions may qualify for the status of NLRC (Table 3).

Table 3

Expected qualified research institutions for the status of NLRC

No.	NLRC	Research institutions
1.	NLRC on the extraction and sustainable use technologies of Energy and Environmental Resources (including *Transport and Mechanical Engineering Centre*)	Institute of Physical Energetic
		Riga Technical University
		University of Latvia
		University of Latvia, Institute of Biology
2.	Pharmacy and Biomedicine NLRC (including *Pharmaceutical Technology Study and Research Centre and Biopharmaceutical Centre)*	Latvian Biomedical Research and Study Centre
		Latvian Institute of Organic Synthesis
		Riga Technical University
		University of Latvia
3.	NLRC on ICT and Signal-Processing Technologies (including *Space Data Processing Centre)*	Institute of Electronics and Computer Science
		Riga Technical University
		University of Latvia
		University of Latvia, Institute of Mathematics and Computer Science
		Ventspils University College, Institute of Engineering "Ventspils International Radio Astronomy Centre"
4.	NLRC on the Latvian Language, Latvian Cultural Heritage and Creative Technologies	University of Latvia
		University of Latvia, Institute of Latvian History
		University of Latvia, Institute of Literature, Folklore and Art
		University of Latvia, Institute of Philosophy and Sociology
5.	NLRC on the Use of Agricultural Resources and Food Technologies	Latvia State Institute of Fruit-Growing
		Latvia University of Agriculture
		Research Institute of Food Safety, Animal Health and Environment "BIOR"
		State Priekuļi Plant Breeding Institute
		State Stende Cereals Breeding Institute
		University of Latvia
6.	NLRC on the Use of Forest and Water Resources	Daugavpils University
		Latvia University of Agriculture
		Latvian Institute of Aquatic Ecology
		Latvian State Forest Research Institute "Silava"
		Latvian State Institute of Wood Chemistry
		University of Latvia
7.	NLRC on Nanotechnologies and Nanomaterials	Riga Technical University
		Riga Technical University, Institute of Inorganic Chemistry
		University of Latvia
		University of Latvia, Institute of Polymer Mechanics
		University of Latvia, Institute of Physics
		University of Latvia, Institute of Solid State Physics
8.	NLRC on Health and Clinical Medicine	Pauls Stradiņš Clinical University Hospital
		Riga Stradiņš University
		University of Latvia
9.	NLRC on Social Economy and Public Administration	Latvian Institute of Agrarian Economics
		University of Latvia

The ESFRI Roadmap identifies new Research Infrastructure (RI) of pan-European interest corresponding to the long term needs of the European research communities, covering all scientific areas, regardless of possible location. The ESFRI roadmap is an ongoing process. First published in 2006, with 35 projects, it was updated in 2008 bringing the number of RIs of

the pan-European relevance to 44. Now the EU Member States have prepared national roadmaps that establish the prioritisation of national and pan-European RIs, using the ESFRI Roadmap as a reference. In Latvia the development of NLRC is the first step in the process of national RI roadmap approval. It is expected that according the NLRC's Cooperation Strategies Latvia National Roadmap will be accepted in 2012. The possible list of investment objects defining Latvia's priorities in the pan-European partnership projects is the following:

- Materials and Analytical Facilities: ESS-European Spallation Source;
- Social Sciences and Humanities: CLARIN - Common LAnguage Resources and Technology Initiative and the European Social Survey ESS;
- e-Infrastructures: PRACE - (ex-EU-HPC) – Partnership for Advanced Computing in Europe;
- Biological and Medical Sciences: ELIXIR – European Life-Science Infrastructure for Biological Information – a Major Upgrade.

The formal approval on the participation in the ESFRI projects will be made by the Government after the conditions of the European Research Infrastructure Consortium (ERIC) agreement.

Conclusions

Latvia's government policy for higher education and research is developed for the research infrastructure concentration, prevention of its fragmentation, and commercialisation of science and industry-science partnership. According to the analysis of research institutions resources, nine NLRCs are developed in five prior research fields, according to the priority sectors of the economy: energy and environment; sustainable use of local resources; innovative materials and technologies; social health; and national identity. It is expected that twenty-eight research institutions may qualify for the status of NLRC for concentration of scientific resources to ensure the European-level research in national research priorities. This helps define national budgets, facilitates political support, and allows long-term financial commitment. Latvia's participation in the ESFRI projects would impact science and technology development on the international level ,and contribute to the enhancement of the European Research Area.

Bibliography

1. Glass, J.C., McKillop, D.G., Hyndman, N. (1995). Efficiency in the Provision of University Teaching and Research: an Empirical Analysis of UK Universities. *Journal of Applied Econometrics*, Volume 10, pp. 61-72.
2. Santos, J.L. (2007). Resource Allocation in Public Research Universities. *The Review of Higher Education*, Volume 30, No. 2, pp. 125-144.
3. *Communication from the Commission* "Annual Report on Research and Technological Development Activities of the European Union in 2009", Brussels, 5.11.2010, COM(2010) 632 final. Retrieved: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0632:FIN:EN:PDF. Access: 19 December 2010.
4. *Communication from the Commission* "Europe 2020 A Strategy for Smart, Sustainable and Inclusive Growth", Brussels, 3.3.2010, COM(2010) 2020 final. Retrieved: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF. Access: 19 December 2010.
5. *Law on Scientific Activity,* Saeima, Riga, 5 May, 2005. Retrieved: http://izm.izm.gov.lv/laws-regulations/2291.html. Access: 19 December 2010.
6. Informatīvais ziņojums par ekonomikas atveseļošanās politikas virzieniem vidējā termiņa periodā, *Cabinet*, Riga, 10 November 2009 (prot. Nr.79, 52.§). Retrieved: http://www.likumi.lv/doc.php?id=200533. Access: 19 December 2010.
7. Par prioritārajiem zinātnes virzieniem fundamentālo un lietišķo pētījumu finansēšanai 2010.-2013.gadā, *Cabinet Decree No. 594*, Riga, 31 August, 2009, (prot. Nr.54 24.§). Retrieved: http://www.likumi.lv/doc.php?id=196878. Access: 19 December 2010.
8. Par valsts nozīmes pētniecības centru noteikšanu, lai nodrošinātu resursu koncentrāciju un Eiropas Savienības struktūrfondu efektīvu ieguldījumu, *Cabinet Decree No. 243*, Riga, 17 August, 2010, Riga (prot. Nr.42 34.§). Retrieved: http://www.mk.gov.lv/lv/mk/mksedes/saraksts/protokols/ ?protokols=2010-08-17. Access: 19 December 2010.
9. Par Zinātnes un tehnoloģijas attīstības pamatnostādnēm 2009.-2013.gadam, *Cabinet Decree No .631*, 16 September, 2009, Riga (prot. Nr.54 35.§). Retrieved: http://www.likumi.lv/doc.php?id=197974. Access: 19 December 2010.
10. Par Zinātnes un tehnoloģijas attīstības pamatnostādņu ieviešanas rīcības plānu 2010.-2011.gadam, *Cabinet Decree No. 243*, Riga, 5 May, 2010, (prot. Nr.20 34.§). Retrieved: http://www.likumi.lv/doc.php?id=209366. Access: 19 December 2010.

Structure of Latvia's Higher Education Studies in the European Qualification Framework

Aina Brige, *Mg.oec., Mg.paed.*
Latvia University of Agriculture

Abstract. Development of higher education in Latvia is influenced by external and internal factors. Therefore, all the EU enactments related to higher education shall be considered in Latvia. It is certain that until now not all legal and regulatory enactments of the Republic of Latvia and other countries, for example, Lithuania and Estonia, confirm to the EU documents.
In this paper, the author summarises the general situation in the structure of Latvia's higher education and indicates the tendencies of Latvia's higher education in connection with the European Union.
This matter is very pending, since during the previous years all the countries had to accept and confirm the Bologna Declaration documents in order to follow the set aims and to put them in practice.
The study concentrates on some main aspects: to evaluate the situation of higher education structure in Latvia and to propose realistic development tendencies while being within the European Union Area.
Key words: Latvia, higher education, European qualification framework.

Introduction

Higher education structure in Europe

Higher education institutions already have and they shall further maintain their main role – as it was expected when the ministers had the first meeting in Bologna. According to the aims of the Bologna Process, the institutional development can be not only observed fast, but it also symbolises challenges to the performers of this work.

There are about 3300 higher education institutions within the European Union and 4000 institutions in the whole Europe including other Western European countries and the new Member States. They enrol an increasing number of students – more than 12.5 million in 2000 in comparison with hardly 9 million students ten years ago.

Particularly in Europe, the higher education institutions face radical necessity to adjust themselves and to be ready for the series of serious changes.

Results and discussion

Bologna Process

The main idea of the Bologna Process is to balance higher education systems and to simplify the mobility of students among countries during the process of higher education acquisition. The same principles were used in the Copenhagen Process regarding professional education. As the result of both initiatives, it will be easier to compare diplomas of the Member States, and thus following the recognition of education in the Member States, and improving the quality of education.

On 19 June 1999, totally, 29 ministers for education of the European countries signed the Bologna Declaration and it was launched with the aim to develop the *European Higher Education Area (EHEA)* by 2010.

Planned activities:

1) to adapt a system of easily readable and comparable academic degrees;
2) to adapt a two-tier bachelor's/master's degree system;
3) to establish the *European Credit Transfer and Accumulation System (ECTS);*
4) to promote mobility (among students and academic staff);
5) to promote European co-operation in quality assurance;
6) to promote the European dimension in higher education (Higher Education, 2002).

 ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Two years later the ministers for education gathered in Prague Ministerial summit, and the Prague Communiqué was signed on 19 May 2000. During the summit, the following additional activities were scheduled:

1) development of lifelong learning;
2) inclusion of higher education institutions and students in the Bologna Process;
3) promotion of the attractiveness of the European Higher Education Area.

Three years after the Prague Communiqué, on 19 September 2003, the ministers for education held a meeting in Berlin, and they signed the Berlin Communiqué. In addition to the already existing development conclusions of the Bologna Process, several new activities were scheduled:

1) to draw closer the co-operation between EHEA and European Research Area (ERA) by integrating doctoral studies programme in the Bologna Process;
2) to accelerate the Bologna Process, the following priorities were set out in Berlin for the first time:
   - effective quality assurance;
   - recognition of academic degrees and studies: implementation of a two-tier bachelor's/master's degree system to approach a single European qualification system in higher education. All the mentioned priorities are in some way connected with the quality of higher education. To ensure the quality, the aim is to establish the European Network for Quality Assurance in Higher Education (ENQA), which includes:
     - national quality assurance agencies and co-operation among them;
     - development of quality research culture within institutions;
     - transnational quality assessment and accreditation.

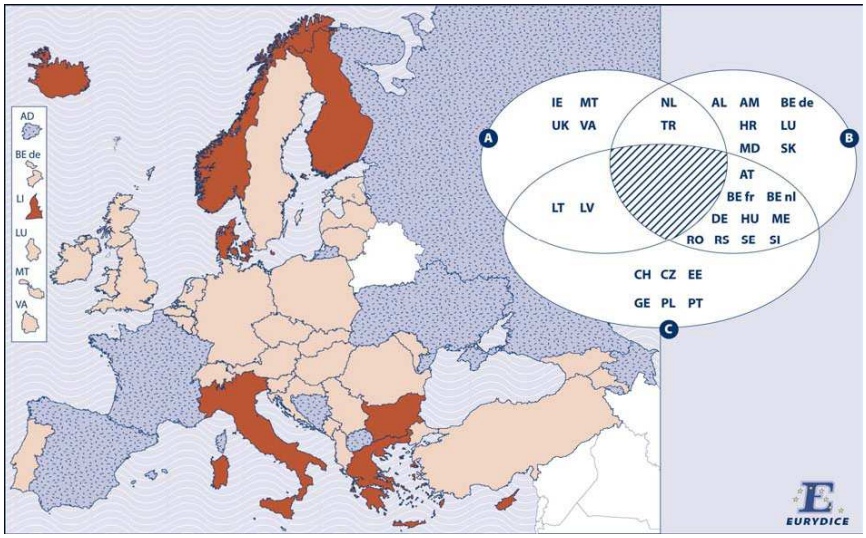
To implement the Bologna Process, every two years conferences are organised where 45 countries, which have joined the Bologna Declaration, report on the implemented activities in the framework of the Bologna Process in higher education structures. The situation for the academic year 2006/2007 is the following: nine countries have fully implemented the three-cycle structure, ECTS (European Credit Transfer and Accumulation System), and Diploma Supplement. The three-cycle (bachelor/master/doctoral) structure has been adopted or is being adopted almost everywhere. In most countries, it is being introduced gradually on a general basis. The doctorate involves three to four years of studies in 26 countries. In several countries, there is no fixed time limit for these studies. The European Credit Transfer and Accumulation System (ECTS) is now anchored in the legislation almost everywhere and it is most often used in the Bachelor and Master type programmes. In over than a half of the countries concerned, ECTS is used in all institutions and study programmes. Almost everywhere, the Diploma Supplement is issued automatically and free of charge in at least one widely used European language, but it has still not been adopted on a general basis in all institutions and study programmes. As regards joint degrees, further progress is still required; they are currently officially recognised in only half of the signatory countries. Half of the countries have fully implemented at least two of three central elements in the Bologna Process. In most countries, financial incentives have been introduced as well as arrangements for guidance and information to facilitate the general adoption of these measures in higher education. Furthermore, around 15 European Union Member States have adopted a national qualifications framework or they plan to do so until 2008 (Haugs, G., 2005).

General implementation means that these criteria are adopted by all higher education institutions for all or most fields of study, for all course modules in all study programmes and for all students.

Higher education institutions of Latvia in the European education system

Latvia's higher education structure, basic principles, system of qualifications, and education degrees

There is an extensive network of higher education institutions in Latvia (6 universities in the state sector, 15 non-university type higher education institutions, and 18 colleges). There are many universities, academies, and colleges in the whole territory of Latvia, but especially in the capital Riga. Basically, these institutions operate since the Soviet regime.



Notes: A - *full introduction of the three-cycle structure in compliance with the Bologna Process in all or most fields of study*
B - *mandatory introduction of ECTS in all study programmes or its implementation on a general basis*
C - *mandatory provision of the Diploma Supplement in all study programmes or its general provision automatically and free of charge in at least one official language of the EU*
all three criteria satisfied (A+B+C)
1 or 2 criteria satisfied (see the above diagram)
none of the three criteria satisfied
Source: author's construction based on the Bologna Process...,2003

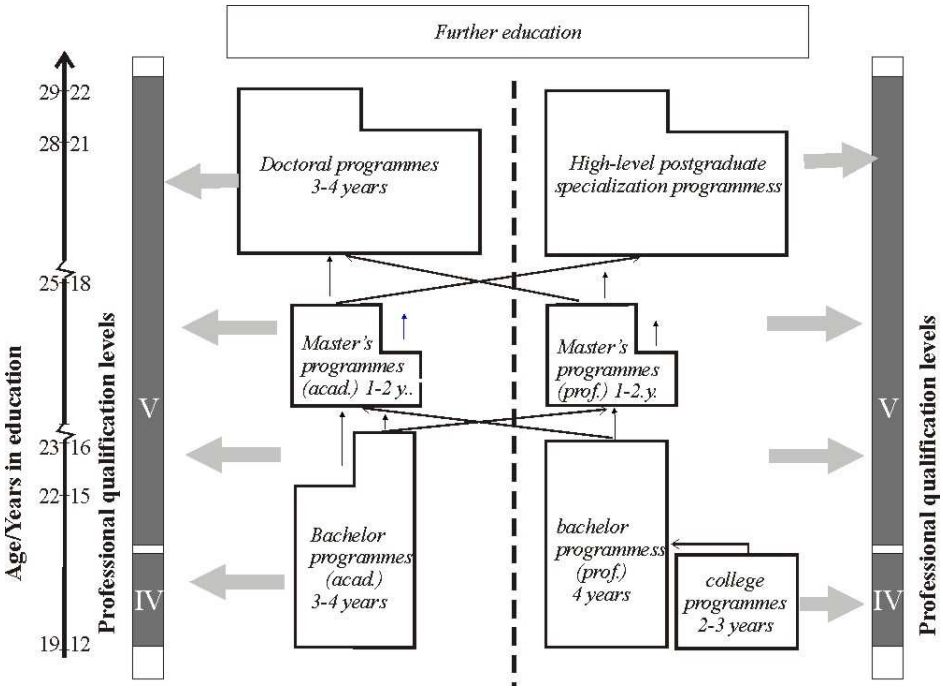
Fig. 1. **General implementation of the three-cycle structure, ECTS and Diploma Supplement, the academic year 2006/07**

One of the most radical norms of the Education Act of 1991 was the rights of legal and natural entities stated in Article 14 to establish education institutions, including higher education institutions. Thus, it became possible to develop private higher education in Latvia. Since 1991, the majority of newly established higher education institutions are located in Riga; however, individual higher education institutions are also established in other places to improve the accessibility of higher education for students from rural areas. Latvian Council of Higher Education has developed "The National Concept for the Development of Higher Education and the Institutions of Higher Education for the Period until 2010". The mentioned concept is based on the principles for creation the higher education area in Europe that have been implemented in many European countries. It shall be noted that the bachelor and master's structure in Latvia's academic higher education was implemented several years before Europe made a decision to move forward with the three-cycle degree structure.

After Latvia joined the European Union, the implementation of reforms in Latvia's higher education has become especially important in connection with the signing of the Bologna Declaration in 1999. Bologna Process in Latvia comes as continuation of the higher education reforms that were launched already in the beginning of the 1990s. The reforms that were launched by the Education Act of 1991, the Law on Higher Education of 1995 and amendments to the Law on Higher Education until 2007, should be mentioned as well. The aim of these reforms is to merge the activities of Latvia's higher education institutions with the common flow of activities done by the European higher education institutions as well as to strengthen the autonomy of higher education institutions and their responsibility for the results of their activities (Education Development Guidelines, 2006).

They intend to make the study process more attractive through academic freedom, three-cycle system, ECTS Credit Point System, lifelong learning, and more precise Student Fees Regulations. The draft law discontinues the division into "academic" and "professional" higher education programmes. The funding mechanisms of higher education are improved, and the

co-operation between higher education institutions and employers is strengthened by passing this law.



Source: author's construction based on the Bologna Process...,2003

Fig. 2. **Conceptual scheme of structure of Latvia's higher education degrees within the Bologna Process reforms**

Currently, the transition to two-cycle higher education takes place in Latvia, which consists of bachelor and master studies. Its purpose is to implement the requirements of the Bologna Declaration and to increase the efficiency of higher education, comparability, and competitiveness. Two-cycle model "3+2" corresponds to the three-year bachelor studies and two-year master studies. The majority of higher education institutions already offer three-year Bachelor programmes. They promote faster alignment in the labour market, more intensive studies, lower costs, and better comparability of the acquired degrees.

It is planned to introduce the requirement that a certain part of academic staff shall possess a doctor's degree to facilitate the academic studies. In academies, at least 30% of the staff shall have a doctor's degree, while in other higher education institutions – at least 20%**.** This requirement came into effect in July 2010 (Education Development Guidelines, 2006).

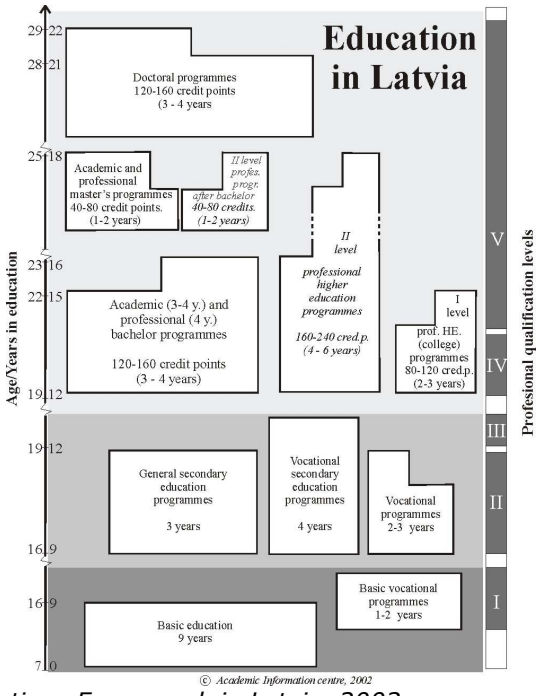
The higher education structure, qualification and degrees' system is developing in accordance with the latest amendments to the Law of Higher Education Institutions.

In accordance with the guidelines set out in the Bologna Declaration, the academic and professional degree structure of higher education system has to be formed in a manner that everyone who has received an education degree has a possibility to participate in the labour market. Subsequently, the principle that high-level professionals could act as staff in professionally oriented programmes, is implemented in practice.

According to the Bologna Declaration of 19 June 1999 on the European Higher Education Area, approximation of the academic and professional education is being performed during the recent years in Latvia. The unified system of academic degrees is established, thus providing the possibility to move from academic to professional education and vice versa.

The professional higher education is a system of abilities and knowledge necessary for working in specific profession or for acquiring the specific profession in the corresponding field that will create preconditions for the professional activity. Thus, the professional higher education is a component of higher education.

The professional higher education system shall be closer integrated with other parts of the education system. The fundamental choice whether to continue studies in professional higher education or continue with academic studies should be made after the graduation the elementary school.



Source: The European Qualifications Framework in Latvia, 2003

Fig. 3. **The scheme of Latvia's higher education structure in the current period**

In grammar schools, in addition to natural and human sciences, professionally oriented education should be introduced, where more attention is paid to the development of practical skills to increase the popularity of professional higher education.

At the same time, the requirements for those who take up studies at the university should be higher. Students are enrolled with no respect to their intellectual abilities – self-financing students with intellectual abilities below the average level are also allowed to take up studies. Such – the so-called – specialists are not necessary in the labour market.

The author is convinced that appropriate professional higher education ensures a competitive advantage in the labour market over poor academic education.

In Latvia now, everyone seeks to educate only the most popular professionals in business, public relations specialists, and lawyers. The society needs persons with less sophisticated theoretical education, but with a thorough practical, and professional knowledge.

For a long time, doctoral studies meant the development of doctor's dissertations, but now it also includes in-depth studies and national examinations. According to the 1998 amendments to the Law "On Scientific Activity" (voided due to the adoption of the Law on Scientific Activity in 2005), a switch has been carried out from the former two-tier doctoral degree system to a one-tier doctoral degree system. The second-level doctoral degree "Habilitated Doctor" has not been any more awarded since 1 January 2000, and the holders of the degree "Habilitated Doctor" have the same rights as the holders of the degree "Doctor".

In the higher education system, the schedule of lessons is determined by a higher education institution itself. The volume of studies is determined in credit points. One credit point corresponds to one-week full-time study workload. The credit point system of Latvia may be compared with the ECTS credits and since its implementation it is used for both – accumulation and transfer of credit points. Transfer of the Latvian credit points into the ECTS credit points requires multiplication by a factor of 1.5 (Higher Education, 2002).

One Latvian credit point corresponds to 40 academic lessons (one study week) where up to 50 per cent of lessons are provided as the contact lessons. A study workload of a full-time study year is 40 credit points.

Full-time studies encompass 40 credit points during an academic year and not less than 40 academic hours per week. Part-time studies encompass less than 40 credit points per academic year and less than 40 academic hours per week (Higher Education, 2002).

Academic hour is a unit of work time for studies, the duration of which is 45 minutes. The duration of a contact lesson (direct communication of academic staff and students) is one academic hour.

The state-founded or municipality-founded institutions provide education in the official language of the state. However, there are three cases when the use of foreign languages shall be possible (the first two correspond to the official languages of the European Union, but the last one to any foreign language):

- implementing the study programmes that are acquired by foreign students, or study programmes or programmes that are implemented within the scope of co-operation through the European Union programmes and international agreements;
- fairly common practice is to invite visiting lecturers from the foreign co-operation universities to read a particular course, or separate subjects in a foreign language may be read by a local staff. Not more than one-fifth of the study programme's volume may be implemented in such way, taking into account that this does not include the final and state examinations as well as writing the qualification, bachelor, and master papers.
- in study programmes, the implementation of which in foreign languages are necessary for the achievement of the aims of the study programme, for example, in language and cultural studies, and language programmes.

In Latvia, the higher education institutions have certain autonomy, and it affects the content of studies as well. The institutions have rights to determine the content and format of study programmes. Every higher education institution has to receive a licence from the Ministry of Education and Science for the implementation of every study programme. The licensing becomes the initial evaluation of the quality, since within three years after the licence has been received the study programme has to be submitted for re-accreditation.

Within the professional higher education, the contents of study courses and practice are defined in the relevant professional standard.

The basic principles of the higher education system in Latvia are as follows:

1) according to the Bologna Declaration, there are two main levels in Latvia's higher education system – bachelor and master studies;
2) there are two types of education degrees – with academic and professional specialisation with corresponding bachelor and master academic degrees (B.Sc.xxx and M.Sc.xxx), and bachelor and master professional degrees (B.yyy and M.yyy);
3) requirement for the bachelor's and master's degrees to meet the scientific disciplines is limited to the academic bachelor's and master's degrees;
4) professional degrees also include degrees of physician, dentist, and veterinarian; they belong to the professional master's degree;
5) every bachelor has access to master studies, every master - to doctoral studies. When entering doctoral studies, additional conditions may be set for those who hold professional master's degree;
6) the implementation of the standards of the academic programmes is defined by the "National Standard of Academic Education" set by the Council of Higher Education. Employer institutions establish the professional standard for the professional studies according to which "National Standard of Professional Higher Education" is modelled and according to which the programme is conformed;
7) programmes for professional degrees are formed according to the fifth level of professional qualification and the standard of the respective profession;

8) to acquire the fourth level professional qualification, the first level professional higher education programmes (college programmes) are formed, which are oriented to mastering of particular profession and meeting the standards of the respective profession;
9) programmes for professional degrees are developed jointly with professionals of the respective field. They also take part in the commission, which grants professional degrees and qualifications;
10) in order to promote the development of professional and academic personnel, within non-university higher education system high-level postgraduate professional higher education programmes are formed where students are equated with doctoral students. Graduates of these programmes, if they are academic personnel in non-university higher education system, are eligible to a salary equated with associate professors;
11) programmes for the academic master's or bachelor's degrees are also focused on specific profession and are in line with its standard (master's programmes are focused on the fifth bachelor's level, and in some cases also on the fourth professional qualification level), but where it is not possible, they provide sufficient level of basic skills, which correspond to the particular discipline, thus enabling students to enter the labour market only after acquiring the bachelor's degree;
12) where possible, all higher education programmes are made in modules' format, thus providing possibility for those employed as well as unemployed to re-enter higher education institution at any time and to acquire additional knowledge and skills necessary for further professional activities. Programmes based on modules' format may be used for both full-time students and those re-entering university within the framework of lifelong learning. The university cooperates with employers to develop these modules (Rauhvargers A., 2002).

College is a higher professional education institution, which provides the opportunity for students with secondary education to acquire the first level professional higher education. College programmes may be implemented by higher education institutions. After acquiring the first level professional higher education, each graduate obtains the fourth level professional qualification and is able to enter the labour market or continue studies to acquire the second level professional higher education in order to obtain the fifth level professional qualification thereafter.

Persons who have completed an accredited study programme are issued a state-recognised diploma. Only accredited institutions of higher education, which implement state accredited curricula, have the right to issue state-recognised diplomas.

In line with the state-accredited programmes, universities provide the following degrees:

- academic education and:
  - bachelor (academic degree);
  - master (academic degree);
  - doctor (scientific degree);
- fourth and fifth level professional qualification and:
  - bachelor degree;
  - master degree (Education Development Guidelines, 2006).

Each graduate (excluding the graduates of doctoral programmes) automatically and free of charge is issued a Diploma Supplement. The Diploma Supplement complies with the model developed by the Council of Europe and the United Nations Education, Scientific and Cultural Organisation (UNESCO/CEPES). It includes details about the essence of the successfully completed studies, their level, content, and status. The Supplement is issued in Latvian and English with the aim to ensure that the document of qualification is recognised both academically and professionally on the international level.

It should be noted that the EU TEMPUS programme and afterwards the SOCRATES programme greatly contributed to the mobility of the faculty and students. The strategic objective of the concept is to develop Latvia's higher education system in such a way to preserve its nature of the national development and that diplomas would be understood and recognised on the European labour market.

Worth noting that Latvia's higher education institutions are making major effort so that the graduates may enter the common European labour market. Many Latvia's higher education institutions (BKI, LPA, LKA, RA etc.) are included in the ERASMUS-SOCRATES register and have joined the European Charter of Higher Education from 1 November 2005. Faculty members of the higher education institutions actively participate in international conferences in European countries in order to promote further cooperation with higher education institutions in Europe, and to develop mobility of the faculty and students (Higher Education and Academic..., 2001).

Higher education institutions offer the following types of studies: full time, part-time, and extramural studies. The last method can be described as remote education, which is characterised by structured learning materials, individual learning pace, and specifically organised evaluation of the education achievements as well as use of various technical and electronic communication tools. Only academic study programmes may be acquired by extramural studies.

Many higher education institutions enter into cooperation agreements with other institutions of higher education in order to provide additional opportunities for the students. Under cooperation agreements, resources and intellectual potential of both (or all) institutions of higher education are available to students when picking courses offered by other high schools and recognised by their own institution of higher education. However, from the legislative point of view, it is still complicated to issue joint or double degrees.

The European Qualifications Framework, developed in 2006, was an important move to create preconditions for the unified European Union labour market and a common training environment. It is worth stressing the importance the European Qualifications Framework has for the new Member States, including Latvia, whose residents have moved to work elsewhere in the EU. The European Qualifications Framework aims to provide opportunity for mutual recognition of education and professional qualification systems in the EU Member States, to provide uniform qualification criteria in order to facilitate the recognition of qualification acquired in different EU countries (The European Higher Education Area, 2005).

There is no doubt that effectively functioning European Union's labour market is still only a future issue. The European Qualifications Framework is an important step in this direction in order to lay the foundations for a unified labour market and a single learning environment. There is no doubt that comparing qualifications not only encourage labour mobility, but also ensures better labour market quality, providing an efficient workforce deployment.

The Qualifications Framework contributes to much closer bonds of the national education systems with the European Union labour market demands. These activities directly correspond to the Lisbon Treaty's strategy and objectives. The last expansion marked unprecedented labour mobility in the European Union. Job seekers from several Central and Eastern European new Member States have left for Great Britain and Ireland, the only old Member States that opened their labour market with no restrictions. In fact, the current situation is unique, in order to assess the necessity of comparing European qualifications. Substantial wage differences have prompted thousands of highly qualified job seekers from the Central and Eastern Europe to adopt a simple, low-skilled consuming work. A study recently conducted by the Ministry of Enterprise, Jobs, and Innovation of Ireland shows that the majority of employees are doing lower-skilled work than is their professional training. Many workers with university degrees have jobs that require few hours of basic training. These are difficulties with comparing very different education systems. These are resources lost both in the countries from where job seekers come from and resources unused in the countries where they cannot use their professional training. The European Qualifications Framework encourages Member States amongst which there is an active labour movement to be pioneers in invigorating the Framework and comparing qualifications, and these Member States will not be the only ones.

Commenting on the Latvian government activities regarding qualification recognition, by 2006 Latvia had done very little to begin to compare qualifications, which is important to thousands of Latvians working abroad so that they could have a job adequate to their qualification.

Lately, more attention is being paid to the relatively higher unemployment levels amongst graduates of higher education institutions. A special task group was set up in order to find out the causes of this. It was found that labour market and country's economic needs are not in accordance with the most popular study programmes. Besides, students' theoretical knowledge and their practical experience differ significantly. It is acknowledged that there is a need to avoid duplication of responsibility in the field of education and career counselling, and to provide information on occupational demand and its forecast.

Conclusions and recommendations

The following conclusions have been made and the following recommendations have been suggested based on the research performed by the author.

Recommendations for the Ministry of Education and Science of Latvia and National Labour Market Board: to create more open and flexible education system beginning with facilitating a continuous dialogue between labour market and education system.

Recommendation for the Ministry of Education and Science of Latvia: to introduce the principle of "open university" in all non-university higher education institutions and colleges.

There is a lack of graduates that have obtained knowledge on an international level. Graduates from the higher education institutions have mostly specialised only on domestic issues of the corresponding domain of science.

Recommendation for the Ministry of Education and Science of Latvia: to activate internationalisation processes of economics studies involving international training; the essential parts are an international curriculum for economics that includes acquiring of international experience for students – international business, international management, international financial management; or curriculum where separate parts include international elements.

Higher professional education is not valued highly enough in the Baltic States. In Finland, there is 40:60 per cent proportion between academic and professional education respectively. Now, the proportion in the Baltic States is 60:40.

If the Baltic States wish to continue their progress, it is important to increase the supply and demand of higher professional education. Recommendations for the Ministries of Education and Science in Estonia, Latvia, and Lithuania: the proportion between academic and professional education needs to be improved in order to achieve the ratio of approximately 40:60.

The Bologna Process in its final stage offers a simple education system in Europe, which ensures:

- equal level of knowledge for all graduates;
- transition of students from one university to another;
- free migration of students among universities of different states.

Recommendation for the government of Latvia is to favour the development of the Bologna Process.

Recommendation for the Ministry of Education and Science of Latvia:

There are several disadvantages of the education system 3+2.

Transition period from the system 4+2 is complicated for all universities.

It is very complicated for any university to arrange final exams or presentations of diploma papers at the end of the third year. The reason for that is simply the shortage of time.

In total, 160 credit points for bachelors do not include employment, which means that they are not given an opportunity to become active participants in the labour market.

System allows students to study for 5 years.

University students who pay themselves for their education get uncompetitive education, since students in such case are interested in obtaining higher education in 3.5 - 4 years.

Estonia has moved to the higher educational system 3+2 in the academic year 2002/2003.

This transition should be flexible, which implies transition in more than one academic year.

Recommendation for the Ministry of Education and Science of Latvia after transition to the higher education system 3+2:

University education: degree of bachelor, master, and doctor should be obtained only in a university, and it should be strictly separated from the higher professional education that can be obtained only in college and other higher professional education institutions.

Under the legislation of the Republic of Latvia, higher professional education is equal to the bachelor degree.

After obtaining the professional higher education, it is possible to continue postgraduate studies on an academic level.

Finland's higher education system consists of university education and professional higher education (polytechnic school system), and the transition to the new education system has been flexible and smooth, though active already since 1999. The higher education is completely free.

It is required for students after the third year to have a work place, which means that students have the opportunity to participate actively in the labour market.

Basing on the author's research, Finland is one the few EU Member States where the transition to the new education system has been smooth and functional.

It is recommended by the author to use Finland's experience as an example for the development of national education systems, particularly pursuing the Finnish organisations that provide higher professional education. An explicit discrimination of vocational and professional higher education and academic higher education should exist. The government should provide more financial support of the GDP to education in order to provide the possibility for all willing to study to obtain free higher education. Finland allocates 2% of GDP for education (total national costs of higher ISCED education (% of GDP) were 5-6% in the year 2000 and 2.1% - in 1999. The corresponding rating parameter in Latvia is 1%, which is twice smaller.

Private universities in Latvia should concentrate on their future attempts to provide only additional training.

Latvia does not have a unified national education system, for example, primary education, secondary education, vocational education, and higher education (academic higher education and professional higher education).

The significance of higher professional education should be increased in order to provide enough competitive specialists in the labour market. At the moment, many persons with academic higher education without speciality are unemployed.

All education levels should be equally developed and should guarantee the quality of obtained education – the EU requirements can be fulfilled only in this way. Important aspect is to follow the information how many graduates work in positions that correspond to their education and how competitive high-school graduates are on the labour market. This gives an opportunity to improve the curriculum and to change the study programmes.

Studies in many higher education institutions of Latvia are performed in accordance with the curriculum that is not harmonised with the requirements of the labour market. Many private schools provide education in accordance with the curriculum (for example, economics, humanities, legislation) that is popular among the potential students, but the excess of such specialists has already formed in the country. Each higher education institution should analyse success of their graduates in the labour market, based on the analysis, improve, and develop its study programme.

Bibliography

1. *Education Development Guidelines for 2007-2013.* The Cabinet of the Republic of Latvia. Riga, 2006.
2. Haugs, G., Tauhs K., (2005). *Tendencies and Structure of the Studies in the Higher Education*. Research on Further Progress. Latvia.
3. *Higher Education, Science and Technology Guidance for 2002 to 2010*. Ministry of Education and Science, Council of Higher Education. Riga, 2002.
4. *Higher Education and Academic Development of the National Concept for the Period up to 2010*. Ministry of Education and Science, Council of Higher Education. Riga, 2001.
5. Latvia in Bologna Process, Report on the Reforms in Latvia's Higher Education on the Way towards European Higher Education Area, (2003). By Rauhvargers A. Retrieved: http://www.aic.lv/bolona/Bologna/Reports/Countrep_03/Latvia.pdf. Access: 14 January 2011.
6. Rauhvargers, A. (2002). *Recognition of Foreign Qualifications.* Riga. pp. 6-12.

7. *The European Higher Education Area – Achieving the Goals,* Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen, 19-20 May 2005.
8. The Bologna Process and the Three-cycle Structure, (2003). Retrieved: http://www.vsnu.nl/Universities/Higher-education-system/The-Bologna-process-and-the-three-cycle-structure.htm. Access: 14 January 2011.
9. The European Qualifications Framework (EQF) in Latvia, (2003). Retrieved: http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm. Access: 14 January 2011.

Analysis of Organisation Management Influencing Factors in Micro-enterprise

Lasma Dobele, *PhD student, lecturer*
Faculty of Economics, Latvia University of Agriculture
Eduards Grigorjevs, *MBA, IT Project Manager*

Abstract. The research describes the significance of organisation management and its influencing factors in micro-enterprise activities. The research is based on the study of specialised literature on the development of organisation management from the ancient history to nowadays. The authors have defined three main factors influencing organisation management – psychological relations and interaction of personnel, project and employee time management, and organisational impact factor. These factors are analysed in an information technology (IT) micro-enterprise "Motive" Ltd. It was found out that the effect of organisation management to micro-enterprise activities was essential. The successful selection and implementation of organisation management is a precondition for effective economic activities, competitive development, and achievement of strategic long-term goals of the business.
Key words: organisation, management, micro enterprises.

Introduction

The significance of organisations in the society is increasing in a nowadays fast - changing era. *V. Praude* and *J. Beļčikovs* (2001), *A. Klauss* (2002) and *L. Gomez-Meija* (2008) emphasise the importance of organisations, since they provide people with material assets and various services. An organisation creates material and intellectual values, increases the wealth of society, creates working places, and ensures the social status of individuals. It is necessary to understand and adjust appropriate management in organisation to be able to manage effectively different forms of organisations. Each business manager shall understand the importance of the company's management.

The changes in the economic situation of the country initiated the changes in business sector as well. According to the *Lursoft* data, in 2010 totally 8835 companies ceased to operate in Latvia, which is 1.5 times more than in 2009. A part of the companies has changed their sector of activity to be able to stay in the market. These changes were accompanied by their own company's internal events, which played an important role in organisation management. Organisations are not able to operate properly on dynamic conditions without the use of all management options or even ignoring the management in general.

According to the data of the *Central Statistical Bureau* (CSB), in Latvia in total 88% of all the enterprises are micro-enterprises. Therefore, it is important to study whether the option of management is significant in the micro-enterprises, since senior managers often use only their personal experience and act intuitively based on the exact situation instead of management. Such scholars as *D.H. Holt (*1990), *H. Mintzberg* (2007), and *T. Herbert* (1997) emphasise the importance of knowledge and skills of middle level managers and senior managers. Acting intuitively is much easier because there is no need for any knowledge of management, yet it is risky. Such actions may lead to the liquidation of a company. Therefore, an IT sector micro-enterprise "Motive" Ltd was chosen as an **object** of the study. The **subject** of the research – factors influencing organisation management.

The **hypothesis** - the impact of organisation management on micro-enterprises activities is significant and diverse – was set based on the previous findings. The **aim** of the study is to evaluate the factors, which influence organisation management in IT micro-enterprise. The following **tasks** were set to achieve the aim:

1) to study the theoretical framework of modern organisation management;
2) to describe the activities of a micro-enterprise "Motive" Ltd in IT sector;
3) to determine the impact of organisation management factors on the activities of "Motive" Ltd.

The following **methods** were used to implement the research: monographic descriptive, analysis and synthesis, graphics, questionnaires, factor, and normal distribution analysis. Several **materials** were used in the research: scientific and specialised literature on organisation management, Internet resources, data from the company "Motive" Ltd. Primary data were acquired from surveys of company executives and managers.

Results and discussions

1. Theoretical aspects of organisation management

The importance of management and organisation has been emphasised already in the ancient society. A Greek philosopher Plato wrote that great leadership was needed among the people, in order to gain victory over the numerically smaller and weaker nations. An ancient Greek philosopher Aristotle emphasised the ideal language skills in the society to reach common goals. The Renaissance writers pointed out that a motivated group, which forms an association with a strong position was needed for progress. In the 20th century, the political leaders achieved their position in the society only because of motivated and target - based group. The authors conclude that there is a need for special human association - an organisation in order to achieve objectives more accurately and more easily (Praude V., Beļčikovs J., 2001). For the provision of effective work in organisation, there is a strong need for **management,** which includes several functions – planning, control, coordination, motivation, and organisation. As *L. Gomez -Meija* (2008) highlights management function has become even more important, since it ensures that all processes are under control in organisation and it works appropriate to achieve the results.

Nowadays, theorists define term "**organisation**" in different ways. *V. Praude* and *J. Beļčikovs* (2001) point out that it is a complex social system consisting of a group of people who want to achieve their objectives. *A. Klauss* (2002) believes that it is the group of employees who have common aims and objectives contributing to a whole part of the interaction and arrangement of perfection. It can be concluded that the organisation is formed with an aim that a group of people could achieve its aims - their individual and common ones more effectively.

By analysing organisation existence theories, it may be concluded that the most famous theories are industrial organisation theories of Frederick Taylor (1856-1915), Henri Fayol (1841-1925), Max Weber (1864-1920), and Lyndall Urwick (1891 – 1983). Taylor and Fayol theories belong to the classic organisation theories, based on a human's increasing role in manufacturing business and society. Classical organisation theory is characterised by three features: motives, communication, and interest in participation.

R. Daft (2004) believes that the most fully modern theory is represented by Hicks and Juleta. They offer 7 key elements: systematic approach, dynamic nature of the process, multi-level structure, diverse motivation, multi discipline, large number of parameters, and adaptation to the possible changes. In contrast, *J. Aldag* (1991) emphasises the importance of preserving theory of organisational bias conditions.

The authors underline modern organisation theory, which is based on 4 functional principles: the target function, adaption of the system to the environment, integration of all parts in the system, and adjustment of the internal tension to the system (Barets R., 2008). For an organisation to act as a perfect system it is necessary to follow these four functional principles, since due to the changes in the country, the organisation shall be able to adapt to the changing environment as quickly as possible and with minimum losses. Experience has shown that not all organisations succeed here. The internal cooperation of organisation systems depends on the organisation manager and responsible managers. If they cooperate just partly then an inadequate functioning is possible within the organisation. In order to promote understanding between employees, it is necessary to use socionics, since the methods of socionics provide reduction of internal tension in an organisation. Therefore, socionics will be used as a substantial tool in the further research.

Based on the organisation management theories, it may be concluded that the viability and efficiency of the business activities depend on periodic and regular operations of business goal, personnel and manager changes, and adaption to the changes. Both companies and

employees have to improve themselves and have to adapt to the changing environment; thus, contributing to the individual, industry, and market development.

2. Characteristic of the micro - enterprise "Motive" Ltd in the context of information technology sector

Micro, small, and medium-sized enterprises (SMEs) play a significant role in economy of Latvia as they promote employment, innovation, and development of entrepreneurial skills. *R.Smukais* (2010) notes that SMEs play a social role and they are of regional importance. According to the European Commission Recommendation 2003/361/EK (6 May 2003) definition of micro, small and medium-sized enterprises, "Motive" Ltd is considered to be a micro-enterprise, since it meets the following requirements:

- maximum number of employees – 9;
- total turnover and/or annual value of balance sheet does not exceed EUR 2 million. (The new definition of SMEs, 2005)

The company "Motive" Ltd was founded in 2006 and it belongs to IT sector programmer companies actively seeking ways to sell an intellectual property, i.e. virtually made product – home pages. Analysing the CSB data, it may be concluded that the number of micro-enterprises in IT sector has been growing – in 2009, the growth rate was 3% compared with 2008. In 2009, totally 82% of all IT sector enterprises were involved in IT service sector: computer programming, consultancy and related activities, maintenance of web sites etc. The company "Motive" Ltd also provides a wide range of services – from homepages with administration systems (content management systems) to reservation systems, interactive business solutions, Internet stores, and intranets (internal website of the company that provides information only for a company's employees). The CSB data show that only 42.3% of all companies in Latvia have their own websites. Companies from all sectors can make their company's image on the Internet; however, many companies do not understand IT technologies and marketing techniques how to attract customers. Therefore, there is an IT company "Motive" Ltd, which deals with project development for the companies who have not discovered yet the possibilities offered by interactive marketing on the Internet. IT sector companies often operate based on the project management principles - coordinated groups of people work together to achieve the set aim. "Motive" Ltd activities can also be described as project – oriented activities that are essential for the IT sector micro - enterprises.

By analysing Internet environment in Latvia, it can be concluded that many companies save on human resources. Instead of human resources, they use programs and sell their goods via Internet. Already in 2007, totally 3.9% of all companies in Latvia sold their goods in Internet; while in 2010, this figure is 4 times bigger and it has a tendency to increase. According to *Economist Intelligence Unit* (2009) data the competitiveness rating of IT sector in Latvia is 42.6 (100 point scale), which ranked Latvia in the 33rd place in the world in 2009. Latvia's population and businesses use computers and Internet and also buy goods via Internet more often (Table 1).

According to the data in Table 1, it can be concluded that the number of inhabitants who use Internet has increased 2.3 times from 2004 to 2010, but the number of enterprises – 2.2 times. It is determined by the rapid changes in IT sector, which are adapted by inhabitants and businesses. More over inhabitants are shopping online, which determines need for qualitative corporate websites and interactive marketing developments.

The situation in IT sector shows that many big companies are making large-scale projects involving a lot of labour force and resources. However, they consume unnecessary administrative working hours and the job at the end is not qualitative. Bureaucratic procedures prevent performance of the work and the result does not justify the invested resources. However, the company "Motive" Ltd is able to carry out identical or similar functions and tasks as big companies do; yet, on much lower costs and more rapidly within the time. It is determined by a smaller number of employees (9 employees in 2009) and smaller administrative costs. The company's economic performance proves the fact. In 2009, the net turnover has increased 8 times compared with 2006 (in 2006 – LVL 1294, in 2009 – LVL 39729). It can be concluded that the company has a stable position in IT sector and is able to make projects in a profitable way. In 2008, the company carried out several insurance broker

e-business projects, which got an overwhelming response to another brokers and demand for this product increased significantly.

Table 1

Tendencies of Latvia's population and businesses in Internet and computer use for the period of 2004-2010, %

Indicators	2004	2005	2006	2007	2008	2009	2010
Inhabitants who use computer at least once per week, of total population (%)	36.4	41.9	49.2	54.5	58.6	61.4	63.4
Chain increase rate, in percentage points	-	*15.1*	*17.4*	*10.8*	*7.5*	*4.8*	*3.3*
Inhabitants who use Internet at least once per week, of total population (%)	27.3	36.3	46.0	52.2	57.0	60.9	62.5
Chain increase rate, in percentage points	-	*33.0*	*26.8*	*13.5*	*9.2*	*6.8*	*2.6*
Use of Internet for businesses, of total number of businesses (%)	41.8	41.6	45.7	56.7	...	86.8	90.7
Chain increase rate, in percent points	-	*-0.5*	*9.6*	*24.0*	*...*	*...*	*4.5*
Inhabitants who are buying goods via Internet, of total population (%)	1.9	2.9	5.1	5.7	9.6	8.2	8.5
Chain increase rate, in percentage points	-	*52.6*	*76.0*	*11.8*	*68.4*	*-14.6*	*3.7*

Source: authors' calculations based on the data of the Central Statistical Bureau, 2011

"Motive" Ltd plans to continue the development of Internet websites and interactive marketing by promoting original and more advanced Internet solutions. It is foreseen to use ready-made products, which are made by other software companies. "Motive" Ltd will adapt and combine it with their designed products and as result, it will be a universal software package. This package will be possible to adapt to almost any Internet business solution. The planned services match with the overall trend in the Eastern Europe, where most IT companies link their future with service provision and adaption, rather than developing products entirely from the beginning.

3. The assessment of factors influencing organisation management in "Motive" Ltd

For successful development of the company, there is a need for qualified and professional personnel. To ensure professional team, it is essential to establish sustainable and efficient organisation management, which may help organise employees for successful achievement of the aim. Therefore, the authors put forward three main factors that influence organisation management in a micro-enterprise:

- psychological relations and interaction between employees;
- time management of employees and projects;
- organisational impact factor.

As the team is numerically small, it is vital to measure the psychological interaction between employees for the provision of positive working environment and high productivity. By growth of employees, the company has to take into account the effects of employees' socionic types and its interaction. It is important to control time management for both - employees and project stages in order to guarantee a project deadline. Organisational impact factor is responsible for each manager level influence on organisation activities.

Assessment of psychological relationship and interaction factor. *V.L. Miķelsone* (2004, 2007) believes that people at every stage of life are related to somebody else next to them. Success, feelings, and even health is highly dependent on the harmony with the surrounding world. Harmony is determined by interaction, which is expression of human social nature and performance in human communication. As *R. Garleja* (2003) points out that the exchange of information, knowledge, experience, ideas, and opinions occurs during communication and interaction process. Communication is essential during the working process in which human potential can occur in various degrees, depending on the quality of human resources management. *I. Vorončuka* (2001) and *I. Ešenvalde* (2004) emphasise that human resources are vital for entrepreneurs for succeeding in the working place. It is increasingly important to be aware of the human role in the organisation and to create such

environment for the staff that a person is pleased to be in one room with colleagues and to deal with everyday issues. To build a motivated team, it is necessary to access quality control of communication and interaction.

Socionics helps improve the quality of interaction between employees, since socionics is a theory of human interaction based on fixed patterns of information processing known as 'socionic types' (there are 16 of them and 16 intertype relations) (Рейнин Г., 2005). **I**t is possible to predict a degree of psychological compatibility with certain types of people knowing the characteristics of those types (Гуленко В., 2005). Being aware of these types, the manager of the business is able to predict the employees role and position in the company; what kind of colleagues are likable for individual and what kind of collective may create conflict situations. It can be easier to plan and organise working groups and divide positions in groups knowing the psychological types of employees. Thus, a manager can avoid conflicts from potential working group partners. Socionics is based on four dichotomies:

- extroversion vs. introversion;
- sensing vs. intuition;
- ethics vs. logic;
- rationality vs. irrationality (Zīlīte L., 2009).

By combining these four dichotomies in all possible ways, it is possible to get 16 types in total. Each type has one of the traits of each dichotomy, but not both (Table 2). However, this does not mean that there is a complete absence of the opposite mechanism. It means that one is more flexible and multi-faceted, while the others are more rigid and simplistic.

Table 2

The letter of sociotype code, social role, and pseudonym

ENTP Researcher *Don Quixote*	**ISFP** Mediator *Alexandre Dumas Sr.*	**ESFJ** Enthusiast *Victor Hugo*	**INTJ** Analysts *Maximilian Robespierre*
ENFJ Mentor *Hamlet*	**ISTJ** Inspector *Maxim Gorky*	**ESTP** Marshal *Gueorgui Zhukov*	**INFP** Lyricist *Ray Bradbury*
ESFP Politician *Caius Julius Caeser*	**INTP** Critic *Honore de Balzac*	**ENTJ** Entrepreneur *Jack London*	**ISFJ** Manager *Theodore Albert Hermann Dreiser*
ESTJ Administrator *Sherlock Holmes*	**INFJ** Humanist *Fedor Dostoyevsky*	**ENFP** Adviser *Tom Sawyer*	**ISTP** Expert *Jean Gabin*

Source: Aushra Augustinaviciute, 2002

The names of socionic types are made in different ways. As a first one in Table 2 is mentioned internationally well known four letter code of these types. The first letter describes affiliation to extraversion (E) or introversion (I) type, the second letter indicates the type belonging to sensing (S) or intuition (N), the third letter denotes the membership of ethics (F) or logic (T), and the last, fourth letter shows belonging to rationality (J) or irrationality (P). The second name in Table 2 shows the social role for each type (e.g., ISTP is an expert etc.) The third name is a pseudonym of socionics that points to similarities with the historical or literary characters (Zīlīte L., 2009).

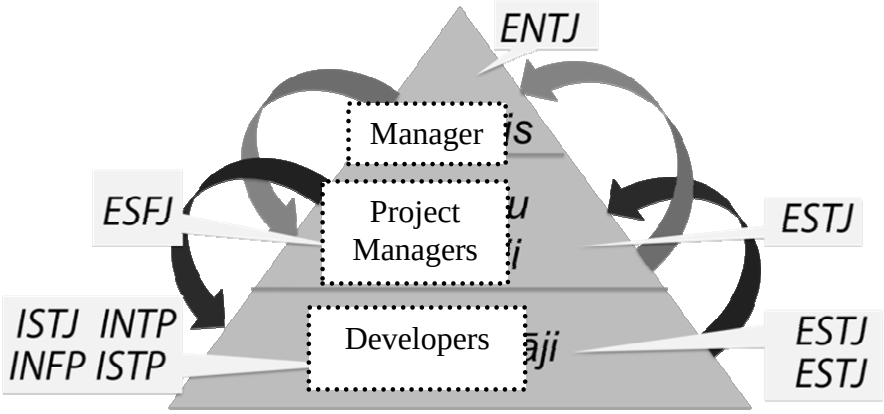
The authors made questionnaires (by using test of Victor Gulenko) to find out the harmonisation or variability of "Motive" Ltd team and the assessment of personnel interaction. The respondents had to choose the most suitable statement from two proposed statements (in total there were provided 24 pairs). The results of the questionnaires showed that "Motive" Ltd employees belong to the following socionic types:

- business manager (designers) – ENTJ;
- designer – INFP;
- project director – ESTJ;
- project manager – ESFJ;
- programmer 1 – ISTP;

- programmer 2 – ISTJ;
- programmer 3 – INTP;
- programmer 4 – ESTJ;
- quality manager – ESTJ.

It can be concluded that 9 company's employees represent 8 different types of socionics. Experts of socionics believe that it is possible to develop intolerable relationships between two good people, since each individual has its own way of information perception and according to it – assessment of information. Each type of siocionics perceives others from his/her point of view. There are no bad types or bad intertype relations; there are only more or less consistent relationships. Knowledge of typology allows being aware of these differences and it helps understand reaction of partner better.

A socionist named Gregory Reinin (*Рейнин Г.*, 2005) has analysed intertype relations in conflict making aspect. Such knowledge is helpful in several situations – for assessing the collective ability to work, analysing kinds of tasks possible for certain groups of employees, and dealing with conflict situations. The authors made a division by type of management hierarchy and compared the type compatibility through the various levels to find out the way for creation of effective working groups in the company "Motive" Ltd. The authors used the compatibility table made by A. Augustinavicuite to make a comparison between the employees. The hierarchy of the company is made according to qualification, roles, and significance of personnel in the company and also taking into account the management level (Figure 1).



Source: authors' construction

Fig.1. **Interaction between "Motive" Ltd socionic types and management levels**

According to Figure 1, it can be concluded that the lower level employee relationships are significant for the middle level managers as well as the middle level relationships are significant for the senior managers. Employees who are subordinates of the middle level managers (project managers) mainly communicate with them, and thus, there should have been very good relationships; otherwise conflicts, which may arise between them can harm the company. Project managers are mainly consulting with senior managers regarding the fulfilment of different tasks. Therefore, these relationships are very important – if the project manager conflicts with the senior manager, the consequences would be felt by all employees and it would bring direct and indirect losses to the company. Very often, the well-being of employees is influenced by the managers, especially in micro-enterprises. Therefore, education of the managers is a very important aspect for the development of their intellectual potential.

The analysis of compatibility of socionic types in "Motive" Ltd shows that in general there are good and cohesive relationships that enable the achievement of the company's aims. Of course, no organisation acts without conflict situations and disagreements. Yet, in order to prevent or minimise them, it is necessary to establish the base of working groups on compatibility of socionic types.

Studies have shown that the more managers know and understand their own personality, the easier for them is to assess the impact on others. Rob Mckenna and David Martin through

 ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

their study with 2000 participants found out that 97% of involved persons after learning basic socionics course better understood colleagues and their team. Those participants accepted and better understood benefits of each group member and saw possibility of improvement of working relationships. However, studies showed that administrators and middle level managers were more satisfied with work than other employees were, and this means that they may become careless and indifferent about other problems (Walck C., 1997). In the authors' opinion, it is very important for employees in IT micro enterprises to build a cohesive and successful team. The manager of the company needs to understand where the competition in relationships is and have to undertake appropriate measures.

Assessment of time management in "Motive" Ltd. Time management is one of the management aspects, which is significant for IT sector micro enterprises that are project management oriented. It can give inestimable advantage over the large companies. Each employee carries out his/her part of the project, and then transfers it to the next employee who is planning the specific time for fulfilment of the work. The project manager prepares and signs a contract with client, makes agreement about time limits and divides a task into several stages. From that moment, the most responsible part starts – to plan time so accurately and correctly that project is implemented within the time limits. It is important that nobody waits too long on a previous stage or nobody scamps a job, which has to be corrected afterwards. The loyalty of clients may be lost due to such problems.

The project implementation time is faster for similar project in micro-enterprises compared with large companies. This can be explained by the fact that time management in micro-enterprises is faster and easier, since there are no large bureaucratic departments that hinder the implementation process. The work is defined quickly and precisely, it is determined by the time and is committed and delivered to the client. The employees of micro-enterprises are able to mobilise quickly for problem solving and after successful achievement of results return to the existing works.

Different automated tools are used for time planning in the company:

Time plan. It is a company's developed internet-based system that provides working plan for each employee. The employee is making a report by listing the working hours s/he has spent for the specific project and by stating difficulties that have occurred during the task implementation.

Bug tracking system "Mantis". It is used for registration of errors that are found in project testing process or after delivery of the project. The errors found in the tests are solved as fast as possible in order to deliver the project as complete as possible.

Client Relations Management System (CRM) is designed for project managers to manage the project quicker and easier. It is the database all customers with the possibility to make records about planned meeting times, sent emails and made calls. CRM is able to classify clients and projects according to importance or priority. This shows which customer a manager should call obligatory or arrange the meeting, and whom the manager may call another day.

A project status report is made for long-term projects**.** At each meeting, all interested parties express their opinion and decide about further activities and action plan. Everything is recorded in a status report, where one can see each phase of the project progress in detail and its compliance with the schedule. The client is always informed about the existing stage of the project, potential risks, and possibilities to be used to finish the project in time according to the customer's wishes.

Different automated tools can be used for any company to optimise and control employees and project time management, but it is especially recommended for micro - enterprises. Many of these tools are free and their integration into company does not require financial expenditures. Each activity, automated tool, or system that helps coordinate the time is a competitive advantage for micro - enterprises over the large ones in working discipline and from the perspective of project implementation term.

The assessment of organisational management factor in "Motive" Ltd. Organisation and control are management factors that have great impact on the activity of micro - enterprises. In micro –enterprises, it is easier to control employees than in large companies. Yet, several factors have to be considered to optimise it to the highest level: personnel maturity to different working process changes and the impact of different level managers to organisational process. To clarify this, the authors made a research among the company's staff. They tried to understand the different level of employee's attitude to

organisation management factors in micro-enterprise: planning, control, organisation, motivation, and coordination. This treatment was compared with the company's internal processes – the impact on organisation, business process, and personnel. The authors' study shows the influence of each manager group. The factors of organisation management were evaluated in a five point scale (1 – do not influence, 2 – low impact, 3 – moderate impact, 4 – affecting, 5 – strong influence).

The structure of the micro – enterprise "Motive" Ltd includes a senior manager or leader, middle level managers or project managers, and other employees or executors. Each manager level has its own role to play and affect the company. Each factor of organisation management was estimated from the appropriate managers' point of view. The results demonstrate the level of each manager to the specific factors (Table 3).

Table 3

The assessment of a manager's impact on organisation management

Factors	**Impact**								
	On organisation			On business process			On personnel		
	H	***M***	***E***	***H***	***M***	***E***	***H***	***M***	***E***
Planning	5	2	1	5	5	2	3	3	1
Organisation	5	3	1	4	5	1	4	4	3
Coordination	5	3	1	4	5	1	4	4	2
Motivation	5	2	1	3	3	3	2	3	4
Control	5	2	1	3	4	1	4	4	2
In total	25	12	5	19	22	8	17	18	12
Normal distribution, %	**41**	**23**	**20**	**31**	**42**	**32**	**28**	**35**	**48**

H – Higher level managers (senior managers); **M** – middle level managers (project managers); **E** – Executors

Source: authors' construction

It can be concluded from the results that the effect is consistent to generally accepted views and hierarchical division. The senior manager has the greatest impact on the company, since the future of the company depends on his/her objectives and activities. The senior manager mainly pays attention to the development of plans, financial analysis, and introduction of new products and services. The highest management level is distinguished from others by the fact that it has a higher degree of responsibility to organisation that explains the impact of senior managers on organisational processes (41%).

There are two middle level managers in "Motive" Ltd. They prepare information for senior managers and coordinate other employees. They are the ones who allocate resources within the project. They are responsible for implementation of project because their organisational capacity determine the efficiency of programmers, designers, and quality manager work. Hence, their impact on business process is the highest – 42%.

Developers – programmers and designers have a significant impact only on working performance – 48%. Relationships between colleagues are the most important for them. They behave according to their character, personal values, and internal and external conditions of the company. Their greatest impact is directly on each other. It depends on their type of socionics and the relationships between them. In each project, a working team, which operates together during the whole project time, is set. Impact among employees contributes to the progress of the project because project manager does not control each step made by the developers.

Organisational factor analysis shows that each manager level has its own impact on the organisation activities with a common aim – to make a successful business. Each has its own sector to be responsible for and to which employee has the greatest impact. Daily work process shows the level of the achievement of the company's goals. If the performance is effective, the company's objectives are fulfilled and a manager can set new ones, more ambitious. Organisation and control as well as other management factors have significant

impact on micro - enterprise activities, and if these activities are adapted to specific sector and type of activities, it can be concluded that entrepreneurship is successful.

Conclusions

1. In modern theories, the achievement of organisation goal, regulation of conflicts and ability to adapt to the economic and social changes are considered as significant aspects that are provided by successful interaction between senior managers and employees within the organisation.
2. "Motive" Ltd is a project-oriented micro-enterprise operating in information technology sector. It can implement similar projects as large companies but in a shorter period of time and consuming fewer resources because of lack of bureaucratic procedures.
3. It is significant in micro–enterprises organisation management, since it influences the efficiency of business performance and achievement of goals. Organisation management in micro–enterprises is influenced by several key factors – personnel relations, personality types, and manager activities in organisation planning and organisational processes.
4. Micro – enterprises are affected by employees belonging to specific socionic type and interaction between them. The principles of socionics have to be considered for successful establishment of a working group to ensure successful compatibility and avoid conflicts between employees.
5. Different automated tools can be used to maximise the effect of time factor in project-oriented enterprises – time plans, bug tracking system, client relations management system, and project status report. These tools help manage internal processes of the company.
6. The manager impact on organisation management is related to its functions. Senior managers have the greatest impact on organisational process, middle level managers mainly influence business process; while programmers and designers have a significant impact on specific work they are doing at exact time.
7. Successful organisation management is a precondition for successful development of the company and for achievement of the strategic goals. Thanks to effective organisation management, "Motive" Ltd has shown good economic performance even in the economic recession.

Bibliography

1. Aldag, J., Stearks, M. (1991) *Management.* USA: Wisconsin university. p. 574.
2. Barets, R. (2008). *Vērtīborientētas organizācijas izveide. Visas sistēmas kultūras transformācijas koncepcija*. Rīga: Domas spēks. 227 lpp.
3. *Centrālā statistikas pārvalde.* Retrieved: http://www.csb.lv. Access: 5 January 2011.
4. Daft, R. (2004). *Organisation History and Design*. Saint Paul. p. 558.
5. David, H., H. (1990). *Management. Principles and Practice*. New Jersey: Prentice Hall. p. 724.
6. Ešenvalde, I. (2004). *Personāla praktiskā vadība*. Rīga: Merkūrijs LAT. 368 lpp.
7. Herbert, T., Estes, R., W. (1977). Improving Executive Decisions by Formalising Dissent: The Corporate Devil's Advocate. *Academy of Management Review*, Volume 3, pp. 662-666.
8. Garleja, R. (2003). *Darbs, organizācija un psiholoģija.* Rīga: RaKa. 200 lpp.
9. Gomez-Meija, R., L., Balkin, B. (2008). *Management: People, Performance, Change*. Boston. p. 773.
10. Klauss, A. (2002). *Zinības vadītājam.* Rīga: Preses nams. 560 lpp.
11. Lursoft: LR uzņēmumu reģistrā reģistrēto subjektu dibināšanas un likvidēšanas dinamika. Retrieved: http://www.lursoft.lv. Access: 5 January 2011.
12. Miķelsone, V., L. (2004). *Nepārveido sevi, tikai uzzini, kas esi!* Rīga: Livilona. 255 lpp.
13. Miķelsone, V., L. (2007). *Socionika. Nepārveido sevi, tikai uzzini, kas esi! Attiecību rokasgrāmata*. Rīga: Biedrība Socionika. 309 lpp.
14. Mintzberg, H. (2007). *The Nature of Managerial Works.* USA: Indianapolis University. p. 345.
15. Praude, V., Beļčikovs, J. (2001). *Menedžments*. Rīga: Vaidelote. 507 lpp.
16. *The IT Development in the EU Investigation* (2009). Retrieved: http://www.eiu.com/public/. Access: 5 December 2010.
17. Voročuka, I. (2001). *Personāla vadība.* Rīga: Latvijas Universitāte. 320 lpp.
18. Walck, C., L. (1997). Using the MBTI in Management and Leadership. Palo-Alto: Davies – Black. p. 650
19. Zīlīte, L. (2009). *Personāla vadības pamati un socionika*. Rīga: Jumava. 196 lpp.
20. Гуленко, В. (2005) *Менеджмент слаженной команды.* Москва. 488 с.
21. Рейнин, Г. (2005). *Соционика: Типология. Малые группы.* Культура. 240 с.

Representation of Deputies in Municipalities after the Local Government Elections

Juris Gudevics, *Mg.oec., lecturer*
Faculty of Economics, Latvia University of Agriculture

Abstract. The fifth local elections after Latvia's restoration of independence took place in 2009. For the first time, the municipal elections were held according to the new administrative division of Latvia that came into force after the elections on 1 July 2009. The deputies were elected in 118 municipalities – 9 republican cities and 109 municipalities.

As one of the negative aspects of the new administrative division, it was believed that the newly elected councils of municipalities would not be represented by every previous administrative-territorial unit due to amalgamation. It was proved in the present research – there is at least one administrative territory in 35 out of 92 analysed municipalities, which is not represented in a new municipality. Hence, totally 57 municipalities are represented by deputies from all administrative units. This means that the municipal election system does not ensure the representation of deputies in the councils of municipalities from all administrative-territorial units.

It was concluded in the present research that there are 31 municipalities in Latvia that are explicitly represented by the administrative centre of municipalities, which is one of the prerequisites for the centre of municipalities to be developed more than the entire municipality. It was stated in the research that there were changes in the body of deputies in 65 out of 92 analysed municipalities until 31 December 2010.
Key words: administrative and territorial reform, local elections, regional economics.

Introduction

18 December 2008 will definitely go down in the history of Latvia when the period called by many people the "new times of surveyors" was finally over due to the completion of the administrative and territorial reform. The reform was full of disputes, contradictions, and protests – many voices were heard for and against the reform as such and its results. The fact that the newly elected councils of municipalities would not represent every previous administrative-territorial unit that was amalgamated was mentioned as one of the negative aspects of the new administrative division. Therefore, there was a reason to think that the representation of deputies would be one of the factors promoting unbalanced development of territories. Every deputy will be more interested in developing the territorial unit from which he or she was elected.

The Law on Administrative Territories and Populated Areas states that any municipality might have a territorial division of amalgamated municipality. If there were more than one municipality in the territory of an amalgamated municipality before it was established during the administrative and territorial reform, the municipalities amalgamated into one municipality are regarded as municipal territorial units – municipality towns or municipality rural territories (Law On Administrative..., 2008).

The fifth local elections after Latvia's restoration of independence took place in 2009. Unlike the previous elections held in March, the 2009 elections were held together with the European Parliamentary elections on 6 June. Although the unreformed municipalities existed in Latvia during that period, the elections were held in the new 118 electoral constituencies. Deputies were elected in 118 municipalities – 9 republican cities (Riga, Jūrmala, Valmiera, Liepāja, Ventspils, Rēzekne, Daugavpils, Jēkabpils, and Jelgava) and 109 municipalities. For the first time, the municipal elections were held according to the new administrative division of Latvia that came into force after the elections on 1 July 2009.

To understand better the present situation after the local elections on 6 June 2009, the number of municipalities in which deputies were not represented from all municipal territorial units was investigated as well as the extent of changes in the body of deputies that occurred until 31 December 2010 was analysed in the present research.

The **research object** is the local elections, but the **research subject** is the representation of deputies in municipalities.

Research hypothesis: the local election system does not ensure the representation of deputies in the councils of municipalities from all the administrative-territorial units.

The **research aim** is to investigate the representation of deputies in the councils of municipalities after the municipal elections.

Research tasks:

1) to describe the procedure of holding elections and the election law;
2) to analyse the voter turnout in the local elections;
3) to characterise the representation of deputies in the councils of municipalities after the local elections;
4) to analyse the changes in the body of deputies in the councils of municipalities until 31 December 2010.

The following research methods were used: descriptive or monographic method, statistical analysis, analysis and synthesis, graphic method, compilation and grouping, comparative analysis, and induction and deduction analysis.

Sources of information used in the present research: laws of the Republic of Latvia, publications in the press, Internet resources, and information provided by the administrations of 92 municipalities.

Results and discussion

1. The procedure of electing the council of municipality in Latvia

The institution making decisions in a municipality in Latvia is its council. Municipal elections in Latvia are stipulated by the Election Law on City Councils and Region Councils passed by the Parliament on 13 January 1994. The law stipulates that the councils of cities and municipalities are elected in equal, direct, secret, and proportional elections for four years. Several amendments have been done in the law and the last amendments were made on 2 October 2008 in relation to the administrative and territorial reform implemented in Latvia. The council of a city and a municipality is elected for four years. The administrative territory of any republican city and municipality constitutes an individual constituency (Election Law on ..., 1994).

The number of deputies to be elected to the council is set according to the number of residents living in the administrative territory of municipality on the day of elections. Presently, totally 13 deputies are elected in the smallest municipality; whereas 60 deputies are elected in the largest municipality (Riga). The smallest number or 13 deputies were elected in 41 municipalities, 15 deputies – in 60 municipalities, and 17 deputies – in 16 municipalities. The number of residents less than 5000 is registered in 37 municipalities. Therefore, the lists of deputy candidates could be submitted to the council elections not only by political parties, but also voter associations (Local Elections in...,2009).

The rights to elect a council belong to citizens of the Republic of Latvia who are aged 18 on the day of elections if no limitations stipulated by the law apply to them. The rights to elect also belong to citizens of other EU Member States who permanently live in Latvia and are registered in the Population Register. Persons have the rights to vote freely in the administrative territory of municipality, where they have declared their place of residence (voters have to declare their place of residence in their administrative territory of municipality at least 90 days prior to the day of elections), or where their real estate is declared in accordance with the procedure stipulated by the law (Vaidere I. et al., 2006).

Citizens of the Republic of Latvia as well as citizens of other EU Member States who are aged 18 on the day of elections and are registered in the Election Register and who have uninterruptedly declared their place of residence in their administrative territory of municipality for at least ten recent months before the list of deputy candidates was submitted or who own a real estate that is declared in accordance with the procedure stipulated by the law or who had a permanent job for at least four recent months before the day of submitting the list of deputy candidates, except persons having legal limitations, can be elected to a council (Vanags E. et al., 2005.)

2. Local elections on 6 June 2009

There were several changes in the 2009 local elections just like in 2005. An electoral threshold of 5% was imposed for the first time in the council elections of Riga in 2005, and the threshold of 5% was set for all municipalities in 2009.
According to the data of the Central Election Commission, in total 1765 deputies were elected to the councils of 9 republican cities and 109 municipalities in the 2009 local elections. The number of deputies elected to local governments has decreased more than twice compared with the 2005 local elections due to the administrative and territorial reform. Four years ago, 4179 deputies were elected in the local elections (Local Elections 2009, 2009).

Table 1 shows the number of deputies elected in the 2005 and 2009 local elections according to the number of residents living in the municipality.

Table 1

Number of elected deputies according to the number of residents in 2005 and 2009

2005		**2009**	
In councils of districts and municipalities		**In councils of municipalities**	
Number of residents	Number of deputies	Number of residents	Number of deputies
less than 2000	7	less than 5000	13
2001 - 5000	9		
5001 - 20000	11	5001 - 20000	15
20001 - 500000	13	20001 - 500000	17
more than 50000	15	more than 50000	19

Source: authors' construction based on Election Law on ..., 1994

The comparison of the number of deputies elected in the 2009 and 2005 local elections according to the number of residents living in the municipality shows that it was forecasted that more deputies would work in municipalities. In a municipality with the number of residents from 5001 to 20000, totally 11 deputies were elected in the 2005 local elections; whereas 15 deputies were elected in 2009. However, if the number of residents in a municipality ranges within 20001-50000, totally 13 deputies were elected in 2005 and 17 in the 2009 local elections. A similar situation is in the municipalities having more than 50000 residents – four more deputies were elected in the 2009 local elections than in 2005. The smallest number of deputies elected in the 2009 local elections was 13, whereas 7 deputies were elected in 2005. After comparing the number of deputies elected in the 2005 local elections with that of deputies elected in the 2009 local elections, one can conclude that the total number of deputies has decreased, while the number of deputies elected according to the number of residents living in the municipality has increased in the result of the administrative and territorial reform.

For the 2009 local elections, 737 lists of deputy candidates were submitted, in which 11196 candidates applied to be elected, i.e. 6 individuals per one deputy position. The largest number of lists were submitted in Rēzekne and in the municipality of Ķekava (17 lists in each municipality), but the largest number of candidates was in Riga (778) (Local Elections 2009, 2009).

The voter turnout in the 2009 local elections in Latvia was 53.75%. It has slightly increased (52.85%) compared with 2005. Yet, it has to be taken into consideration that the voter turnout significantly decreased in the 2005 local elections compared with the previous elections - in 2001, the voter turnout reached 61.98%. The voter turnout in the 1997 local elections was 56.48%, in 1994 – 58.50%, though approximately 10% of ballot-papers were invalid in the 1994 local elections. The voter turnout is usually lower in the local elections than in the parliamentary elections. In 1993, it was 89.90%, in 1995 – 71.90%, in 1998 – 71.89%,

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

in 2002 - 71.51%, in 2006 - 60.98%, and in 2010 – 62.62%, which was the second lowest voter turnout in the history of parliamentary elections (Regional Development in ..., 2010).
Extraordinary local elections were held in two municipalities on 19 December 2010 in relation to the separation of the municipality of Mērsrags from the municipality of Roja. Thirteen deputies were elected in both municipalities. Five lists of deputy candidates, which comprised 68 candidates, were submitted in the elections in the municipality of Roja. Five lists of deputy candidates, which consisted of 33 candidates, were submitted in the municipality of Mērsrags. Therefore, one may conclude that the deputies in the municipality of Roja had to compete more to get their position than those in the municipality of Mērsrags. After the mentioned municipalities separated, the new administrative and territorial division of Latvia consists of 110 municipalities and 9 republican cities (Elections to the..., 2010).

3. Representation of deputies in the councils of municipalities after the local elections

In total, the representation of deputies in the 92 newly established amalgamated municipalities was analysed in the paper; in detail 17 municipalities that were established only by changing their name – from rural parish or town to municipality (municipalities of Alsunga, Ādaži, Baldone, Baltinava, Carnikava, Cesvaine, Garkalne, Iecava, Ikšķile, Mālpils, Mārupe, Ropaži, Salaspils, Saulkrasti, Sēja, Skrīveri, and Stopiņi) were not studied in the present research.

Table 2

Classification of municipalities by number of territorial units and the representation of deputies after the 2009 local elections

Municipality	Administrative-territorial units	Number of municipalities having no representation from at least one administrative territory
Rēzekne	*25*	*1*
Daugavpils	*19*	*1*
Talsi	*17*	*1*
Saldus, Alūksne	*16*	*2*
Madona	*15*	*1*
Kuldīga, Gulbene	*14*	*2*
Jelgava	*13*	*1*
Ventspils, Krāslava	*12*	*2*
Balvi, Dagda, Dobele, Tukums	*11*	*4*
Ogre, Ludza	*10*	*2*
Smiltene, Bauska	*9*	*2*
Limbaži	*8*	*1*
Ilūkste, Jēkabpils, Kandava, Viļaka	7	3
Aizpute, Auce, Burtnieki, Jaunjelgava, Kārsava, **Krustpils, Līvāni, Priekule, Riebiņi, Valka, Vecumnieki**	6	2
Amata, Cibla, Grobiņa, Preiļi, Rūjiena, **Kocēni,** Vecpiebalga	5	6
Aglona, **Aloja, Ape, Brocēni, Durbe, Inčukalns, Mazsalaca, Nereta, Pļaviņas, Priekuļi, Sigulda, Skrunda, Strenči,** Viesīte, **Viļāni**, Zilupe	4	3
Aknīste, Beverīna, Engure, Ērgļi, Koknese, Ķegums, Ķekava, Lielvārde, Ozolnieki, Pārgauja, Pāvilosta, Rundāle, Salacgrīva, Tērvete, Varakļāni, Vārkava	3	0
Aizkraukle, Babīte, Cēsis, **Dundaga, Jaunpiebalga, Jaunpils, Krimulda, Līgatne, Lubāna, Naukšēni, Nīca, Olaine, Rauna, Roja, Rucava, Rugāji, Sala, Vaiņode**	2	1

Source: authors' construction based on the information provided by municipal administrations

The representation of deputies in municipalities was analysed according to one of the criteria of electing a deputy: a deputy has uninterruptedly declared his/her place of residence in his/her administrative territory of municipality for at least ten recent months before the list of deputy candidates was submitted or who owns a real estate that is declared in accordance with the procedure stipulated by the law or who had a permanent job for at least four recent months prior to the day of submitting the list of deputy candidates. The municipal administrations determined the administrative-territorial unit, which is represented by a deputy – the largest part of deputies were analysed according to their declared place of residence.

In case at least 8 territorial units amalgamated into one municipality, then at least one administrative-territorial unit is not represented by a deputy; it is marked in italic in Table 2. The municipalities having the representation of deputies from all their territorial units are marked in bold. According to the data of Table 2, one may conclude that no problems arise if 2 or 3 territorial units have amalgamated into one, except the municipality of Cēsis, which is represented only by the deputies of the town of Cēsis after amalgamation of the town of Cēsis and the rural parish of Vaive.

Of the 92 analysed municipalities, 35 municipalities have at least one administrative-territorial unit, which is not represented in the new municipality; while 57 municipalities are represented by all their administrative-territorial units. According to the information and results of calculations in Table 3, one may conclude that the municipalities of Rēzekne and Talsi are least represented by deputies from all their administrative-territorial units, i.e. 9 administrative-territorial units are not represented in each of them, followed by the municipalities of Alūksne and Daugavpils with 8 units as well as the municipalities of Kuldīga, Madona, Ogre, and Saldus with 7 administrative-territorial units. There is a risk that the mentioned municipalities might develop in an unbalanced way, as the majority of deputies, according to the authors, are interested to develop only the administrative-territorial unit they come from, and not the entire municipality. Of course, it depends very much on the fairness of each deputy. In the municipality of Rēzekne, no deputies are represented from the rural parishes of Čornaja, Dricāni, Kantinieki, Kaunata, Lendži, Nagļi, Puša, Rikava, and Stoļerova; in the municipality of Talsi – from the rural parishes of Abava, Balgale, Ķūļciems, Laidze, Sabile, Strazde, Valdgale, Vandzene, and Virba; in the municipality of Alūksne – from the rural parishes of Ilzene, Jaunalūksne, Jaunanna, Kalncempji, Maliena, Mālupe, Pededze, and Veclaicene; and in the municipality of Daugavpils – from the rural parishes of Ambeļi, Demene, Laucesa, Maļinova, Nīcgale, Saliena, Tabore, and Vabole.

After analysing the representation of deputies as a percentage of all administrative-territorial units, one may conclude that deputies are most represented in the municipalities of Ogre – 70%, and Talsi – 52.9%, followed by the municipalities of Alūksne, Kuldīga, Krāslava, Viesīte, and Cēsis with an equal rate of 50%.

Of the 92 analysed municipalities, changes in the body of deputies have taken place in 65 municipalities until 31 December 2010; the reasons are several – the elected deputies became heads of boards, deputies of the Parliament, and executive directors, resigned their seats due to private reasons, or died.

Table 3

Municipalities not represented by deputies from at least one administrative-territorial unit after the 2009 local elections

No	Municipality	Number of elected deputies	Number of administrative - territorial units	Number of territories not represented	Territories not represent-ted, %
1	Rēzekne	17	25	9	36.0
2	**Talsi**	17	17	9	**52.9**
3	**Alūksne**	15	16	8	**50.0**
4	Daugavpils	17	19	8	42.1
5	**Kuldīga**	17	14	7	**50.0**
6	Madona	17	15	7	46.7
7	**Ogre**	17	10	7	**70.0**
8	Saldus	17	16	7	43.8
9	**Krāslava**	17	12	6	**50.0**
10	Dobele	17	11	5	45.5
11	Jelgava	17	13	5	38.5
12	Balvi	15	11	4	36.4
13	Dagda	15	11	4	36.4
14	Gulbene	17	14	4	28.6
15	Ludza	15	10	4	40.0
16	Tukums	17	11	4	36.4
17	Kandava	15	7	3	42.9
18	Bauska	17	9	2	22.2
19	Cibla	13	5	2	40.0
20	Jēkabpils	15	7	2	28.6
21	Kārsava	15	6	2	33.3
22	Limbaži	15	8	2	25.0
23	Ventspils	15	12	2	16.7
24	**Viesīte**	13	4	2	**50.0**
25	Viļaka	15	7	2	28.6
26	Aglona	13	4	1	25.0
27	Amata	15	5	1	20.0
28	**Cēsis**	15	2	1	**50.0**
29	Grobiņa	15	5	1	20.0
30	Jaunjelgava	15	6	1	16.7
31	Preiļi	15	5	1	20.0
32	Rūjiena	15	5	1	20.0
33	Smiltene	15	9	1	11.1
34	Vecpiebalga	13	5	1	20.0
35	Zilupe	13	4	1	25.0

Source: authors' construction based on the information provided by municipal administrations

Table 4 shows that the largest changes in the body of deputies took place in the municipality of Rēzekne – 8 of 17 elected deputies were replaced over a 1.5 year period. Large changes also occurred in the municipalities of Aglona, Aizpute, Cibla, and Jaunjelgava, where 4 deputies were replaced in each municipality. Changes in the body of deputies did not take place in 27 municipalities. In general, one can conclude that the rotation of deputies mostly affected the performance of the municipality of Rēzekne, which, of course, is viewed

negatively, since the deputies who left their seats are not responsible for the decisions they made as well as the newly elected deputies have problems of adapting to the new situation.

Due to the changes in the body of deputies, their representation worsened in 11 municipalities: Rēzekne, Aizpute, Līvāni, Priekule, Rūjiena, Smiltene, Tukums, Vecumnieki, Viļāni, Kuldīga, and Madona. The representation of deputies improved in 6 municipalities: Cibla, Jaunjelgava, Krāslava, Jēkabpils, Ludza, and Bauska, but no changes took place in 48 municipalities.

Table 4

Changes in the body of deputies after the local elections from 6 June 2009 to 31 December 2010

Municipality	Number of municipalities	Changes in the body of deputies, times
Rēzekne	1	8
Aglona, Aizpute, Cibla, Jaunjelgava	4	4
Dobele, Krāslava, Līvāni, Lubāna, Priekule, Rucava, Rūjiena, Smiltene, Strenči, Tukums, Vecumnieki, Viļāni	12	3
Auce, Babīte, Burtnieki, Dagda, Daugavpils, Durbe, Gulbene, Ilūkste, Jaunpiebalga, Jēkabpils, Kārsava, Kuldīga, Lielvārde, Ludza, Madona, Nereta, Olaine, Ozolnieki, Rauna, Roja, Rundāle, Talsi, Varakļāni, Vārkava, Viesīte	25	2
Aloja, Amata, Balvi, Bauska, Beverīna, Brocēni, Jelgava, Kandava, Koknese, Ķekava, Limbaži, Nīca, Ogre, Pāvilosta, Rugāji, Salacgrīva, Sala, Saldus, Skrunda, Vaiņode, Kocēni, Viļaka, Zilupe	23	1
Total	65	133

Source: authors' construction based on the information provided by municipal administrations

In the analysed 92 municipalities, 1348 deputies were elected on 6 June 2010, of which 133 lost their deputy mandate until 31 December 2010. Therefore, one may conclude that in total 9.87% of the elected deputies lost their mandate.

Table 5 shows that at least 60% of the deputies are represented from the administrative centre of municipalities (in 31 analysed municipalities). In the municipality of Cēsis, 100% of the deputies come from the town of Cēsis, followed by the municipality of Dundaga whose administrative centre is represented by the rural parish of Dundaga and the municipality of Lubāna where its administrative centre is represented by the town of Lubāna (92.3%). A very high percentage of the representation of deputies from the administrative centre of territories is also in the municipalities of Babīte, Jaunpils, Nīca, Zilupe, Vaiņode, Viesīte, Ogre, and Preiļi. According to the authors, the centres of municipalities could develop at a faster pace in the above-mentioned municipalities, however, outlying areas could emerge in the other territories, as result of which the population will choose to live closer to the centre of municipality or in its very centre.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

Table 5

Representation of administrative centres after the local elections on 6 June 2009, %

No	Municipality	Administrative centre	Deputies	Number of administrative-territorial units	Representation of administrative centres, %
1	Cēsis	Cēsis	15	2	100.00
2	Dundaga	Dundaga parish	13	2	92.30
3	Lubāna	Lubāna	13	2	92.30
4	Babīte	Babīte parish	15	2	86.70
5	Jaunpils	Jaunpils parish	13	2	84.60
6	Nīca	Nīca parish	13	2	84.60
7	Zilupe	Zilupe	13	4	84.60
8	Vaiņode	Vaiņode parish	13	2	84.60
9	Viesīte	Viesīte	13	4	84.60
10	Ogre	Ogre	17	10	82.40
11	Preiļi	Preiļi	15	5	80.00
12	Jaunpiebalga	Jaunpiebalga parish	13	2	76.90
13	Varakļāni	Varakļāni	13	3	76.90
14	Inčukalns	Inčukalns parish	15	4	73.30
15	Kandava	Kandava	15	7	73.30
16	Koknese	Koknese parish	15	3	73.30
17	Krimulda	Krimulda parish	15	2	73.30
18	Olaine	Olaine	17	2	70.60
19	Naukšēni	Naukšēni parish	13	2	69.20
20	Rucava	Rucava parish	13	2	69.20
21	Ludza	Ludza	15	10	66.70
22	Rauna	Rauna parish	13	2	66.70
23	Salacgrīva	Salacgrīva	15	3	66.70
24	Kuldīga	Kuldīga	17	14	64.70
25	Tērvete	Tērvete parish	13	3	64.30
26	Ķegums	Ķegums	15	3	60.00
27	Lielvārde	Lielvārde	15	3	60.00
28	Priekuļi	Priekuļi parish	15	4	60.00
29	Roja	Roja parish	15	2	60.00
30	Sigulda	Sigulda	15	4	60.00
31	Viļāni	Viļāni	15	4	60.00

Source: authors' construction based on the information provided by municipal administrations

By analysing the representation of deputies, an interesting fact was revealed – 12 deputies instead of 13 are in the municipality of Zilupe, since 14 deputy candidates applied to be elected in the elections, of which one withdrew his candidature and all the 13 remaining candidates were elected on 6 June 2010. Unfortunately, one of the elected deputies died, and there is no one who could replace him. The municipality of Zilupe is the only Latvia's municipality being short of one deputy as it is stipulated in the Election Law on City Councils and Region Councils. Extraordinary elections do not have to be held, since it is possible to constitute a quorum in its municipal government.

Conclusions

1. The number of deputies to be elected to the council is set according to the number of residents living in the administrative territory of municipality on the day of elections. There are elected 13 deputies in the smallest municipality; whereas 60 deputies are elected in the largest

municipality (Riga). The smallest number or 13 deputies were elected in 41 municipalities, 15 deputies – in 60 municipalities, and 17 deputies – in 16 municipalities.

2. In the 2009 local elections, totally 1765 deputies were elected, whereas 4179 deputies were elected in the 2005 local elections. One may conclude that the number of deputies in the councils has decreased 2.37 times in the result of the administrative and territorial reform.

3. The voter turnout in the 2009 local elections in Latvia was 53.75%, which is 0.90 percentage points higher than in the 2005 local elections, but 8.23 percentage points lower than in the 2001 local elections. One can conclude that the voter turnout sharply changes.

4. The municipality of Zilupe is the only Latvia's municipality being short of one deputy as it is stipulated in the Election Law on City Councils and Region Councils. Extraordinary elections do not have to be held, since it is possible to constitute a quorum in its municipal government.

5. In case at least 8 territorial units amalgamated into one municipality, then at least one administrative-territorial unit is not represented by a deputy; however, if 2 or 3 territorial units have amalgamated into one, almost all municipalities are represented by deputies. An exception is the municipality of Cēsis, which is represented only by deputies of the town of Cēsis after amalgamation of the town of Cēsis and the rural parish of Vaive.

6. Of the 92 analysed municipalities, 35 municipalities have at least one administrative-territorial unit, which is not represented in the new municipality; while 57 municipalities are represented by all their administrative-territorial units. It leads to a conclusion that the municipal election system does not ensure the representation of deputies in the councils of municipalities from all administrative-territorial units.

7. Changes in the body of deputies did not take place in 27 municipalities of the 92 analysed ones. The largest changes in the body of deputies took place in the municipality of Rēzekne – 8 of 17 elected deputies were replaced over a 1.5 year period. Large changes also took place in the municipalities of Aglona, Aizpute, Cibla, and Jaunjelgava, where four deputies were replaced in each municipality. In the analysed 92 municipalities, in total 1348 deputies were elected on 6 June 2009, of which 133 or 9.87% of the elected deputies lost their deputy mandate until 31 December 2010.

8. After analysing the representation of deputies as a percentage of all administrative-territorial units, one may conclude that deputies are most represented in the municipalities of Ogre – 70%, and Talsi – 52.9%, followed by the municipalities of Alūksne, Kuldīga, Krāslava, Viesīte, and Cēsis with an equal rate of 50%.

Bibliography

1. *Law On Administrative Territories and Populated Areas*. Law of the Republic of Latvia (2008). Retrieved: http://www.likumi.lv/doc.php?id=185993. Access: 4 January 2011.
2. *Local Elections 2009*. Central Election Committee. Retrieved: http://www.cvk.lv/pub/public/. Access: 4 January 2011.
3. *Local Elections 2009 in Latvia.* Ministry of Regional Development and Local Government. Retrieved: http://www.raplm.gov.lv/pub/index.php?id=1715. Access: 4 January 2011.
4. *Regional Development in Latvia 2009* (2010). Riga: National Regional Development Agency, p. 172.
5. *Election Law on City Councils and Region Councils.* Law of the Republic of Latvia (1994). Retrieved: http://www.likumi.lv/doc.php?id=57839&from=off. Access: 4 January 2011.
6. *Elections to the Council in the Municipalities of Roja and Mērsrags*. Central Election Committee. Retrieved: http://www.cvk.lv/pub/public/29719.html. Access: 4 January 2011.
7. Vaidere, I., Vanags, E., Vanags, I. et al. (2006). *Regional Policy and Municipal Development in the European Union and Latvia*. Academic publishing house Latvian Statistics Institute of the University of Latvia, p. 295.
8. Vanags, E., Vilka, I. (2005). *Performance and Development of Municipalities*, Riga: Academic publishing house of the University of Latvia, p. 384.

Innovative Business Development and Financing

Ingrida Jakusonoka, *Dr.oec., professor*
Latvia University of Agriculture
Anatolijs Prohorovs, *PhD student*
Riga International School of Economics and Business Administration

Abstract. The positive changes in the rates of innovation performance for the EU-27, according to the Innovation Union Scoreboard (IUS), show that the annual average growth rates of the leading countries – Sweden, Denmark, Finland, and Germany – have significantly decreased during the post-crisis period and range within 1-2%. Among the Baltic States, only Estonia has reached the indicators of the group of innovation followers. Yet, Latvia's rank in the IUS-2010 is the lowest among the EU-27 countries, and its growth rate has to be significantly stimulated. Qualitative researches on innovative performance carried out in Latvia confirm insufficient cooperation between innovative business and science. In addition, they point to the needs to promote venture capital funds for developing innovative processes, including research on possibilities for attracting funding from business angels; to summarise the necessary statistical data regarding this field; and to establish financial infrastructure for engaging private equity funds in innovative development.
Key words: venture capital, innovation, Innovation Union Scoreboard, business angels, private equity funds, Latvia. JEL classification: O5, G24.

Introduction

The financial crisis has significantly affected several EU regions and interrupted the equilibrium and convergence observed over the recent period. A special Innovation Union is formed and strengthened in Europe, the main objectives of which for the next years have been set by the Europe 2020 Strategy's flagship initiative "Innovative Union" (Communication from the Commission..., 6 October 2010). It especially stresses that all the regions have to be engaged in the Innovative Union and thus trying to avoid the fragmentation in innovation between the strongest innovative regions and other regions. In this respect, a problem of ensuring adequate funding for research and innovation, including funding from the EU Structural Funds and national government support schemes becomes very topical.

Totally EUR 86 billion are budgeted from the EU Structural Funds for research and innovation in the programming period of 2007-2013. The funding will be used based on a prudent specialisation approach, concentrating on certain advantages in the fields where this funding can produce excellent results. The European Commission will announce proposals on establishing a European market of patents and licensing before the end of 2011 in close cooperation with the Member States and stakeholders. It has to be based on experiences of the Member States regarding exchange models in which demand and supply in the markets, where financial investments are turned into non-material property, are considered and giving new impulses to such undervalued non-material assets areas as mutual funds of patents and innovative intermediation. The new European Research Area Committee has to undertake the responsibility to encourage the Member States so that they implement the initiative "Innovative Union" (Europe 2020 Flagship ..., 2010).

To perform successfully these tasks and to engage actively national countries in the "Innovative Union", a great role is played by an assessment of each country's advantages and disadvantages in attracting additional financial resources.

The research **aim** is to assess the development dynamics of research and innovation and their funding possibilities in Latvia based on the indicators of the Innovation Union Scoreboard 2010 and the qualitative indicators of innovative activities researched in Latvia.

Within the present research, the authors set forth two research tasks: 1) to assess the level of innovation performance in Latvia, to compare it with the achievements of Estonia, Lithuania, Sweden, and Denmark, and to identify the main hindering factors; 2) to justify the need to stress the engagement of venture capital funds and business angels in financing of innovation processes in Latvia.

Data sources and research methods

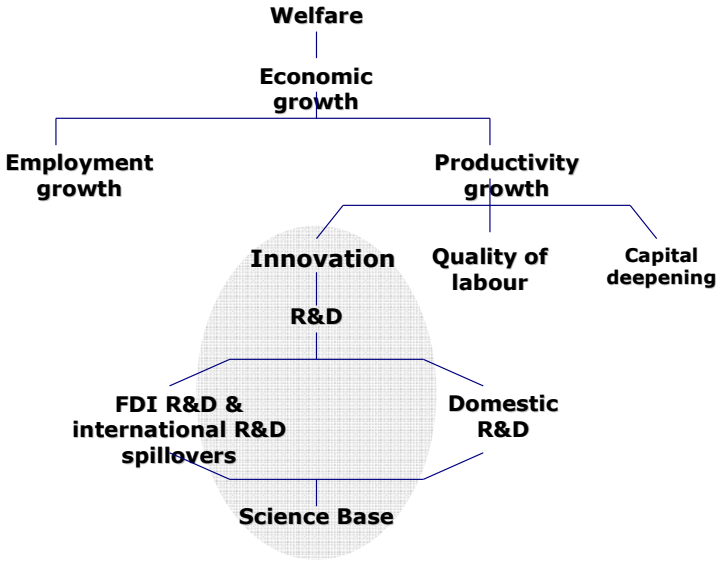
An assessment of the level of innovation performance in Latvia and a comparative analysis of related achievements of Estonia, Lithuania, Sweden, and Denmark were done based on a methodology, which includes 24 indicators and is developed by the Innovation Union Scoreboard 2010 (IUS 2010).

Reports of the European Commission, IUS 2010 data compiled by INNO METRICS, data compiled by the Central Statistical Bureau of Latvia, survey data obtained by Latvia's marketing public opinion research centre SKDS, expert interviews, and researches of scientists from the Baltic States regarding assessment and financing innovation performance were used as data sources.

Results

1. Financing of research and development costs and research centres of the national significance

According to the Lisbon Strategy, Latvia's national priorities in increasing the capacity of national innovation are as follows: to create a favourable institutional environment for innovative activity, to promote cooperation among science, education, and the private sector, to support knowledge and technology transfer as well as to foster development of new products and technologies.



Source: Jean Guinet, 2006

Fig.1. **Innovation-based economy**

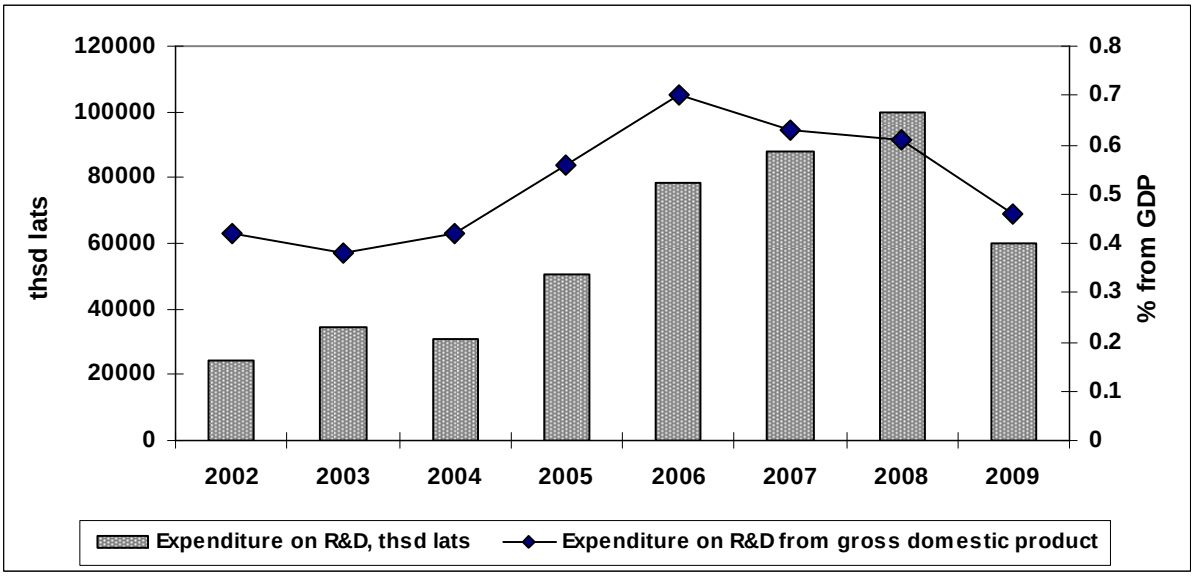
The Competitiveness Promotion and Innovation Programme 2007-2013 was elaborated to coordinate successfully Latvia's economic policy in the field of innovation, based on the National Development Plan, the National Innovation Programme, the Small and Medium Enterprise Development Programme of Latvia as well as the Guidelines for Developing the Industry of Latvia. The Department of Knowledge and Innovation Systems of the Investment and Development Agency of Latvia has also activated its performance; the main task is to analyse the national innovation system, to prepare proposals for its improvement, and to implement effective activities of the National Innovation Programme. Developing new government support programmes for promoting innovation was one of the first tasks.

Technology transfer contact points were established in several higher education institutions of Latvia: the University of Latvia, Riga Technical University, Ventspils University College, Latvia University of Agriculture, and Rēzekne Higher Education Institution.

Yet, the leading Latvian economists stress insufficient effectiveness in implementing activities regarding studies on innovation environment and management. S.Boļšakovs (2004) emphasises that the following conditions for successful implementation of innovative business are required: strong scientific potential; an idea on commercialisation process that is based on close cooperation among higher education, science, and business; special legislation and promoting schemes for innovation performers; a financial system that ensures successful implementation of innovative projects by integrating the spheres of national and local governments and business; and uniting the funding of the EU Structural Funds and the Programmes.

Following the main trends in providing innovation support in the EU Member States, Latvia, too, partially moves from providing support to several enterprises to developing clusters of enterprises. Within the PHARE programme, researches on identifying potential clusters of enterprises were done in Latvia. Yet, the emergence of clusters goes on slowly in Latvia; only a few clusters have emerged, like an information system cluster, a wood-processing cluster, a biotechnology cluster, and a tourism cluster (Deniņš A., Zakovics J., 2008).

The process of innovation is based on research and development work (R&D), the funding of which is analysed according to an indicator – expenditure on research and development as a percentage of GDP. A goal was set for Latvia and other EU Member States to increase investments in research to 3% of GDP until the year 2010. However, after analysing the period of 2002-2009, one can conclude that the share of expenditure on R&D in Latvia was only 0.4-0.7% of its GDP (Figure 2). Besides, it has significantly decreased during the crisis (2008-2009) due to the lack of funds. According to Deniņš A., the expenditure per scientist in Latvia is 30-40 times smaller than in industrially developed countries (Deniņš A., 2005).



Source: authors' construction based on Research and Development and Innovation Statistics, 2010

Fig. 2. **Expenditure on research and development (R&D) in Latvia, 2002-2009**

A SWOT analysis of the Latvian Innovation System (Deniņš A., Zakovics J., 2008) exposed several significant imperfections in this sector: low R&D funding capacity from the national government and companies; non-systemised national policy regarding innovation; specialised infrastructure promoting innovation is insufficiently developed; weak linkages among the sectors of business, research, and education; few patents; insufficient access to financial resources, especially venture capital and others.

Presently, a very topical issue is the EU support funds for science commercialisation, controlled by the Ministry of Education and Science of the Republic of Latvia. The total funding of the ERDF amounts to LVL 401.3 million for the period of 2007-2013. Within the ERDF funding, LVL 35.8 million is available in Latvia for the period of 2007-2013 under the programme 2.1.1.1 "Support for Science and Research". This support is intended for research

projects of practical orientation, which promote the integration of science and production, obtaining new knowledge and techniques for developing or perfecting new products, processes, and methods. According to the result of a tender in 2010, totally 114 research projects were approved: 14 commercial research projects or 12.3% with a total eligible funding of LVL 4.1 million. Of all the projects, entrepreneurs are engaged in 37 projects (33%) as cooperation partners (in total, 30 entrepreneurs are engaged, among which, for instance, the following companies may be mentioned: PharmIdea, Saint-Tech, Grindeks, Syntagon Baltic, Hologramma, Baltfarm, Anima Lab, Liepājas RAS, Silvanols, Telemedica, Latvijas Valsts ceļi etc.).

Table 1

Research centres of the national significance (RCNS) in Latvia, 2010

RCNS	Cooperation partners
RCNS for energy and environmental resources and sustainable technologies	University of Latvia, Biology Institute and the Physical Energy Institute of the University of Latvia, Riga Technical University
Pharmacy and biomedicine RCNS	Organic Synthesis Institute, Riga Technical University, University of Latvia, Latvian Biomedical Research and Study Centre (BMC)
RCNS for information communication and signal-processing technologies	Electronics and Computer Science Institute, Ventspils International Radio Astronomy Centre, University of Latvia, Riga Technical University, Institute of Mathematics un Informatics of the University of Latvia
RCNS for agricultural resources and food	Latvian State Crop Farming Institute, Scientific Institute of Food Safety, Animal Health and Environment "BIOR", State Stende Cereals Breeding Institute, Latvia University of Agriculture, State Priekuļi Plant Breeding Institute, University of Latvia
RCNS for forest and water resources	Latvian Institute of Aquatic Ecology, Latvian State Institute of Wood Chemistry, Latvia University of Agriculture, University of Latvia, Daugavpils University, Latvian State Forest Research Institute "Silava"
RCNS for nanostructured and multifunctional materials, constructions, and technologies	Institute of Polymer Mechanics of the University of Latvia, Institute of Solid State Physics of the University of Latvia, University of Latvia, Institute of Physics of the University of Latvia, Inorganic Chemistry Institute of Riga Technical University, Riga Technical University
RCNS for public health and clinical medicine	Riga Stradiņš University, University of Latvia, Pauls Stradiņš Clinical University Hospital
RCNS for the Latvian language, cultural and historical heritage, and creative technologies	History Institute of the University of Latvia, Literature, Folklore and Art Institute of the University of Latvia, Philosophy and Sociology Institute of the University of Latvia
RCNS for socio-economic and public management	Latvian State Institute of Agrarian Economics, University of Latvia

Source: authors' construction based on the IDAL data, 2010, Business Forum

Yet, under the programme 2.1.1.3.1 "Science Infrastructure Development", the financing of LVL 56.3 million is available: support is intended for 9 research centres of the national significance (Table 1) to promote resource concentration and scientific achievements as well as funding is available for developing a research infrastructure for commercial or partially commercial purposes (construction, purchase of scientific equipment). The elaboration of development strategies for the research centres of the national significance will continue in 2011, taking into consideration the basic concepts and guidelines of the EU Innovation Union

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

that are included in the European Commission's Communication – the Europe 2020 Strategy's flagship initiative "Innovative Union" SEC(2010)1161.

It is important that this document especially stresses that "in times of fiscal constraints, the EU and Member States need to continue to invest in education, R&D, innovation, and ICTs. Such investments should where possible not only be protected from budget cuts, but should be stepped up" (Europe 2020 Flagship ..., 2010).

2. Comparative analysis of the innovation system in Latvia

According to the IUS 2010, the EU Member States are divided into four country groups: 1) innovation leaders; 2) innovation followers 3) moderate innovators and 4) modest innovators (Table 2).

Table 2

Average annual growth rates in the EU-27 in 2006-2010

Group	Growth rate	Growth leaders	Moderate growers	Slow growers
Innovation leaders	1.6%	Finland (FI), Germany (DE)		Denmark (DK), Sweden (SE)
Innovation followers	2.6%	Estonia (EE), Slovenia (SI)	Austria (AT), Belgium (BE), France (FR), Ireland (IE), Luxembourg (LU), the Netherlands (NL)	Cyprus (CY), the United Kingdom (UK)
Moderate innovators	3.5%	Malta (MT), Portugal (PT)	the Czech Republic (CZ), Greece (GR), Hungary (HU), Italy (IT), Poland (PL), Slovakia (SK), Spain (ES)	
Modest innovators	3.3%	Bulgaria (BG), Romania (RO)	Latvia (LV)	Lithuania (LT)

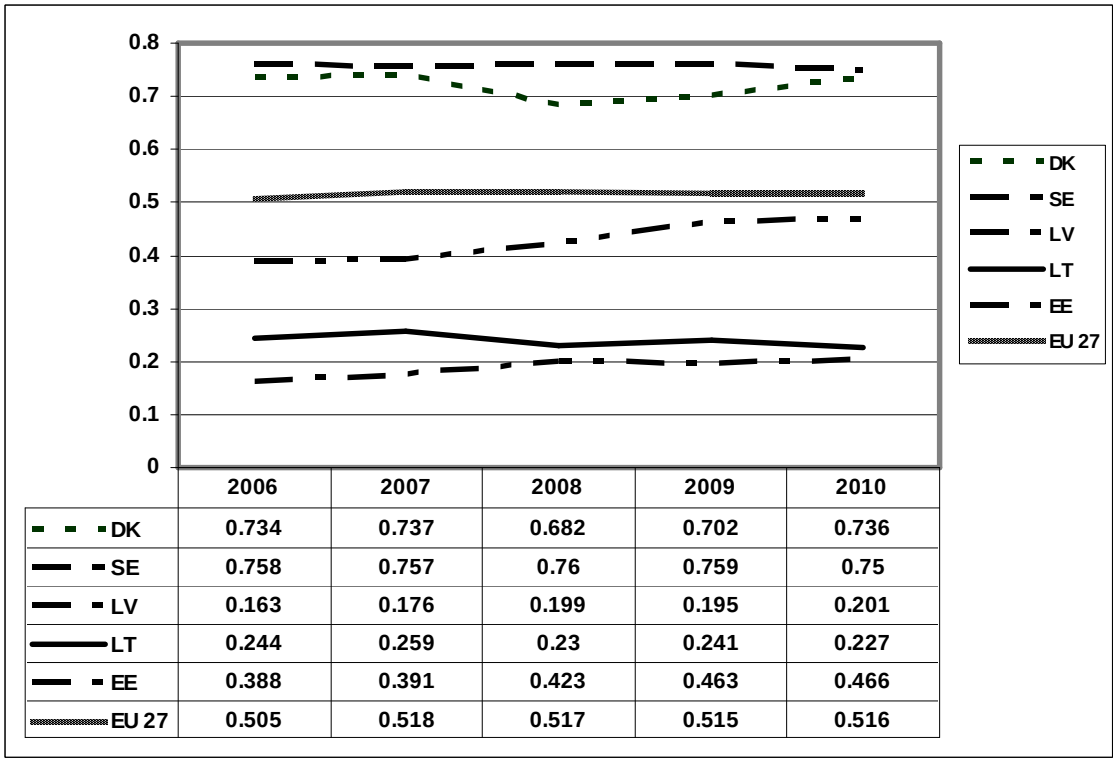
Source: Innovation Union Scoreboard 2010

Denmark, Finland, Germany, and Sweden are the Innovation leaders; Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, the Netherlands, Slovenia, and the UK all show a performance close to that of the EU-27, these countries are the Innovation followers. The performance of the Czech Republic, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovakia, and Spain is below that of the EU-27 – they are moderate innovators. However, Latvia, Bulgaria, Lithuania, and Romania are Modest innovators. The performance of Innovation leaders is 20% or more above that of the EU-27; of Innovation followers, it is less than 20% above but more than 10% below that of the EU-27; of Moderate innovators, it is less than 10% below but more than 50% below that of the EU-27; and for modest innovators, it is below 50% that of the EU-27 (Innovation Union Scoreboard 2010).

After analysing the growth rates of innovation performance for Latvia compared with the respective average EU-27 rates, one can conclude that an increase in investments in R&D is 7.3% lower, cooperation among SMEs is 14.3% lower, while registration of licenses and patents is 24.6% lower (Innovation Union Scoreboard 2010). Latvia presents relatively better results for human resources, economic effects of innovation, and public financial support. However, if Latvia's innovative activities are compared with those of Finland, Estonia, Germany, and Slovenia, one has to conclude that over the recent 5 years Latvia's performance is lower for all significant indicators and Latvia's rank in the IUS-2010 is the lowest among the EU-27, and the country's growth rate has to be significantly stimulated. The rates of innovation performance in the EU-27 show that the rates of the leading countries – Sweden, Denmark, Finland, and Germany – have significantly decreased during the post-crisis period and range within 1-2%. Among the Baltic States, only Estonia has reached the indicators of the group of innovation followers.

The analysis of the country ranks within a group that could be an example for improving the innovation environment of Latvia (Denmark, Sweden, Estonia, and Lithuania) shows

(Figure 3) that by increasing activities, resources, and return of innovation only four times, Latvia could reach the present situation of Sweden and Denmark; while the country could reach the achievements of Estonia if they are increased two times.



	2006	2007	2008	2009	2010
DK	0.734	0.737	0.682	0.702	0.736
SE	0.758	0.757	0.76	0.759	0.75
LV	0.163	0.176	0.199	0.195	0.201
LT	0.244	0.259	0.23	0.241	0.227
EE	0.388	0.391	0.423	0.463	0.466
EU 27	0.505	0.518	0.517	0.515	0.516

Source: authors' construction based on the Innovation Union Scoreboard 2010

Fig. 3. **Composite indicator of the Innovation Union Scoreboard in 2006-2010**

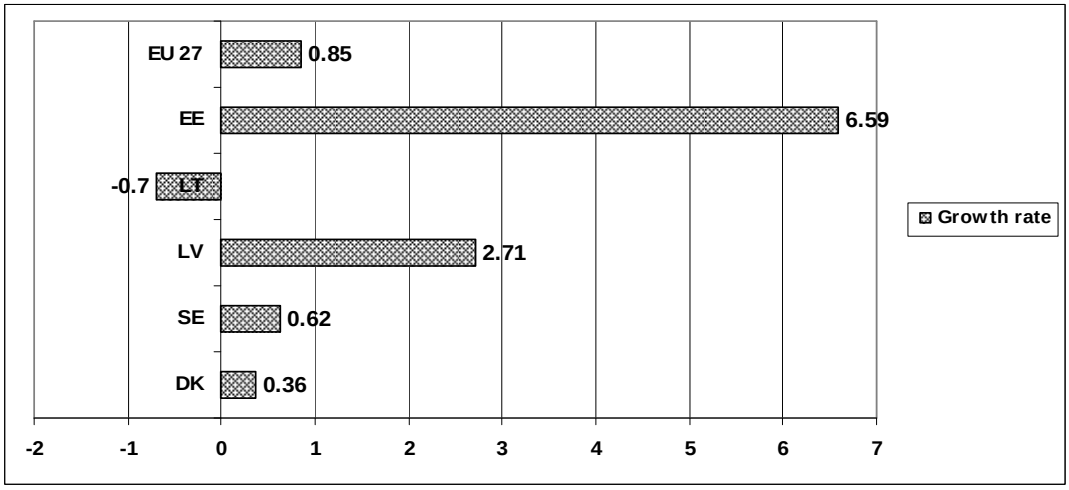
However, Latvia's efforts to retain its rate of innovation performance as much as possible have to be appreciated; the average annual rate was 2.71% in the period of 2006-2010 (Figure 4), and this average rate is higher than the EU-27 average. Especially Estonia's efforts in innovation performance have to be stressed, which allowed the country to retain an average growth rate at 6.59% over the five-year period.

Estonia is one of the innovation followers. Its relative strengths are in human resources, firm investments, and linkages and entrepreneurship. Its relative weaknesses are in open, excellent and attractive research systems, and intellectual assets and outputs. High growth is observed for community trademarks, community designs, and license and patent revenues from abroad. A relatively strong decline is observed for new doctorate students and SMEs, introducing marketing or organisational innovations. Growth performance in open, excellent and attractive research systems, and intellectual assets is above average. In the other dimensions, it is below average (Innovation Union Scoreboard 2010).

Yet, the case of Denmark shows that the advantages of this country are composed of high growth for new doctorate graduates and community trademarks, a strong decline is observed for venture capital and SMEs, introducing marketing or organisational innovations. Whereas Latvia's statistics lack data on the amounts of financing invested by venture capital and business angels, and it, to a certain extent, does not allow assessing changes in this indicator.

To find a solution for activating and enhancing innovation, each Member State of the EU Innovation Union has to make a self-assessment, as the result of which its strengths and weaknesses are identified and its possibilities to activate certain processes are determined.

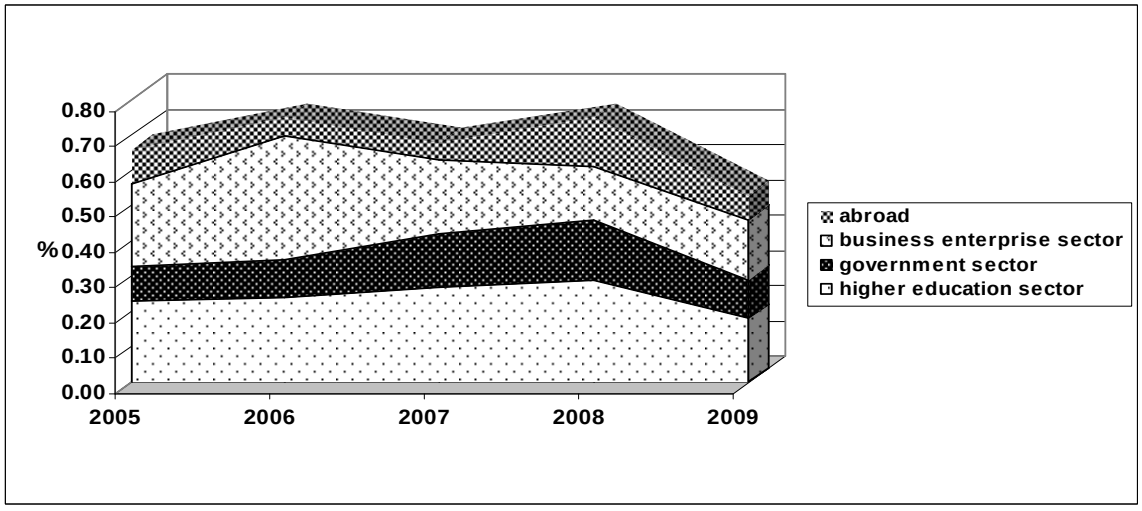
ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011



Source: authors' construction based on the Innovation Union Scoreboard 2010

Fig. 4. **Growth rates of innovation performance (2006-2010)**

After comparing the total expenditure on R&D with the EU goal – 3% of GDP in 2010, one can see (Figure 5) that the expenditures on the sectors of higher education, government, and business have significantly declined in 2009 and accounted for only 0.46% of GDP. The use of venture capital and the attraction of business angels are weakly motivated in Latvia. There is a lack of information and statistical data on the possibilities for using private equity funds, and there is no adequate infrastructure and cooperation among entrepreneurs for this purpose.



Source: authors' construction based on Research and Development and Innovation Statistics, 2010

Fig. 5. **Expenditure on R&D as a percentage of GDP by sector of performance in Latvia, 2005-2009**

To ascertain the factors affecting the environment and performance of innovation activities in Latvia, the Investment and Development Agency of Latvia together with the marketing public opinion research centre SKDS conducted a survey of 300 respondents in December 2009. The target group was companies that developed and introduced new and significantly different services or goods in the market and/or invested funds in research related to the development of new products over the recent 5 years. According to the survey, insufficient funding as a hindering factor was mentioned by 55% of the respondents, 27% believed there is a lack of highly qualified human resources in companies, and 18% of the respondents were convinced there were insufficient resources at Latvia's scientific and research institutions (Kaktiņš A., 2010).

Out of 62 enterprises that developed and introduced new and significantly different services or goods in the market and cooperated with scientists or scientific and research institutions over the recent 5 years, 48% paid Latvia's scientific institutions for their consultations and product tests, 37% paid for a research done; 32 % of them ordered a research from Latvia's scientists (natural entities), while 16% paid foreign scientists for their researches, and 13% paid foreign scientific institutions; another 16% paid foreign scientific institutions for their consultations and product tests (Kaktiņš A., 2010).

The data summarised confirm that the practical results of the national innovation policy are not still fully achieved in Latvia.

Conclusions and recommendations

1. The exchange of the best experiences among the Member States have to be actively exploited and an understanding of innovation in a broader sense (innovation in services, improvements in processes and organisational changes, business models, marketing, brands and designs) has to be promoted consequently.
2. The basic conditions, tax incentives, and a support scheme have to be elaborated as well as information has to be provided for researching these processes to attract private capital and use it efficiently in the innovation process.
3. An appropriate model of financial infrastructure for Latvia has to be elaborated after critical assessment of the development of financing models for private capital, especially venture capital, in developed countries
4. Higher education and research institutes have to be given sufficient autonomy and possibilities to use alternative sources of funding, for instance, venture capital funds and business angel financing.
5. It is necessary to ensure active partnership among the public and private sectors, to promote innovative solutions for financing, to attract both the EU Structural Funds and the private sector's investments along with the public sectors' funding for prospective researches and product commercialisation.
6. Investments in education, research, innovation, and information and communication technologies do not have to be reduced, but increased to the EU target of 3% of GDP.

Bibliography

1. Boļšakovs, S. (2004). Innovative Business Financing Problems in Latvia. Economics and Management. Volume 677, Scientific Papers. University of Latvia, pp. 85-96.
2. Deniņš, A. (2005). Innovative Business Management as a Driving Force of Competitiveness of Enterprises. Scientific Papers. University of Latvia, Economics IV, Volume 689, pp. 56-62.
3. Deniņš, A., Zakovics, J. (2008). Innovation Activity Management Problems in Latvia. Scientific Papers. University of Latvia, Volume 737, Economics VII, pp. 64-74. ISBN 978-9984-45-022-3.
4. Europe 2020 Flagship Initiative Innovation Union. SEC(2010)1161. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions. Brussels, 6 October 2010. Retrieved: http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf. Access: 1 February 2011.
5. Guinet, Jean (2006). Enhancing Industry**-**Science Relationships. The Role of Governments. Retrieved: http://www.oecd.org/dataoecd/59/22/35936087.ppt.
6. Innovation Union Scoreboard 2010. The IUS Report, its Annexes and the Indicators. Retrieved: http://www.proinno-europe.eu/metrics. Access: 1 February 2011.
7. Kaktiņš A. (2010). Development of New Products at Latvian Enterprises. Business forum 2010, Riga, 9 December 2010. Retrieved: http://www.liaa.lv/lv/sakumlapa/pasakumu_arhivs/2010_gads/decembris/biznesa_forums/. Access: 1 February 2011.
8. Research and Development and Innovation Statistics: Statistical Data Collection. Central Statistical Bureau of Latvia, Riga, 2010. ISBN 978-9984—06-400-0
9. Sīka, L. (2010). The Ministry's of Education and Science Managed EU Financial Support for Science Commercialisation. Business forum 2010, Riga, 9 December 2010. Retrieved: http://www.liaa.lv/lv/sakumlapa/pasakumu_arhivs/2010_gads/decembris/biznesa_forums/. Access: 1 February 2011.

Nutrition Science for Retired Rural Population in Slovenia

Stojan Kostanjevec, *PhD, research assistant*
Živa Zupan, *teacher*
Verena Koch, *PhD, associate professor*
Faculty of Education, University of Ljubljana

Abstract. Like in all other countries, the population in Slovenia is aging. The number of retired and elderly people is ever increasing and the quality of their lives greatly depends on their health, social and economic conditions. Most frequent health problems in this age are often due to unhealthy life styles and are manifested in obesity, diabetes, coronary and heart diseases, and different types of cancer. Therefore, an important role in preservation and enhancement of health is to encourage this population to take greater care about healthy nutrition. In this report, the authors present the implementation and evaluation of workshops on nutrition, which were organised for retired people from rural areas in Slovenia. With this target group the authors analysed how useful was the information presented through workshops and evaluated different methods of work. In this research, the authors applied qualitative and quantitative techniques of data collection. The results show that retired people have insufficient knowledge about nutrition, which is also reflected in inadequacy of their everyday nutrition. The evaluation of workshops proved that group work is the best and most successful method for presenting problems. Through group work the participants developed social contacts and the group dynamics contributed to forming positive attitudes towards healthy nutrition, which eventually influenced the participants to take decisions for changing their eating habits. The results show that in promoting healthy nutrition among rural population, one need to offer information on food and nutrition professionally and the participants will readily take the advice. This also requires suitable professionalism and adequate pedagogical education on the part of the training staff.
Key words: nutrition science, nutrition knowledge, retired people, education.

Introduction

During the previous decade, human society has gone through numerous changes. Particularly developed countries, including countries of the European Union (EU), Slovenia being part of it, have been faced with the problem of aging of their population. The structure of the population in Slovenia has dramatically changed with the ever-extending human life span. We are now in a situation where on the one hand the percentage of the 14-year olds is decreasing, while the number of working population, i.e. people between 15-64 years of age as well the number of older population, i.e. people older than 65 is increasing. In the early 1980s, the percentage of older population was only 10%, and by 2004, it increased to more than 15%. The reasons for this rapid aging can be ascribed to lower fertility of humans and extended life span. Important factors, which influence the extension of human life span, are better social and health conditions (Vertot N., 2010).

As people live longer, the age at which people retire also changes. Compared with other countries of the EU, in 2006, Slovenia had the lowest average retirement age limit, being 56.2 years (i.e. 59.6 years for old-age pensions and 52.4 years for disability pensions). In 2009 Slovenia had as many as 538 455 retired persons, which represent more than 25% of the total population. In 2001, the European Council set out a target for its Member States, namely, to strive to ensure a 50% share of working population aged between 55-64 years by 2010. Slovenia did not manage to reach this goal: in 2008 the employment rate of working population was only 32.80%, after which the number of retired persons and elderly people started increasing (Vertot N., 2010). Due to biological aging, combined with unhealthy life styles this segment of population is now facing various health problems, for example, obesity, increased blood pressure, coronary and heart diseases, diabetes, and cancer.

The two most frequent reasons for the mortality of people in Slovenia are coronary and heart diseases, and cancer. More than 70% of people die of chronic non-communicable

diseases, where coronary and heart diseases represent 38% of the total mortality rate of Slovenian population (Fras Z., 2007). At the age from 45 to 65, many people die of coronary and heart diseases, while after the age of 65 coronary and heart diseases are the most frequent causes of death (Health Statistics Yearbook, 2008).

In the study of Elmadfa and Meyer (2009), the authors claim that the main factors, which influence the prevalence of overweight, obesity and other non-communicable diseases among European people, are the lack of physical activity and unhealthy eating habits, and emphasise the necessity for making changes towards healthy nutrition, especially among high-risk population, that is the elderly.

The results of the study *Risk Factors for Non-communicable Diseases of Adults in Slovenia*, carried out between 2001 and 2002, indicate prevalence of overweight among adults in Slovenia in the age group between 25 and 64 years, which accounts for 39.6%, and obesity 15.0%. The study showed that the number of overweight people even increased by age. Thus, in the age group of 55 - 59-year-olds the prevalence of overweight people is 48.0%, and 22.7% for obese, while in the age group of 60 – 64-year-olds the percentage of overweight people is even higher, i.e. 49.6%, and obese 20.4% . Obesity is a serious risk factor, which leads to other chronic non-communicable diseases. It was found out that among obese people the incidence factor for the development of hypertension is 5.3 and 6.4 for diabetes compared with the population with normal nutrition. According to the research in Slovenia, 46.5% of adults live on inadequate diets (Zaletel Kragelj L., Fras Z. and Maučec Zakotnik J., 2004).

In 2005, in order to establish, preserve, and strengthen healthy nutrition habits, the state of Slovenia adopted a Resolution of the National Programme on Food and Nutrition Policy 2005 – 2010. The basic tasks and activities related to the promotion of healthy nutrition for adults aimed at:

- setting up recommendations for healthy nutrition and specific target groups;
- promotion of recommendations on healthy nutrition for strengthening health, skills, raising awareness and motivation of people;
- promotion and awareness on market available products and purchasing healthy food products; and
- extending health promotion programmes.

After adoption of this resolution, various responsible bodies were appointed for the implementation of tasks and activities, among them those responsible for health education and health services, regional Institutes of Public Health, Chamber of Commerce, Chamber of Craft of Slovenia, Chamber of Agriculture and Forestry of Slovenia and various non-governmental institutions (Maučec Zakotnik J., Hlastan Ribič C., Poličnik R., Pavčič M., Štern B. and Pokorn D., 2007).

The results of the study on Nutrition habits of adult population in Slovenia from the aspect of health protection, carried out between 2007 and 2008, pointed out three most frequent factors, which influence decision making in buying food for daily nutrition. These are: sex, education, and age. Women seem to be more concerned with healthy nutrition than men are. This may be because women are more susceptible to medical ideology and doctrines, which call for individual and personal responsibility for health. The study also showed that there was a correlation between education and nutrition. People with higher education are better informed and, thus develop higher awareness about food issues. Higher education also brings better jobs with higher income, which is important for purchasing food products good for health, which as a rule are more expensive. The results showed that the elderly, in certain aspects, were more careful about their diets than younger people were. The author Tivadar (2009) notes that this is because the elderly are already faced with health problems, and hence pay more attention to their food. In planning measures for the promotion of healthy life styles and healthy nutrition there is a need to consider that on the average the retired population has lower education and receives lower income than younger people, which of course significantly influences their nutrition patterns (Tivadar B., 2009).

Promotion of healthy nutrition

Kamin (2004) observes that public health services in Slovenia have become more concerned with communicating information on health problems. In the past, this communication was supplied mainly via printed media (posters, brochures, leaflets); however, nowadays various

other means are used to communicate this information, i.e. via television programmes, radio, educational or entertainment programmes, magazines, and other printed media. In addition to this, food industries advertise their products; thus also promoting health by communicating information about health protection.

What is important is that individuals are able to find suitable sources of information on healthy nutrition, either formal or informal (Thematic Guidelines for Consumer…, 2006). The authors McKay, Houser, Blumberg and Goldberg (2006) have found out that the quality of information about nutrition, which elderly people (>50 years) acquire, is highly correlated with their education. Compared with higher educated population, people with lower education more often rely on various sources of information on healthy nutrition. They trust the opinion of their medical doctors, friends and neighbours, and the information they see on television. Spadaro (2003) notes that the main sources of information about health and healthy nutrition for the people in Europe are medical professionals (medical doctors, pharmacists…), and he supports this with figures from the research data: people above 55 years (51.9%), retired persons (51.0%) and people with lower education (54.9%) are those groups, which mainly rely on the opinion of medical professionals.

The research **aim** of the present study is to analyse the efficiency of informal educational programme to affect formation of positive opinion in connection with healthy nutrition of retired people living in rural environment.

The following **tasks** were posed in order to achieve the aim:

- to design, perform and evaluate an informal educational programme promoting healthy nutrition for retired people living in rural environment;
- to find out which are the most appropriate methods of healthy nutrition education for retired people; and
- to analyse motivation factors, which could cause change of opinion and nutrition habits of the retired people.

Table 1

Goals and topics of workshops as a form of non-formal education

Workshop	No. of hours	Goals	Topics
1	3	- to know the recommendations on healthy nutrition - to be able to recognise risk factors for health	- recommendations for healthy nutrition (nutritional rhythm, food pyramid, nutritional and energy values of food) - food and health risks
2	3	- to be able to analyse and plan their own diets in view of recommendations on healthy nutrition - to be able to understand food labels and information on energy and nutritional values of food items	- analysis of food diary - individual nutrition planning - criteria for purchasing healthy food
3	4	- to be able to select appropriate food and cooking methods for preparing healthy meals - to be able to prepare meals with less fats and salt	- preparation of healthy meals

The Faculty of Education, University of Ljubljana with partner institutions from Lithuania, Latvia, and Estonia collaborate within the framework of the project Science for Consumers, carried out between 2009 and 2011 under the Grundtvig programme, which is a part of the European Lifelong Learning Programme. A 10-hour educational programme on nutrition was designed and performed at the Faculty of Education, University of Ljubljana. The programme aimed at promoting healthy nutrition for retired people living in rural environment. The programme was designed as a form of non-formal education, offering different forms of activities to convey modern doctrines of nutrition science with evaluation mechanisms for the assessment of the programme. Topics were specifically adapted to this target group and

presented through the activities recommended by the Guidelines for Consumer Education for Adults (Thematic Guidelines for Consumer…, 2006).

The principal aim of this educational programme was to improve the ability of the elderly to understand recommendations for healthy nutrition and to raise awareness for taking personal responsibility for their own health. The authors anticipated that by forming positive attitudes towards healthy eating the participants would develop inner motivation to critically reflect on their eating habits and change them appropriately. Table 1 presents particular goals and topics of the workshops.

Holli, O'Sullivan Maillet, Beto, and Calabrese (2009) emphasise the importance of open communication between workshop leaders and participants as well as communication between the participants. With this in mind, the strategies and the methods of work the authors applied in these workshops were adapted to the age level of the participants, aiming at their active participation and communication.

For the collection, analysis, and interpretation of the data, the authors decided on qualitative method of analysis, which is a recommended approach for understanding the problems related to the nutrition of the participants and evaluation of educational results.

For this research, the authors formed a group of 15 participants who went through a 10-hour workshop programme. All the participants were females from a rural area, with the status of retired persons. The average age of the test group was 62.29 years.

Results and discussion

Further below, the authors present the results of research, which include evaluation of the topics presented, implementation of the workshops, and analysis of nutrition knowledge of the participants. The results show that both, the topics and the methodology of workshops, were appropriate for the group, which brought to the expected results.

Workshop 1

Before starting Workshop 1 the authors enquired the participants about their expectations and tested their level of motivation. The answers showed that they were interested in getting more information about healthy nutrition; e.g. "I would like to learn how to acquire healthy eating habits" and "how to compose a healthy and tasteful menu". Kamin and Tivadar (2003) have found out that adults are much concerned about their own health. This applies to both, individuals with no health problems and those who have been personally faced with a disease or health problems of other family members. This concern for health was also expressed by the participants in the study.

Furthermore, the participants expected to receive advice and encouragement on how to change their eating habits, e.g. "I would like to become motivated for changing my eating habits", and "I would like to know what to do to retain newly acquired habits in the future". The answers the authors got from the participants show that they were highly motivated and willing to learn something new and ready to change and reshape their eating habits.

Based on their expectations the authors focused on their own stage of behaviour and preparedness to change eating habits with regard to the levels described in the trans-theoretical model. According to this model, the behaviour changes go through six stages: pre-contemplation, contemplation, preparation, action, maintenance, and termination (Prohaska J. O. and Velicer W. F., 1997). Firstly, the authors found out that the participants were intensely thinking of making some changes in their own nutrition behaviour, which corresponds with the contemplation stage. The authors wanted to bring the participants to the subsequent level, i.e. the preparation stage, during which they should acquire suitable information and receive clear guidance on how to change their own behaviour. This was in fact the overall aim of the workshops.

Before the authors started with the workshop programme they wanted to find out how much the participants already know about nutrition and if they were informed about recommendations for healthy nutrition. The authors also analysed the nutritional status of the participants. For this purpose, the authors administered a written knowledge test and carried out a group interview. The knowledge test was designed as a multiple choice answer test and covered topics such as: energy needs of adults, fats and cholesterol, salt, food fibres, sugar, fruit, vegetables, composition and quality of food, and recommendations for daily meal intake.

The results of the test showed that the participants were well aware of the recommendations for healthy nutrition, namely, that one should take five meals per day (88.20% correct answers). On the contrary, there were only 47.11% correct answers to the questions on energy needs for adults and the same percentage of the respondents answered this question with "I don't know". Health promotion programmes frequently mention the significance of cholesterol, e.g., HDL - good cholesterol, LDL - bad cholesterol. In the research, the authors found out that as much as 70.60% of the respondents did not know anything about different types of cholesterol, and 94.10% about allowable cholesterol limits in daily nutrition. Similarly, only 11.79% knew something about recommendations related to food fibres. On questions on how much fruit and vegetables one should consume daily the participants seemed to be better informed: they were well aware of the significance of this type of food for health; however, they were not sure about appropriate quantities: more than 70% of participants believed that the recommended quantity was 0.5 or 1.0 kg of fruit and vegetables per day. When asked about the content of salt in particular foods the participants ranked salami and smoked meat very high, and less frequently mentioned potato chips, toasted pea nuts, and sauerkraut. They did not mention bread, cheese, or canned food at all. This shows that they were not sure, which food contains salt. Hence, the authors assume that they have problems with selecting food with less salt. Another question was about sugar: they mentioned different sweets, cakes, chocolate, but forgot to mention jam, honey, or fruit syrup. It was interesting to observe that none of the respondents mentioned some frequently consumed items such as fruit yoghurt, cereals, and non-fizzy soft beverages, which also contain a lot of sugar. The test was supplemented by interviews during which the authors wanted to acquire more in-depth information about their nutrition knowledge. From the interviews, the authors could conclude that healthy nutrition for them meant a diet containing lots of fruit and vegetables, little fats, sugar, and salt.

Based on the results of the knowledge test and the interviews the authors conclude that the participants are well aware of the basic recommendations on healthy food, which they probably acquired from the media and other health promotion programmes. However, this knowledge is very basic. The participants did not know much about particular recommendations on the quantities of necessary nutrients and foods as well as energy and nutritional values of food.

In order to identify possible health risk factors due to unhealthy nutrition, each participant was measured to identify the percentage of body fat, followed by calculating the body mass index. For measuring body fat the authors used Omron BF 306 analyser and compared the results against reference values to determine their nutritional status. The authors found out that more than half of the participants (9 out of 17) were well over the reference values. Those with body mass index greater than 25 were marked overweight, and those with more than 30 as obese. In total, there were 12 participants (i.e. 70.59%), who were considered overweight or obese. The participants were quite excited to learn more about measurements and interpretation of the results. They became aware that overweight and obesity can present a serious risk for health. The authors believe that the results of measurements can become a strong motivational factor for changing people's behaviour, which will help them make transition from the stage of contemplation to the preparation stage. This will encourage them to go further and learn more, search for solutions, and take appropriate decisions to deal with negative effects caused by inappropriate diets and obesity.

Prochaska and Velicer (1997) warn that during the contemplation stage certain equilibrium may appear between the costs incurred by changes in the behaviour and benefits of changing. Such ambivalence may prevent individuals to make a further step into the subsequent phase of behaviour changing. For this reason, it is necessary that participants identify positive effects of the changes in their eating behaviour. Thus the participants, as a part of group work, had to identify what positive effects may be anticipated after changing their eating habits. Their answers show that they mainly expected improvements in health and general well-being, e.g.:
"I can lose weight if I reduce the amount of fats in my meals";
"If I lose some weight I will be able to move easier";
"I can bring my blood sugar down by reducing sweets".

During Workshop 1 the participants received some basic information about nutrition and health (Table 1) and had to define their intentions for improving eating habits. Their intentions

were expressed typically as: "to take care of healthy nutrition «, »to do something for my body", "to lose weight but don't know how", "to stop eating sweets". However, these intentions are very general and difficult to measure, which means that in practice it would be very difficult to put them in action. For this reason, the participants were asked to define their intentions more specifically and write them down in their worksheets. For monitoring their own progress in changing eating habits, they were asked to keep a diary as recommended by Willet (1998). They were instructed on how to keep a nutrition diary and write down all they have eaten over the period of three days.

Workshops 2 and 3

At the beginning of Workshop 2 the authors carried out a group interview trying to find out how the participants managed to perform their own intentions, defined during Workshop 1. The authors found out that they were thinking about their intentions and tried to do something to put these in action. Some typical answers the authors received were: "I stopped eating sweets in the evening while watching TV", "I was eating less bread", "I've managed to eat slower", "I reduced salt and sugar in meals", "I cut servings in half", and "I put less cream in sauces".

The authors found out that the changes they had made had some positive impacts on other family members as well. They mentioned that they lived in households with other family members and that they purchased food and prepared meals for others as well. One of the participants said: "My husband used to put three spoons of sugar in his coffee. I said that was too much and advised him to take only two or one, to which he agreed. For the last week he has been putting only one spoon of sugar in his coffee".

During Workshop 2, the participants had to present their nutrition diaries to the rest of the group. Group presentation, followed by professional analysis and discussions is a good motivational tool. By presenting their own experience and receiving new information the internal motivation for planning better diets will increase. The analysis of nutrition diaries showed that all the participants took breakfasts and lunches on a regular basis, but often skipped morning and afternoon snacks, and sometimes dinner too. Gabrijelčič Blenkuš (2009) has found out that, the age of people has significant statistical correlation with the frequency of meal intake (breakfast, lunch, dinner) among Slovenian population, and that this percentage further increases by age. Among the population of elderly people (46 to 65 years) breakfast is regularly consumed by 67.40%, and lunch by 93.50% of people. Since all the participants of the workshop were retired persons it was expected that, they would have a suitable nutrition rhythm in terms of regular meal intake, which was also confirmed by the results from their notes in the diaries. However, a major deficiency the authors found was that the participants did not consume enough fruit and vegetables according to healthy nutrition standards.

Furthermore, the authors identified some key problems, which the participants had in analysing and planning their meals. The authors found out that it was difficult for them to determine the appropriate quantity of food from a particular food category. The authors used the food pyramid model as used by the CINDI (Integrated Non-communicable Disease Intervention) programme for promoting healthy nutrition (CINDI Dietary Guide, 2000), which uses number of servings as units as well as Nutrition circle, designed by the German Nutrition Society, which was adapted to Slovenian population (Stehle P., 2007). Thus, the authors converted the number of servings into common household units, e.g. a piece, a cup, a soup ladle, a spoonful, which the participants found very useful and simple to understand.

For presenting the information on the composition and quality of food they purchase in supermarkets, the authors used active method of work. Two companies, Danone and Unilever, were invited to donate some of their products, which our participants had to analyse and present their findings to the rest of the group. In this way, they learned the labelling system and how the information about the composition of food products should be interpreted. The authors also presented the system of GDA (Guideline Daily Amounts) and the traffic light colours system (Traffic light, 2010). After final evaluation of the activities from the workshops, all the participants (15 persons) claimed that after this programme, they started paying

attention to labels on food products, and 13 participants claimed that the information acquired helped them in making more critical decisions when buying food.

As for the methods of work the authors found out that, the most efficient two were demonstrations and practical work. During Workshop 3 the participants had to prepare meals and make consultations with a professional dietitian. The results of evaluation show that Workshop 3 was the most popular one (Table 2).

Table 2

Evaluation of topics presented in workshops

Topics	M *
Diseases related to improper nutrition	4.79
Nutrition diary	4.71
Composition and quality of food	4.86
Food pyramid	4.79
Planning meals	4.86
Understanding declarations on food labels	4.93
Measuring percentage of fats in human body	4.93
Calculating body mass index	4.93
Practical cooking	5.00

* the mean value (M) was calculated according to the Likert scale (1 – extremely disappointed, 2 – rather disappointed, 3 – undecided, 4 – I rather liked it, 5 – extremely liked it);
15 persons participated in the evaluation questionnaire

Final evaluation of the workshops was carried out as a group interview, using a questionnaire. The results show that the topics and activities related to food preparation ranked highest (M = 5.00), followed by measuring body fat (M = 4.93) and calculating body mass index (M = 4.93), and understanding food labels (M = 4.93). The least popular activity was keeping individual nutrition diaries even though the authors believe that eventually the overall satisfaction was rather high (M = 4.71). The results show that the authors managed to present all relevant topics and apply suitable methods for presenting information.

Conclusions, proposals, recommendations

Considering factors such as the socio-economic status, educational level, and the age of retired persons living in rural areas, the authors anticipated that the participants life styles also change by age and that typical diseases, which accompany this population may become a positive motivational factor for changing their lifestyles leading to healthier nutrition, and hence improving quality of their lives.

The authors found out that non-formal workshop was the most efficient method for presenting information on healthy nutrition to this specific group. The results of formative and summative evaluation indicate that the participants managed to form positive attitudes and behavioural intentions for healthy nutrition and through the process of changing their nutrition habits managed to reach the action stage.

For this group of population, the formation of positive attitudes and behavioural intentions for retaining healthy nutrition were very important: this helped them change their old eating habits and helped them in purchasing better quality food. It is important to stress that these people would need some further education to reinforce newly acquired attitudes and habits, preferably in a form of group meetings, which would encourage them to retain this new behavioural pattern.

In terms of methods, the authors applied in this study the authors observe that the most efficient method was active participation of individuals. While theoretical topics stimulated their personal interest in a particular topic, their internal motivation was additionally fostered during practical activities, e.g. cooking and measuring body fat. In addition, the participants established social contacts during group activities when they were analysing nutritional habits and planning diets.

Based on the results of this study the authors wish to recommend that nutrition education programmes for retired population living in rural areas should be carried out close to the place where they live, thus making it accessible to everyone. Education should be non-formal,

preferably in the form of workshops. Topics should be adapted to the interests of the target group, and active participation should be encouraged and combined with a suitable methodological approach.

Course evaluation is necessary for both teaching and learning. It needs to become an integral and continuous element of non-formal nutrition education in order to check and improve, or reshape future programmes. By formative evaluation, one can identify the participants pre-knowledge, their attitudes and behaviour patterns. By summative evaluation, which is carried out at the end of the programme, one can evaluate the results, quality of the course, and outcomes. It is understood that persons engaged in nutrition education should have appropriate professional and methodological knowledge with good communication and leadership skills.

Bibliography

1. CINDI Dietary Guide (2000). Copenhagen, World Health Organization. Retrieved: http://www.euro.who.int/__data/assets/pdf_file/0010/119926/E70041.pdf. Access: 6 December 2010.
2. Elmadfa, I., Meyer, A. L. (2009). Trends in Nutrition in Europe. *Acta Alimentaria*, 38, 2, pp. 153-159.
3. Fras, Z. (2007). *Slovenian Forum of Cardiovascular Disease Prevention*. *Proceedings* (in Slovenian). Ljubljana: Slovenian Society of Cardiology. pp. 17-26.
4. Gabrijelčič Blenkuš, M. (2009). *Food Frequency Consumption*. (in Slovenian) In: *Nutrition Habits of the Adult Population of Slovenia from the Aspect of the Health Protection II.* Gabrijelčič Blenkuš, M. (ed.). Ljubljana, University of Ljubljana, Faculty of Education. pp. 43-58.
5. GDA Guideline Daily Amounts (2010). Retrieved: http://gda.ciaa.eu/asp2/guideline-daily-amounts.asp. Access: 15 December 2010.
6. Healt Statistics Yearbook (2008). Retrieved: http://www.ivz.si/Mp.aspx?nn=Print&pi=5&_5_id=407&_5_PageIndex=0&_5_groupId=-2&_5_newsCategory=IVZ%20kategorija&_5_action=ShowNewsFull. Access: 6 December 2010.
7. Holli, B., O´Sullivan Maillet, J., Beto J. A., Calabrese R. J. (2009). *Communication and Education Skills for Dietetics Professionals, 5th ed.*. Baltimore, Philadelphia: Lippincott Williams&Wilkins. pp. 291-310.
8. Kamin, T., Tivadar, B. (2003). Laično upravljanje s telesom v imenu zdravja: iskanje ravnotežja s prehranjevanjem (in Slovenian). *Teorija in praksa*, 40, 5. pp. 889-906.
9. Klinedinst, N. J. (2005). Effects of a Nutrition Education Programme for Urban, Low-Income, Older Adults: A Collaborative Program Among Nurses and Nursing Students. *Journal of Community Health Nursing*, 22, 2, pp. 93-104.
10. Maučec Zakotnik, J., Hlastan Ribič, C., Poličnik, R., Pavčič, M., Štern, B., Pokorn, D. (2007). *Food and Nutrition Action Plan for Slovenia 2005-2010*. Ljubljana: Ministry of health. pp. 11-27.
11. Prohaska, J. O., Velicer, W. F. (1997). The Transtheoretical Model of Health Behaviour Change, *American Journal of Health Promotion*, 12, 1, pp. 38-48.
12. Spadaro, R.(2003). *Eurobarometer 58.0, European Union Citizens and Sources of Information about Health* Directorate-General, Press and Communication, "Public Opinion Analysis". Retrieved: http://ec.europa.eu/public_opinion/archives/ebs/ebs_179_en.pdf. Access: 15 December 2010.
13. Stehle, P. (2007). Dissemination of Nutritional Knowledge in Germany – Nutrition Circle, 3D Food Pyramid and 10 Nutrition Guidelines, *Annals of Nutrition and Metabolism*, 51, Suppl. 2, pp. 21–25.
14. Tivadar, B. (2009). *Dejavniki odločanja pri izbiri živil* (in Slovenian). In: Nutrition habits of the adults population of Slovenia from the aspect of the health protection. Gabrijelčič Blenkuš, M., Gregorič, M., Tivadar, B., Koch, V., Kostanjevec, S., Fajdiga Turk, V., Žalar, A., Lavtar, D., Kuhar, D., Rozman, U. Ljubljana: University of Ljubljana, Faculty of Education. pp. 125-137.
15. *Thematic Guidelines for Consumer Education for Adults*. (2006). London: CEAN – Consumer Education for Adults Network, a Socrates Grundtvig 4 Project 2003-2006. pp. 28-39.
16. Traffic light (2010). Retrieved: http://www.eatwell.gov.uk/foodlabels/. Access: 15 December 2010.
17. Vertot, N. (2010). *Older people in Slovenia* (in Slovenian)*.* Ljubljana: Statistical Office of the Republic of Slovenia*.* pp. 7-10, 36, 49-51. Retrieved: http://www.stat.si/doc/pub/StarejsePrebivalstvo.pdf. Access: 6 December 2010.
18. Zaletel Kragelj, L., Fras, Z., Maučec Zakotnik, J. (2004). *Tvegana vedenja, povezana z zdravjem in nekatera zdravstvena stanja pri odraslih prebivalcih Slovenije. 1. Značilnosti in povzetek rezultatov razsikave* (in Slovenian. Ljubljana: CINDI Slovenija. pp. 95- 106.
19. Willet, W (1998). *Nutritional Epidemiology*, 2nd edition. New York, Oxford: Oxford University Press. pp. 50-67.

Role of Social Factors Generating Business Environment

Maiga Kruzmetra, *assistant professor*
Baiba Rivza, *Dr. hab.oec., professor*
Sandija Rivza, *Mg.oec., assistant*
Latvia University of Agriculture

Abstract. Entrepreneurship activities are influenced by political, economic, financial, and social factors. The social factors include the problems faced by start-up entrepreneurship as an agent with a new status and the roles corresponding to the new status. The authorities usually provide political, financial, and economic support for start-up businesses. However, the initial stage of entrepreneurship requires the development of the support system for an entrepreneur as an agent that could be done by organisations functioning in the civic society.
Key words: business environment, social factors, social roles, non-governmental sector.

Introduction

One of the current features of Latvia's rural space is a rapid change in the number of population, a high unemployment rate, the small and unevenly distributed amount of sole traders/proprietors or enterprises, and pessimism of urban and rural inhabitants about the conditions in the rural space.

In the period from 2005 to 2010, the total number of population inhabiting rural space has decreased by 19.3 thousand people, and the number of inhabitants of parishes has decreased by 11.9 thousand. However, as regards the population of municipalities, the trends vary. The population of 80.9% of municipalities has decreased, but the population of 19.1% of municipalities has increased. The municipalities with an increased amount of population are found around large towns, primarily Riga (the municipalities of Mārupe, Garkalne, Ādaži etc.). The significant decrease is observed in that part of rural space, which is located in the remote countryside (Alsunga, Baltinava, Kārsava, Nereta etc.) (Reģionu ..., 2010).

As regards the unemployment rate, municipalities can be divided into three groups. The first one is formed by the municipalities with the unemployment rate under 10.0%, the second group includes the municipalities with the unemployment rate from 10.1% to 20.0%, but the third group is comprised by the municipalities with the unemployment rate of more than 20.1%. The municipalities with the lowest unemployment rate are concentrated around large cities, but a high rate is a feature of remote areas of the rural space (Reģionu ..., 2010).

The statistic data on sole traders/proprietors and enterprises per 1,000 inhabitants in rural space show that higher rates are characteristic of municipalities closer to the cities (Babīte, Stopiņu, Ķekava, and Salaspils municipalities). They have up to ten times more sole traders/proprietors and enterprises than the municipalities in other areas of the rural space where self-employed persons dominate (Rucava, Aknīste, Vārkava etc.) (Reģionu ..., 2010).

The survey was carried out in 2010 among the urban and rural population (n=500). Two conclusions can be drawn from the survey: first, the growth trends are apparent in the rural areas geographically located in the influential zone of cities; and second, other territories are characterised by a high unemployment level and migration of the population to either the suburban areas or abroad (Viedokļi par...).

One of the ways of overcoming the crisis and unemployment is the promotion of the business start-ups that is one of the EU priorities reflected in the documents "Small Business Act" (Small...) and "The European Charter for Small Enterprises" (The European...). The concept of micro-enterprise support measures (Par Koncepciju...) was adopted according to the "EU Common Agricultural Policy" (EU CAP...), which envisaged the promotion of rural development and "Draft Report on the Role of Women in Agriculture and Rural Areas" (Draft report...).

The aim of the study is to examine the role of social factors in starting micro-entrepreneurship and the conditions for their provision. Several tasks were set to achieve the aim:

- to single out the main problems of start-up entrepreneur as an agent in a new role;
- to compare the problems of start-up entrepreneur with the government support measures;
- to analyse a non-governmental organisation as an institution of social support in the initial phase of micro-entrepreneurship.

The methods of research: general methods of research and sociological methods were used in the study: comparative analysis, synthesis, surveys, expert interviews, and the data were processed with hierarchy analysis method.

The methodological basis of research. The present study is based on the theories of entrepreneurship's social environment, social roles, and social competence.

There are different views in the scientific literature regarding the division of business environment. The majority of authors (Lescevica M., 2005, Forands I., 2004) consider that economic, political, legal, scientific, technical, socio-cultural, institutional, and informative environment and even geographical environment and international affairs influence entrepreneurship. The social or socio-cultural environment is characterised in general phrases and does not include such entrepreneurship aspects as "demographic trends, income distribution, social mobility, lifestyle, attitudes to work and leisure, and levels of education" (Kew J&Stredwick J., 2005). Some authors analysing business environment as a phenomenon, do not mention social or socio-cultural environment at all (Campbell D.&Craig T., 2005). Likewise, Latvian researchers (Lescevica M.,2005; Forands I.,2004) in the analysis of business environment concentrate basically on economic, political, and institutional aspects.

Scott Shane has a different view. He claims that "the socio-cultural environment influences the amount of opportunity exploitation in a society in several ways. First, social and cultural norms influence the degree to which entrepreneurial activity is considered socially desirable among members of community... Second, social norms influence the number of people who have already engaged in entrepreneurial activity and thus the presence of experienced entrepreneurial role models... Third, certain cultural beliefs encourage entrepreneurial activity. The exploitation of entrepreneurial opportunity involves certain types of decision-making, specific approaches to resource acquisition, distinct strategies, and particular methods of organisation design. Specific norms and cultural beliefs are associated with these types of actions" (Shane S., 2003). The last view is aimed at obtaining an entrepreneur's social status and, thus, the role of an entrepreneur.

A role can be defined as a social position, or a typical behaviour. The change of social position not only causes, but also demands the changes in the behaviour (Hindin M.J., Turner R.H.). Transforming from the status of an employee or a housewife to the role of an entrepreneur, a woman has to learn a new role, the role of an entrepreneur that makes her look at many things and actions from a different view, that requires new knowledge and skills as well as the ability to combine a job and family.

The acquisition of a new status and a new behavioural model is influenced by an individual's competence. It is an important factor for achieving aims of entrepreneurial activities (Dian N., 2009, Cragg R. & Spurgeon R., 2007, Foss N.J., 2003). The competence is composed of professional and social competences and the competence of individual growth. The professional competence includes professional skills, but the social competence refers to the readiness to adapt in the social environment, to act in specific social conditions and untypical situations; it refers to interaction, communication and cooperation skills and culture, the ability to suspend an instantaneous response, fight against every day temptations, empathy, goal-orientation, and the ability to work in a team, solve conflicts (Garleja R., 2006). The intellectual development competence is equally important, since it either reduces or assists in avoiding risks (Bora A., 2006; Giddens A., 1999).

The statistic data from the survey of microcredit group members and expert interviews serve as the basis for the analysis.

Results and discussion

1. Significance of economic and social problems in the process of micro entrepreneurship start-up

The problems faced by rural women in the process of starting a microenterprise and causing risk during economic activities were divided into two groups in terms of their character. The respondents were divided into two groups according to their experience in entrepreneurial activities. The results are depicted in Table 1.

Table 1

The opinion of rural women regarding the problems of micro-entrepreneurship (total range according to the level of significance)

	Are interested in the opportunity	Have taken micro credit	Range
	Social problems		
Lack of information	**5.4**	**2.8**	**10 – 8**
Lack of experience	**8.4**	**5.2**	**5 – 5**
Lack of initiative	**9.8**	**5.2**	**3 – 5**
Insecurity	**7.8**	**7.0**	**6 – 2**
Problems of group formation	**6.6**	**3.8**	**8 – 6**
Lack of family support	**4.8**	**2.2**	**11 – 9**
Average	**7.1**	**4.4**	
	Economic problems		
Lack of money	**11.4**	**8.6**	**2 – 1**
Lack of premises/equipment	**7.4**	**5.8**	**7 – 4**
Lack of demand	**9.4**	**6.4**	**4 – 3**
Changes in legislation	**12.4**	**5.8**	**1 – 4**
Lack of labour force	**6.2**	**3.0**	**9 - 7**
Average	**9.4**	**5.9**	

Source: authors' construction based on the survey results

The analysis of the results depicted in Table 1 provides grounds for several conclusions. First, women involved in entrepreneurship consider that hardships decrease during the change from the status of an interested person to the status of an entrepreneur in the process of obtaining experience. Yet, except for three positions, which are: 1) financial problems that become more apparent after the start of the business and move to the first place; 2) the decrease in demand in the domestic market due to the economic crisis; and 3) the problem of insecurity that moves from the sixth place to the second, and thus, calls for an immediate solution.

Second, in both groups the significance of social problems accounts for 43% of total amount reflecting the importance of social problems in the start-up and development of micro-entrepreneurship.

Third, the business start-up problems could be divided according to another principle. External problems created by external conditions and individual problems of a start-up entrepreneur as an agent. In such a case, all economic problems plus "the lack of family support" could be referred to external problems, but all social problems excluding "the lack of family support" could be referred to the problems of a starting entrepreneur as an agent, since human potential is an important resource in the economic environment (Garleja R., 2006).

Thus, the problems of an agent account for 47% of the total amount of business start-up problems and give the reason for the analysis of support measures offered by governmental institutions for the purpose of the promotion of entrepreneurial activities.

2. Problems of start-up entrepreneurs and government support measures

The support of entrepreneurship was included in the strategic goal defined by the European Council (EC) in Lisbon in March of 2000. Its aim was to make the EU the most competitive and

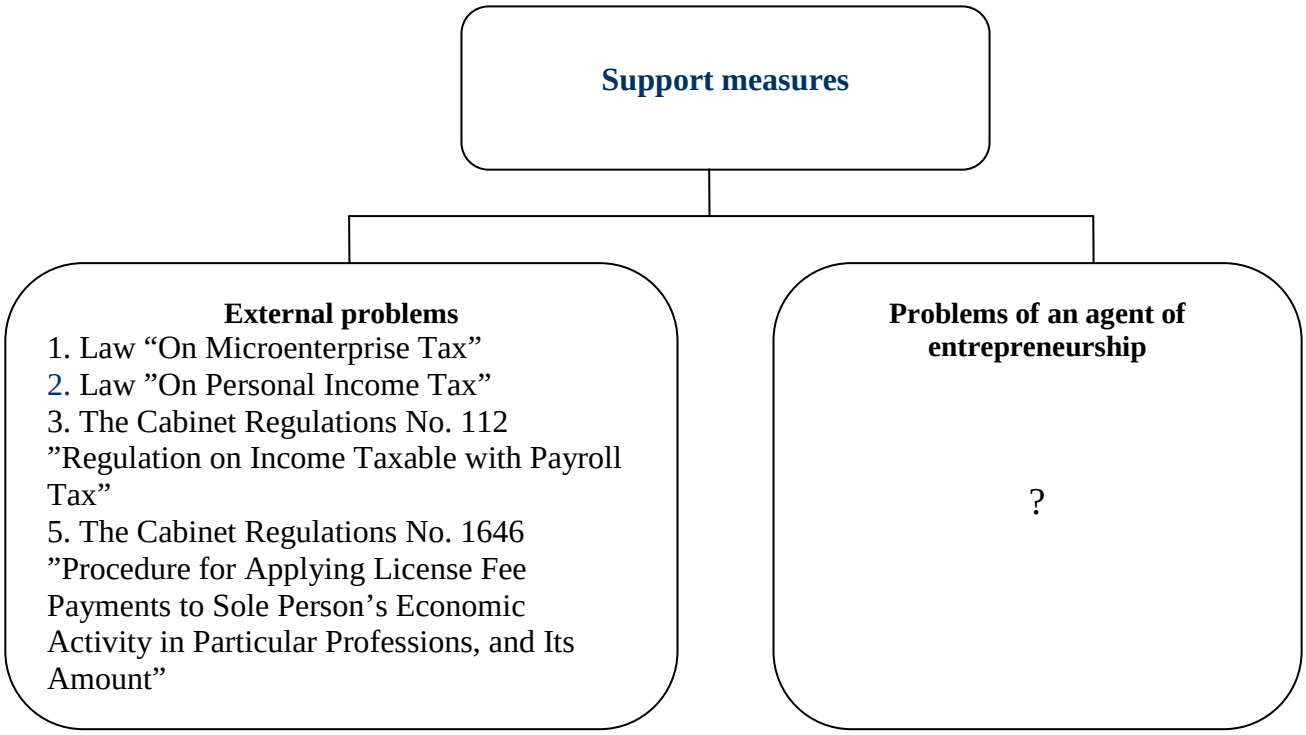
dynamic knowledge-based economy in the world, providing favourable conditions for small and medium-sized businesses and greater convergence among the Member States (Lisbon European Council, 2000). The significance of the goals on the EU level was proved by the adoption of two documents: "The European Charter for Small Enterprises" (Eiropas Mazo..., 2004) and "Small Business Act" for Europe (Eiropas mazās...2008) that is considered to be one of the most significant intermediate results in achieving the strategic goal of the EC (Īstenošanas ziņojums par..., 2008). Latvia adopted the following documents to implement the actions of the policy: the Cabinet Regulations "On Micro Crediting Programme of Small and Medium-sized Enterprises in Latvia" (Par Latvijas..., 2008) and the Cabinet Regulations "On the Concept of Support Measures for Micro Businesses" (Koncepcija par.., 2009). The support for entrepreneurship in the context of innovative entrepreneurship was reflected in the long-term planning document "Sustainable Development Strategy of Latvia until 2030". (Latvijas ilgtspējīgas..., 2008) and "Latvian National Development Plan for 2007 – 2013" (NDP) that was approved on 4 July 2006 by the Cabinet Regulations No. 564 (Noteikumi par..., 2006). The latter one is a document of the medium-term strategic planning and highlights a polycentric development, and supports the establishment of innovative enterprises in traditional industries as well as start-up entrepreneurship, especially in the regions of Latvia, mentioning microcredits as one of the effective support variants. (Latvijas Nacionālais..., 2006). The Cabinet Regulations "On the Concept of Support Measures for Micro Businesses" approved in 2009 have set the aim to create prerequisites for the unemployed to start business activities, and provide support measures, including:

1) reducing the costs of starting a micro business;
2) implementing taxation policy favourable to micro-businesses;
3) achieving the situation when micro-entrepreneurs are capable of carrying out book-keeping activities on their own;
4) availability of funding for microenterprises;
5) availability of valuable information for microcredits (Par Koncepciju...).

As regards support measures available for microenterprises included in the laws and regulations, the focus is mostly on the external problems (Figure 1). Besides, there are several problems in the regulations: first, frequent changes and premature decisions cause uncertainty and insecurity in entrepreneurs for their future; second, the Latvian law is very complicated and difficult to grasp, thus the support measures, included in the legislation are not fully applied and the establishment of new businesses is held up; and third, the system of support and relief measures is bureaucratic, entrepreneurs do not understand who is eligible for the support and what should be done in order to become eligible. Consequently, the above-mentioned drawbacks do not promote the establishment and performance of microenterprises. Therefore, it would be necessary to simplify the legislation, educate business start-ups, and arrange consultations on how to use the support.

The government measures are positive, but they deal only with a part of problems of start-up micro-entrepreneur, according to the survey. They settle a part of economic problems. The process of preparing an agent of micro-entrepreneurship for a new role and the maintenance of the social support for the further activities has not been included in the legal enactments yet. There are two questions to be answered:

1. Who should provide support measures for an agent of entrepreneurship and in what form?
2. Who currently provides support functions for a start-up micro-entrepreneur?



Source: authors' construction

Fig. 1. **The problems of government support measures**

There is no answer to the first question, which has not been discussed in relation to the promotion of micro-entrepreneurship along with financial, informative, and legal support on the behalf of authorities as a simultaneous action of two sides of the single process. The second question is dealt with by non-governmental organisations to a certain extent.

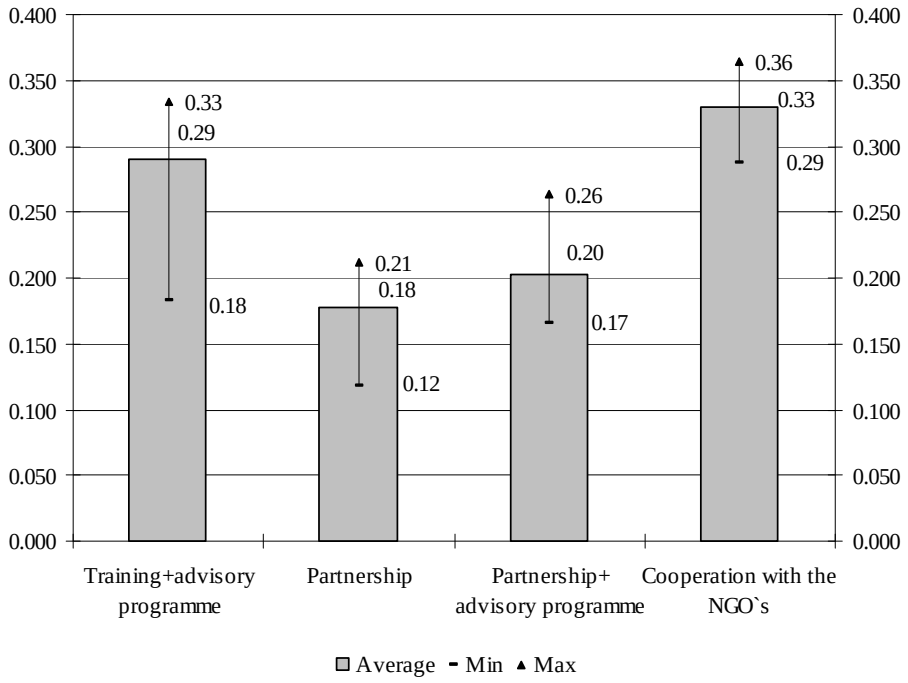
3. Non-governmental organisation as social support institution for start-up micro-entrepreneurship

Currently, social structures based on networking are highly dynamic; they attract innovations, generate new values, and form public feeling of comfort. The convergence of social evolution and information technologies has created a new material basis for the performance of activities throughout the social structure. This material basis, built in networks, earmarks dominant social processes (Castells M.). The advantage of networking is creation of synergy effect, thus the inclusion into the network results in various activities, also a social support.

The study carried out by the organisation "Technology Development Forum" gave evidence that women need the social support when they get involved in entrepreneurial activities. Overall, six factors were mentioned as the most supportive and two out of them referred to social supporters and private supporters (Veicinošie...). Thus, networking for the support was considered very important.

The study by the authors was devoted to the involvement of rural women into entrepreneurship in one of the models mentioned in the concept of microcredits – group microcredit (Kruzmetra M., Rivza B., Rivza S., 2010-1).

In the course of the study, an expert interview was carried out and showed similar results (Figure 2). With the help of AHP method, the risk reduction factors were analysed in the microcredit group model; the results showed that the main risk reduction factor was the cooperation with NGO. In this case it was NGO "Latvian Rural Women Association" (hereinafter - the LRWA), because the participants of microcredit groups were its members.



Source: authors' construction based on the survey results

Fig. 2. **Experts' total estimation of risk reduction models in microcredit groups**

Microcredit movement in Latvia is a variant of partnership that is simultaneously both economic and social partnership (Kruzmetra M, Rivza B, Rivza S, 2010-2). Partnership in the economic sphere is implemented via product marketing. Social partnership is implemented through social support.

The results of Figure 2 lead to two conclusions.

1. The comparative analysis of an average figure of all four-risk reduction models shows that the most significant method of reduction of micro-entrepreneurial problems is social partnership between an agent of entrepreneurship and an institution of civic society – a women's organisation.
2. This opinion was unanimous in the experts' estimations.

The role of NGO was pointed out by the participants as well. The following extracts from the interviews with the LRWA members prove the positive role of NGO:

- I have become braver and more confident to express my opinion (B. Sp.);
- I have learned to speak with more courage and confidence, and be more understanding towards other people (I.M.);
- the participation in the LRWA is "a school of life"; I have learned to look at things from a different angle (M.Š);
- we have become more courageous, confident, we have the ability to act individually, make contacts, we have found the niche for our activities (A.S.).

It is possible that the increasing establishment of professional associations by entrepreneurs in rural areas is caused not only by the wish to discuss the problems of manufacturing or providing service, but also to develop social partnership, to obtain social support that is not provided and is not intended to provide by government microenterprise support measures.

Conclusions

The results of the survey allow to make a conclusion that, according to the opinion of businesswomen, hardships decrease in the process of changing from the status of an interested person to the status of an entrepreneur via obtaining experience, except for three positions: financial problems that become more apparent after the start of the business and

move to the first place; the decrease in demand in the domestic market due to the economic crisis; the problem of insecurity that moves from the sixth place to the second, and thus calls for an immediate solution. In both groups, the significance of social problems accounts for 43% of the total amount reflecting the importance of social problems in the start and development of micro-entrepreneurship.

Business start-up problems could be divided into two groups: external problems created by external conditions (basically, economic problems) and individual problems of a start-up entrepreneur as an agent (basically, social problems). As regards the problems of a start-up entrepreneur as an agent, they account for 47% of the total amount of business start-up problems and suggest the extension of the support measures offered by governmental institutions for the purpose of the promotion of entrepreneurial activities. Government support measures are aimed at solving external problems and do not tackle the problems of entrepreneurship's agent.

The current taxation system in Latvia is flexible and an entrepreneur can choose from various regimes, which is a positive trend. However, the legislation is complicated and not easily comprehensible, thus there are difficulties with applicability of taxes and bookkeeping. It is necessary to improve the availability of information, since the existence of information does not mean that it is available and comprehensible.

The results of the comparative analysis of risk reduction in microcredit groups using AHP method show that social aspects of partnership dominate over economic aspects of partnership, proving the significance of non-governmental sector in the formation of social support. The more detailed analysis of organisations of non-governmental sector is the next step in the research of the role of social factors in the entrepreneurship environment.

Bibliography

1. A Small Business Act for Europe Retrieved: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0394:FIN:en:PDF Access: 17 October 2010.
2. Bora, A. (2006). Risk, Risk Society, Risk Behaviour, and Social Problems. *In: The Blackwell Encyclopaedia of Sociology. Ritzer G. Eds.,* pp. 3927-3932.
3. Castells, M. (2000). *The Rise of the Network Society*. 2nd ed., Blackwell. p. 594.
4. Cragg, R., Spurgeon, R. (2007). *Competencies of a Good Leader*. In: How to Succeed as a Leader. Ed. by Chambers, R etc. Redclif Publishing, Oxford-New York, US, pp. 33-40.
5. Demography 2010. (2010). Collection of Statistical Data. Riga, Central Statistical Bureau of Latvia, p. 124.
6. Dian, N. (2009). Foresight Styles Assessment: A Theory Based Study in Competency and Change. Journal of Futures Studies, Nr. 13 (3), pp. 59-74.
7. Draft Report on the Role of Women in Agriculture and Rural Areas (2010/2054(INI)). Retrieved: http://www.europarl.europa.eu/meetdocs/2009_2014/documents/agri/pr/834/834050/834050en.pdf. Access: 10 October 2010.
8. Forands, I. (2004). *Biznesa vadības tehnoloģijas.* Rīga, Latvijas Izglītības fonds. 330 lpp.
9. Foss, N.J. (2003). *The Emerging Competence perspective*. In: Towards a Competence. Theory of the Firm. Ed. by Foss, N.J. & Kundsen, Ch. Routledge. p. 237.
10. Garleja, R. (2006). *Cilvēkpotenciāls sociālā vidē*. Rīga, Raka. 200 lpp.
11. Giddens, A. (1999). Risk and Responsibility. *Modern Law Review* 62(1). pp. 1-10.
12. Hindin, M.J. (2007). *Role Theory*. In: The Blackwell Encyclopaedia of Sociology. Ed. By G. Ritzer. Blackwell Publishing. pp. 3951-3954.
13. Īstenošanas ziņojums par Kopienas Lisabonas programmu 2008. – 2010. gadam Eiropas Komisija, Brisele (2008). Retrieved: http://ec.europa.eu/growthandjobs/pdf/european-dimension-200812-annual-progress-report/COM2008881LV.pdf . Access: 12 February 2010.
14. Kārtība, kādā piemērojama patentmaksa fiziskās personas saimnieciskajai darbībai noteiktā profesijā, un tās apmēri [tiešsaiste]: MK noteikumi Nr.1646, stājušies spēkā 2010. gada 1. janvārī. Retrieved: http://www.likumi.lv/doc.php?id=203047 Access: 20 November, 2010.
15. Kew, J., Stredwick, J. (2005). Business Environment. Managing in a Strategic Context. Chartered Institute of Personnel and Development, UK.
16. Kruzmetra, M., Rivza, B., Rivza, S. (2010-1). Group Microcredit as Version of Starting Entrepreneurship for Rural Women. LZP Ekonomikas, juridiskās un vēstures zinātnes galvenie pētījumu virzieni 2009. gadā. Nr. 15. Rīga, 48.-53. lpp.

17. Kruzmetra, M., Rivza, B., Rivza, S. (2010-2). Microcredit Movement as one of the Partnership Patterns. Proceedings of the International Scientific Conference. "Economic Science for Rural Development No. 23, pp. 70.-75.
18. Lescevica, M. (2005). Opportunities for Developing the Rural Entrepreneurship environment in Latvia. Resume of PhD Paper. Jelgava, LLU. p. 79.
19. Mikrouzņēmuma nodokļa likums. LR likums, stājies spēkā 2010. gada 1. septembrī. Retrieved: http://www.likumi.lv/doc.php?id=215302. Access: 12 December 2010.
20. Noteikumi par ienākumiem, par kuriem jāmaksā algas nodoklis. Ministru Kabineta noteikumi Nr.319, stājušies spēkā 1998. gada 3. martā. Retrieved: http://www.likumi.lv/doc.php?id=47540. Access: 16 November 2010.
21. Par Koncepciju par mikrouzņēmumu atbalsta pasākumiem. MK rīkojums Nr 748., 30.10.2009. Retrieved: http://www.likumi.lv/doc.php?id=200709. Access: 15 October 2010.
22. Par iedzīvotāju ienākuma nodokli. LR likums, stājies spēkā 1994. gada 1. janvārī Retrieved http://www.likumi.lv/doc.php?id=56880 Access: 10 October 2010.
23. Par Latvijas mazo un vidējo komersantu mikrokreditēšanas programmu. Ministru kabineta 2008. gada 2. decembra rīkojums Nr.752 (2008.) Retrieved: http://www.likumi.lv/doc.php?id=184689 Access: 10 March 2010.
24. Presidency Conclusions. Lisbon European Council, European Parliament (2000.) Retrieved: http://www.europarl.europa.eu/summits/lis1_en.htm. Access: 20 February 2010.
25 Reģionu attīstība Latvijā 2009. (2010) Valsts reģionālās attīstības aģentūra, Rīga. 172 lpp.
26. Shane S. (2003) A General Theory of Entrepreneurship. The Individual – Opportunity Nexus. Edward Elgar Publishing, p. 327.
27. The European Charter for Small Enterprises. Retrieved: http://ec.europa.eu/enterprise/policies/sme/files/charter/docs/charter-en.pdf. Access: 21 October 2010.
28. Turner, R. H. (2001). Role Theory. In handbook of Sociological Theory. Ed.by J.H. Turner, Springer. pp. 244-254.
29. Veicinošie un kavējošie faktori sieviešu iesaistē uzņēmējdarbībā inženiertehniskajās nozarēs Latvijā. (2006/2007). Biedrība „Tehnoloģiju attīstības forums". Eiropas Kopienas Iniciatīvas EQUAL projekts „Profesiju segregācijas cēloņu mazināšana", 166 lpp. Retrieved: http://equal.lsif.lv/faili/rezultati/Entrepreneurship_LV_2007.pdf. Access: 18 November 2010.
30. Viedokļi par Latvijas laukos notiekošo. LZP projekta Nr 09.1579 ietvaros veikta pilsētnieku un laucinieku nejaušas izlases aptauja (n=500) 2010. gada aprīlī un maijā.

Basic Aspects of Legal Factor within the National Innovation System in Latvia

Marta Mezeniece, *PhD student*
Faculty of Economics, Latvia University of Agriculture
Baiba Rivza, *Dr. habil. oec., professor*
Faculty of Economics, Latvia University of Agriculture

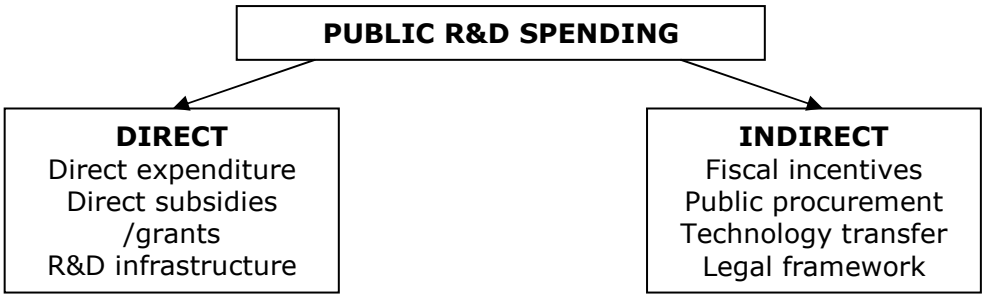
Abstract. The direct public R&D funding cannot be delivered or increased in sufficient amount due to the recent crisis and huge cuts of the state budget. Therefore, the authors consider that indirect measures such as interference in the legal and regulatory framework, and definition of public procurement rules in favour of innovative and R&D promoting products and services could be used to enhance R&D performance in Latvia.
This paper aims to investigate the role of legal factor played in the national innovation system. The authors have set several tasks in order to reach the aim. First, to revise and analyse the existing research and theoretical findings on significance of legal factor within the national innovation system; and to organise a questionnaire to find out the level of significance of basic factors within the legal framework that determines the development of the scientific activity and R&D in Latvia. Second, to evaluate and analyse the results of the survey. Third, to propose recommendations to policy makers for elaboration of more user friendly, effective, and efficient policy measures that do not demand immediate financial investments from the conversely direct spending of government.
The basic aspects of legal factor in the questionnaire are evaluated mainly as negatively influencing, except of tax allowance or subsidies for producers of innovative products. However, the authors still observe high rate of answers that indicates low influence of certain aspects to the development of R&D in Latvia. This could be explained by the fact that other R&D development determinants like financing, productivity and efficiency, project implementation skills, and commercialisation of inventions have more significant influence in Latvia.
Key words: National innovation system, public spending for R&D, legal framework, research policy.

Introduction

The concept of National innovation system (NIS) has been developed by Lundvall (1992) and it is defined to be the relationship of elements, which interact in the production, diffusion, and use of new, economically useful knowledge and are either located within or rooted inside the borders of a national state. The national government as the leading designer of NIS and innovation policy maker by using one of its most powerful instruments - legislature - creates the national legal framework. The government's role is to establish policies and legislation to encourage innovation as well as stimulate the creation of spin-offs and encourage the development of an entrepreneurial culture (Innovation Management and..., 2004). The innovation creation can prosper if the government creates enabling environment for innovation, applying favourable credit policy, tax and customs policy as well as investment policies in order to make the private sector investments more beneficial to innovative activities (Dimza, 2003).

The support channels used by the government to implement the innovation policy are divided into direct and indirect channels, as it is shown in Figure 1.
The direct public R&D spending refers to the following (Conte et. al., 2009):

1) R&D activities carried out in the government, state funded higher education institutions, or state research institutes, which are funded by public sources;
2) R&D activities funded by direct subsidies/grants irrespective of the sectors in which they are actually performed;
3) providing infrastructure for R&D.



Source: Conte A., Schweizer P., Dierx A. and Ilzkovitz F., 2009

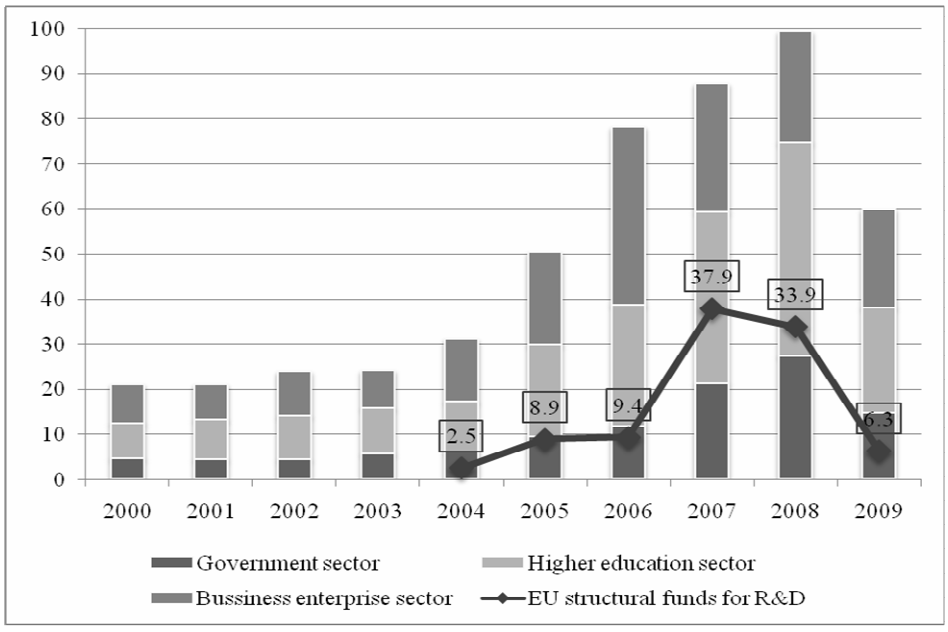
Fig. 1. **Policy instruments**

Guidelines for Development of Science and Technology 2009-2013 elaborated by the Ministry of Education and Science states that insufficient amount of financing, and lack of knowledge and skills of commercialisation are the main problems in the field of research and development (R&D) in Latvia. While on May 5, 2010, the Cabinet of the Republic of Latvia approved Action Plan for Guidelines for Science and Technology Development Implementation, 2010-2011 where the main tasks for solving the above-mentioned problems are set as follows:

- to provide a financing mechanism that assures growing public sector investments in the field of research and development;
- to facilitate knowledge and technology transfer by constructing enabling institutional environment as well as promoting public and private partnership.

The data in Figure 2 show that since the year 2000, the expenditure for R&D has gradually increased, but mainly on behalf of the EU financial contribution to Latvia.

Therefore, the authors of the article consider that indirect measures such as interference in the legal and regulatory framework and definition of public procurement rules in favour of innovative and R&D promoting products and services could be used to enhance R&D performance in Latvia.



Source: authors' construction based on the data acquired from the Central Statistical Bureau of Latvia and Eurostat

Fig. 2. **Research and development expenditure by sectors of performance (million LVL)**

The financing for innovation is just 0.45% of Gross Domestic Product (GDP) in Latvia, while in 2009 the average performance of 27 European Union (EU) Member States is 2.01% of GDP according to the data provided by Eurostat. However, as one can see the direct public R&D funding cannot be delivered or increased in sufficient amount due to the recent crisis and huge cuts of the state budget claimed from the foreign creditors of the state of Latvia that are affecting all spheres including public funding for R&D.

There are several authors in Latvia who have been writing on innovations and knowledge based economy like innovative activities (Boļšakovs, 2008), innovation process and system (Dimza, 2003), knowledge society (Karnītis, 2004), innovation capacity (Lukjanska, 2010), but the research on the development of innovativeness in Latvia within the current set of national legal framework is lacking. Therefore, the authors of this paper have found it topically to study the basic aspects of legal factor within the national innovation system that influence the development of innovative activities in Latvia.

Hypothesis: the basic aspects of legal factor within the national innovation system have significant impact on the development of innovative activities in Latvia.

This paper aims to investigate the role of legal factor played in the national innovation system.

The authors have set the following tasks in order to reach the aim:

- to revise and analyse the existing research and theoretical findings on the national innovation system determinants;
- to organise a questionnaire to evaluate whether there is a significant interconnection between the opinions of two main target groups (project implementers and policy makers) on how the legal factor influences the development of the scientific activity and R&D in Latvia; to investigate the basic aspects of legal factor playing significant role in the national innovation system in Latvia; and to evaluate and analyse the results of the survey;
- to provide recommendations to policy makers for elaboration of more user friendly, effective and efficient policy measures that do not demand immediate financial investments from the conversely direct spending of the government.

The following economic research methods were used for carrying out the tasks: grouping, graphic illustration, and monographic descriptive method. Analysis and synthesis are used in the paper to study the problem elements and synthesise coherencies. The authors have studied legal framework in Latvia and scientific publications in regional development, innovation economics, innovation policy, and research policy. Induction method is used for summarising individual facts in general statements, and deduction method is used for theoretical explanations and logical synthesis of the empirical study.

The authors organised a survey in December 2010 during the annual general meeting of Latvia Academy of Agricultural and Forestry Sciences in Jelgava and via internet directly invited the most representative stakeholders. Stakeholders initially were chosen from two main target groups:

1) beneficiaries of the EU Structural Funds projects in the field of R&D (mainly research institutes and representatives of higher education institutions and their research institutes);
2) policy makers of innovation, R&D, and scientific activity policy in Latvia.

In total, 162 completed questionnaires were returned to the authors. In order to test the hypothesis mentioned above, the significance level of legal factor aspects were tested using the analysis of variance (ANOVA). Interactions among the dependent variables and the independent variables were tested using the multivariate analysis of variance (MANOVA) test in the program SPSS.

The analysis of R&D financing in Latvia is based on statistical data obtained from the Central Statistical Bureau of Latvia, Eurostat, and the information included in the Reports on Higher Education in Latvia (figures, data, tendencies) acquired from the Ministry of Education and Science during the period of 2003-2009 as well as unpublished data from the EU Funds Joint Information System (JIS).

Comparative, analytical, and historical methods have been mainly used in the article, taking into consideration the large amount of scientific literature.

Results and discussion

For determination of factors the authors analysed large number of scientific literature, interviewed experts, and took into consideration previously conducted research (Meženiece et.al., 2010) in December 2009, where the respondents were questioned to name the factors that impede the development of the research institution they represent. According to the results of questionnaire, the legislation framework was mentioned as the second difficulty impeding the development of research institutes after the cut of base financing from the state budget. Therefore, the authors were encouraged to set and test the following main aspects of the legal framework that influence the development of R&D activity in Latvia:

- the current regulation of the intellectual property rights;
- the newly introduced joint record keeping of scientific and academic personnel working hours at the same employer;
- corruption;
- tax allowance or subsidies for producers of innovative products;
- the legislative conditions, which make provision for indemnification of losses in case of unsuccessful research results.

The legislation of intellectual property rights is one of the basic elements of the national innovation system (Dimza, 2003; Boļšakovs, 2006). As B. Hall and R. Ziedonis (2001) have concluded in their research it is used not only for purposes of innovation development, but also for the mutually reinforced comprehension of vulnerabilities of private companies and persistent need for self-protective strategies of patent trading and cross-licensing that caused semi-conductor industry patent portfolios rapid growth in the US during the 1980s. The unconsidered action by the government elaborating legislation of intellectual property rights can bring about enormous state budget losses later on (see Aghion et. al., 2009). Therefore, it is even more important to evaluate the aspect of the legal factor.

The experts from the research institutions and state agencies expressed contestant opinion about the newly introduced joint record keeping of scientific and academic personnel working hours at the same employer.

According to the results of the Corruption Perceptions Index 2010, Latvia is ranked as 59 of 178 countries with the score 4.9 on a scale from 10 (highly clean) to 0 (highly corrupt). This indicates on a rather serious corruption problem, which is an important aspect describing the environment of legislative factor, and thus it was enclosed in the survey questions.

Tax relief is the innovation facilitator measure that is widely used in Europe being introduced as contraction to the crisis in the EU Member States - Belgium, Germany, Spain, Ireland, France, the Netherlands, Portugal, and Slovakia (Conte et.al. 2009).

The authors questioned representative stakeholders from two main target groups:

1) beneficiaries of the EU Structural Funds projects in the field of R&D – mainly research institutes and representatives of higher education institutions and their research institutes as well as some entrepreneurs who have been implementing R&D projects or participating in the projects as partners (810, response rate 17.3%);

2) policy makers of innovation, R&D, and scientific activity policy in Latvia – different levels of civil servants working in the ministries and state agencies: Ministry of Education and Science, Ministry of Economics, Investment and Development Agency of Latvia, and State Education Development Agency (203, response rate 10.8%).

During the 6-weeks process of collecting the questionnaire, one reminder was sent after 4 weeks. In total, the authors obtained a representative random sample with 162 usable responses – 32 respondents filled in paper during the annual general meeting of Latvia Academy of Agricultural and Forestry Sciences in Jelgava and 130 respondents - via internet using survey portal http://www.kwiksurveys.com.

The overall response rate was 39.5% (paper filled by 45.71%; internet filled by 12.83%) and all of them were valid, since it was impossible to complete the questionnaire without provision of all the required answers.

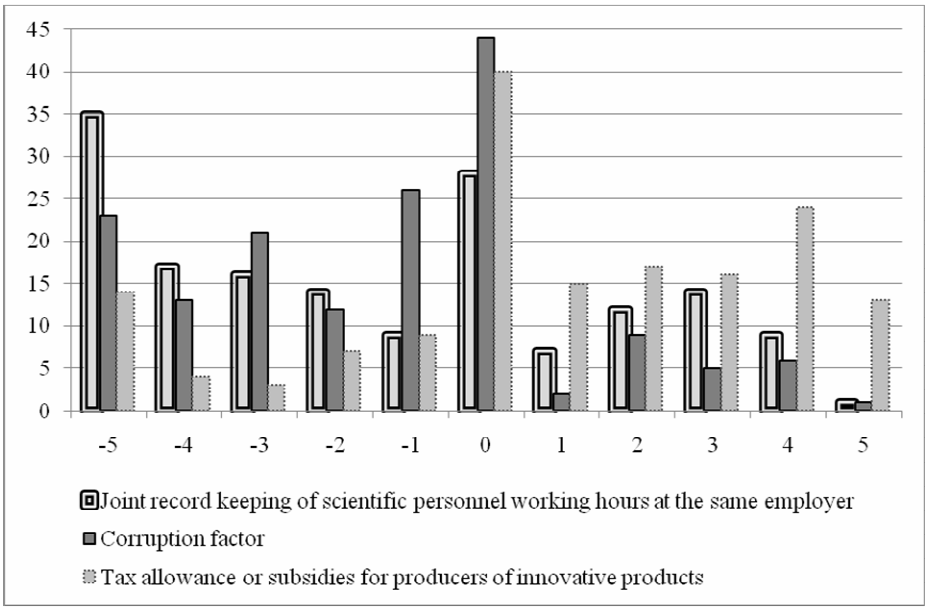
Age structure of respondents shows that 43.8% of them were above 44 years (9.2% above 63 years), while the main group of respondents – 35% – aged between 25 and 34 years. The number of female and male participants was almost equivalent – respectively 49% (79) females and 51% (83) males.

The respondents were asked to evaluate five previously mentioned aspects of legal factor in the scale from -5 to +5; respectively to mark the aspect with -5 if it according to a respondent's opinion influences the development of scientific activity in Latvia in the most negative way, and +5 if the impact of the aspect is extremely positive. The authors assume that the aspects marked with zero over 30% of all answers (48.6 answers) have no influence on the development of scientific activity in Latvia. Therefore, according to the responses of the survey, two aspects of the legal factor: the current regulation of the intellectual property rights (57; 35.18%) and the legislative conditions, which make provisions for indemnification of losses in case of unsuccessful research results (61; 37.65%) were assumed to be not factorial in the development of scientific activity in Latvia.

Figure 3 shows that the remained aspects are evaluated mainly as negatively influencing, except of tax allowance or subsidies for producers of innovative products. However, the authors still observe high rate (28; 40; 44) of answers that indicates low influence of the mentioned aspects on the development of R&D in Latvia.

This could be explained by the fact that other R&D development determinants like financing, productivity and efficiency, skills of project implementation, and commercialisation of inventions have more significant influence in Latvia.

The test with multivariate analysis of variance (MANOVA) in the program SPSS shows that at a significance level α=0.05, only the age group has a remarkable interrelation to these answers. The analysis of variance (ANOVA) shows that there is a significant interconnection between the opinions of two main target groups (project implementers and policy makers) on how the legal factor influences the development of the scientific activity and R&D in Latvia only in regard to two aspects: joint record keeping of scientific and academic personnel working hours at the same employer (α=0.05, R^2= 0.139) and tax allowance or subsidies for producers of innovative products (α=0.05, R^2= 0.135).



Source: authors' construction

Fig. 3. **Evaluation of the basic aspects of a legal factor**

According to J.Fagerberg and his colleagues' research (Fagerberg et. al., 2009), a national system of innovation consists of firms in many different sectors operating within a common (national) 'knowledge infrastructure' and a common institutional and political framework. Therefore, structure of the national economy plays an important role in the determination of the national innovation system. The relationship between sectoral and national innovation systems is a coevolutionary one, in which sectoral characteristics (and the needs of firms in these sectors) influence the development of the 'knowledge infrastructure', institutions and

policies on the national level, while these factors influence the subsequent evolution of the national economy, including its sectoral composition (Fagerberg et.al., 2009).

If one analyses the national innovation system in the light of the path dependency theory, the researchers still dispute whether lagging-behind regions might catch-up even in case of strong path-dependency by introducing new approach and measures in the field of R&D. The research carried out by J. Fagerberg and M. Srholec (2008) states that countries that succeed in developing and sustaining strong innovation capabilities and well-functioning systems of governance do well economically; while those that fail tend to fall behind. Since the national innovation system cannot be established in a short period of time but incrementally over many years, many present-day poor countries have been hampered in developing an innovation system by unfavourable aspects related to geography, nature, and history (Fagerberg and Srholec, 2008). On the contrary, G. Fuchs and P. Shapira (2005) admit that efforts to implement a reorientation may be successful even if the past development and the present economic structure of a certain region have created unfavourable preconditions. The catching-up region can succeed if it uses modern tools of economic activities such as creation of the self-sustaining innovative regionally located industrial cluster and building of collaborative innovation networks.

The authors of the article consider that Latvia is still a developing country. Therefore, it is worth to bear in mind the study of C.Freeman and L.Soete (2009), which states that the challenge for such countries appears directed towards the establishment of industrial technological competitiveness through more traditional industrial science and technology policies including support particularly to engineering, design skills, and accumulation of 'experience'. While in a high income, developed country context, the innovation policy challenge seems increasingly directed towards questions about the sustainability of processes of "creative destruction" within environments that give a premium to insiders, to security and risk aversion, and to the maintenance of income and wealth (Freeman, Soete, 2009).

The findings in the recent study of innovation processes in the times of crisis executed by A.Filippetti and G.Archibugi (2011) ascertain that European catching-up countries, namely the New Member Countries of Central and Eastern Europe, have been affected to a greater extent than the countries with a stronger National innovation system. Particularly, competences and quality of human resources, the specialisation in the high-technology sector along with the development of the credit system seem to be the structural factors, which are able to mitigate the effects of the economic downturn on innovation investments of firms across Europe. The fact that some structural characteristics of the National innovation system explain persistency of innovation in response to major exogenous shocks is an important finding (Filippetti and Archibugi, 2011).

The significance of regional and national economic environment in innovation creation process is outlined also in the recent study of regional innovation determinants in the European Union by M. Buesa et.al. (2010). The research concludes that the determinants of regional innovation in the European Union are mainly (innovative) firms and the environment in which they are situated (both the Regional productive innovation environment and the National environment). In this process, the firms are supported – though generally in an indirect way – by the other agents of the R&D system, such as the Public Administration and the University (Buesa et. al., 2010).

Conclusions, proposals, recommendations

The authors consider that the set of legal framework can be seen as an opportunity to attract more private financing to R&D and redistribute the available financing in the way it brings more to the national economy.

There is a significant interconnection between the opinions of two main target groups (project implementers and policy makers) on how the legal factor influences the development of the scientific activity and R&D in Latvia only in regard to two aspects: joint record keeping of scientific and academic personnel working hours at the same employer and tax allowance or subsidies for producers of innovative products.

The basic aspects of legal factor in the questionnaire are evaluated mainly as negatively influencing, except of tax allowance or subsidies for producers of innovative products.

However, the authors still observe high rate of answers that indicates low influence of the mentioned aspects to the development of R&D in Latvia. This could be explained by the fact that other R&D development determinants like financing, productivity and efficiency, skills of project implementation, and commercialisation of inventions have more significant influence in Latvia.

Despite the findings, the authors consider that unconsidered action by the government elaborating legislation of intellectual property rights can cause enormous state budget losses later on (see Aghion et. al., 2009). Therefore, it is even more important to evaluate the current regulation of the intellectual property rights as the aspect of the legal factor.

The authors consider that indirect measures such as interference in the legal and regulatory framework, and definition of public procurement rules in favour of innovative and R&D promoting products and services could be used to enhance R&D performance in Latvia.

Acknowledgments

The authors gratefully acknowledge the funding from the European Union and the European Social Fund (Agreement No. 2009/0180/1DP/1.1.2.1.2/09/IPIA/VIAA/017 "Support for Doctoral Studies Programme at Latvia University of Agriculture", 04.4-08/EF2.D2.21).

Bibliography

1. Action Plan for Guidelines for Science and Technology Development Implementation, 2010-2011 (2010). Cabinet of Republic of Latvia, Retrieved: http://www.likumi.lv/doc.php?id=209366 Access: 12 January 2011.
2. Arhipova, I., Bāliņa, S. (2006). *Statistics in the Economy and Business. Solutions Using SPSS and Microsoft Excel. (Statistika ekonomikā un biznesā. Risinājumi ar SPSS un Microsofr Excel.)* Issue 2. Rīga: Datorzinību Centrs, pp. 17.-19.
3. Aghion, P., David, P.A., Foray, D. (2009). Science, Technology and Innovation for Economic Growth: Linking Policy Research and Practice in 'STIG Systems'. In: *Research Policy*, Volume 38, Issue 4, pp. 681-693.
4. Boļšakovs, S. (2008). *Innovative Activity in Latvia (Inovatīvā darbība Latvijā).* Ogre: J.L.V Ltd. pp. 226, 313-321.
5. Buesa, M., Heijsa, J., Baumert, T. (2010). The Determinants of Regional Innovation in Europe: A Combined Factorial and Regression Knowledge Production Function Approach. *Research Policy*, Volume 39, pp. 722–735.
6. Corruption perceptions index 2010, Transparency International, Retrieved: http://www.transparency.org/policy_research /surveys_indices/cpi/2010/results. Access: 12 January 2011.
7. Conte, A., Schweizer, P., Dierx, A. and Ilzkovitz, F. (2009). An Analysis of the Efficiency of Public Spending and National Policies in the Area of R&D. *European Economy*, Occasional Paper No. 54, pp. 1-63. Retrieved: http://ec.europa.eu/economy_finance/publications/publication_summary15845_en.htm. Access: 14 January 2011.
8. Dimza, V. (2003). *Innovation in the World, in Europe, in Latvia. Riga: Institute of Economics*. Latvian Academy of Sciences Ltd. p. 41.
9. Ernst, H., Legler, S., and Lichtenthaler, U. (2010). Determinants of Patent Value: Insights from a Simulation Analysis. *Technological Forecasting and Social Change*, Volume 77, pp. 1-19.
10. Fagerberg, J., Mowery, D., Verspagen, B. (2009). The Evolution of Norway's National Innovation System. *Science and Public Policy*, Volume 36, Issue 6, pp. 431–444.
11. Fagerberg, J., Srholec, M. (2008). National Innovation Systems, Capabilities and Economic Development. *Research Policy*, Volume 37, pp. 1417–1435.
12. Filippetti, A., Archibugi, G. (2011) Innovation in Times of Crisis: National Systems of Innovation, Structure, and Demand. *Research Policy*, Volume 40, pp. 179–192.
13. Freeman, C., Soete, L. (2009). Developing Science, Technology and Innovation Indicators: What We Can Learn from the Past. *Research Policy,* Volume 38, pp. 583–589.
14. Fuchs, G., Shapira, P. (2005). Rethinking Regional Innovation and Change: Path Dependency or Regional Breakthrough? Preface. In G. Fuchs & P. Shapira (Eds.) *Rethinking Regional Innovation and Change Path Dependency or Regional Breakthrough,* pp. xi-xix. Boston: Springer Science + Business Media, Inc. eBook ISBN: 0-387-23002-5.
15. Grupp, H., Schubert, T. (2009). Review and New Evidence on Composite Innovation Indicators for Evaluating National Performance. *Research Policy,* Volume 39, pp. 67–78.

16. Guidelines for Development of Science and Technology 2009-2013, (2009). Ministry of Education and Science of the Republic of Latvia, 32 p. Retrieved: http://www.lzp.gov.lv/images/stories/dokumenti/Zinatnes_pamatnostadnes-2009-2013-gadam.pdf. Access: 9 December 2010.
17. Hall, B. H., and R. Ziedonis, 2001. The Patent Paradox Revisited: An Empirical Study of Patenting in the US Semiconductor Industry, 1979-95. *RAND Journal of Economics*, Volume 32, pp 101-128.
18. Innovation Management and the Knowledge-Driven Economy (2004) European Commission, ECSC-EC-EAEC Brussles-Lexembourg, pp.114.-115. Retrieved: http://www.proinno-europe.eu/promotion-pro-inno-europe-results/page/publication-detail-innovation-management-knowledge-driven-eco. Access: 23 September 2010.
19. Karnītis, E. (2004). Informācijas sabiedrība – Latvijas iespējas un uzdrošināšanās (Information Society - Latvian Opportunities and Ventures). Pētergailis, Rīga, 208 lpp.
20. Lukjanska, R. (2010). Innovation Capacity – Problems and Solutions for Successful Development, Annual 16th international Scientific Conference Proceedings Research for Rural Development 2010, Volume 2, pp. 42-48. Retrieved: http://www.llu.lv/getfile.php?id=27927 Access: 14 January 2010.
21. Lundvall, B-Å. (ed.) (1992). National Innovation Systems: Towards a Theory of Innovation and Interactive Learning, Pinter, London, p. 342.
22. Meženiece, M., Feifere, S., Rivža, B. (2010). Financing Mechanisms for Research Institutes in the Field of Agriculture in Latvia. Annual 16th International Scientific Conference Proceedings Research for Rural Development 2010, Volume 2, pp. 35-41. Retrieved: http://www.llu.lv/getfile.php?id=27927 Access: 14 January 2010.
23. Musyck, B.; Reid, A. (2007). Innovation and Regional Development, Do European Structural Funds make a Difference? *European Planning Studies,* Volume 15, pp. 961–983.
24. Persson, K.G. (2010) An Economic History of Europe: Knowledge, Institutions and Growth, 600 to the Present. Cambridge: Cambridge University Press, pp. 92-126.
25. Prodan, I., Drnovsek, M. (2010). Conceptualising Academic- entrepreneurial Intentions: An empirical test. *Technovation.* Volume 30, Issues 5-6, pp. 332-347.

Evaluation of the Supply of Erythrocytes for Transfusion to Regional Medical Institutions in Latvia

Zane Mistre, *Mg.oec., PhD student*
Faculty of Economics, Latvia University of Agriculture
Ilva Rudusa, *Mg.oec., lecturer*
Faculty of Economics, Latvia University of Agriculture
Anda Zvaigzne, *Dr.oec., assistant professor*
Faculty of Economics, Latvia University of Agriculture

Abstract. In health care, which is a component of the European Union's economy, a sufficient available quantity of erythrocytes for transfusion is important in saving human lives. The present paper researches and evaluates the quantities of erythrocytes for transfusion supplied to regional medical institutions in Latvia in the period of 2008 - 2010 by taking into account the period of validity of this blood component and the proportions of blood groups of erythrocytes for transfusion in the total stock of it. The impact of seasonality and blood group on the quantities of erythrocytes for transfusion, in litres, supplied to the regional medical institutions was evaluated by the General Linear Model. The authors improved the calculation of balanced quantities of erythrocytes for transfusion, taking into consideration their periods of validity.
Key words: quantity of erythrocytes for transfusion, supply, regional medical institutions.

Introduction

Health care plays an important role in regional economies and policies. It constitutes one of the most important industries of the European Union's economy, but managing and implementing health care is a competency of each EU Member State *(Eiropas Kopienas dibināšanas līgums, 1957)*. The Constitution of the Republic of Latvia (hereinafter – the RoL) stipulates that the state protects human health, and health belongs to the basic human rights *(LR Satversme, 1922)*.

In cases of emergency medical help, acute sicknesses, and chronic sicknesses (for instance, births, curing patients with haematological sickness, traumas, burning wounds as well as surgical operations et al.), the transfusion of blood and blood components has the crucial role in medical care and in saving human lives. The following institutions are involved in preparing blood and blood components for medical institutions in Latvia: the State Blood Donor Centre (hereinafter – the SBDC) and Blood Preparation Departments of medical institutions (hereinafter – BPDs) (*Direktīva 2002/98/EK ar kuru nosaka kvalitātes un drošības standartus..., 2003; VADC nolikums, 2005)*.

Today, mainly the blood components gained from donations of whole blood – unseparated blood that can be both processed and used for blood transfusion and intended for producing blood components – are used in blood transfusion therapy. A blood component is therapeutical blood (erythrocytes, leucocytes, thrombocytes, blood plasma) made of whole blood or by means of apheresis in accordance with the general standards accepted by the National Blood Service *(Direktīva 2002/98/EK ar kuru nosaka kvalitātes..., 2003*).

Nowadays, erythrocytes for transfusion (hereinafter – EfT) are most often used in the transfusion of blood components owing to the specifics of medical treatment and the medical diagnosis of patients – blood recipients. Therefore, medical institutions most often need this very blood component for transfusions.

Researching the demand of regional medical institutions for blood and blood components, and identifying related correlations are important issues, as presently the preparation of blood and blood components takes place chaotically in Latvia. The institutions preparing blood and its components depend on clients-donors who donate their blood for free of charge. With some exceptions, the general idea of these institutions is to serve all the donors who meet the standards set by Latvian legal enactments and the EU regulations *(Direktīva 2002/98/EK ar kuru nosaka kvalitātes..., 2003; Noteikumi par cilvēka asiņu un asins komponentu*

savākšanas...,2005). Only in case of the oversupply of components of certain blood groups, which is determined according to the period of validity, the donors of these blood groups are not served. A balanced supply that meets the demand is not shaped also during blood donation campaigns when all the donors who have come and meet the medical standards are served irrespective of their blood group and quantity of blood donated.

The initial studies created a basis for such a research **hypothesis**: it is possible to determine the quantities of EfT supplied to Latvia's regional medical institutions by taking into account the periods of validity of this blood component and the proportions of certain blood groups in the total stock of EfT.

The **research aim** is to investigate and evaluate the quantities of EfT supplied to Latvia's regional medical institutions and to improve the calculation of a balanced supply of EfT.

The following **research tasks** are set forth to achieve the aim:

1) to characterise the regional institutions that are responsible for preparing and distributing the necessary quantities of EfT in Latvia, and to identify the main factors impacting the quantities of EfT supplied;
2) to evaluate the impact of seasonality and blood group on the quantities of EfT supplied to the regional medical institutions;
3) to determine the distribution of demand by type of blood group, and to compare their proportions by year;
4) to improve the calculation of a balanced stock of EfT.

Research methods

The monographic and descriptive methods as well as analysis and synthesis for researching problem elements and synthesising interrelationships or formulating correlations were used in the present research. The scientific inductive method was applied to make general conclusions from individual facts or to identify correlations. However, the deductive method was used to logically systematise and theoretically explain the results of empirical studies.

The authors set the following research limitations to evaluate the quantities of EfT supplied to the regional medical institutions in the demand and to take into account the factors impacting the distribution of blood and blood components,

- calendar years (2008, 2009, and 2010) were split into quarters; the quantity of EfT, in litres, supplied to the medical institutions was calculated for every quarter of the year according to the data obtained from the information system ProSang of the institutions preparing blood and blood components;
- based on the relation to the ABO blood groups and Rh (D) – the medical classification of blood and blood components – the supply of EfT to the medical institutions was analysed for every blood group and Rhesus factor (in total 8 subgroups).

To identify the impacts of quarter, year, and blood group on the supply of EfT to the regional medical institutions, a GLM (General Linear Model) was developed and evaluated (*Maxwell S.E., Delaney H.D., 2004)*:

$$Y_{ijklm} = \mu + Gr_i + G_j + C_k + G C_l + \varepsilon_m, \qquad \textit{where}$$

Y_{ijkl} – quantity of EfT supplied to medical institutions, in litres;
Gr_i – blood group;
G_j – year;
C_k – quarter;
$G_j \cdot C_k$ – interaction of quarter and year;
ε_m – accidental error.

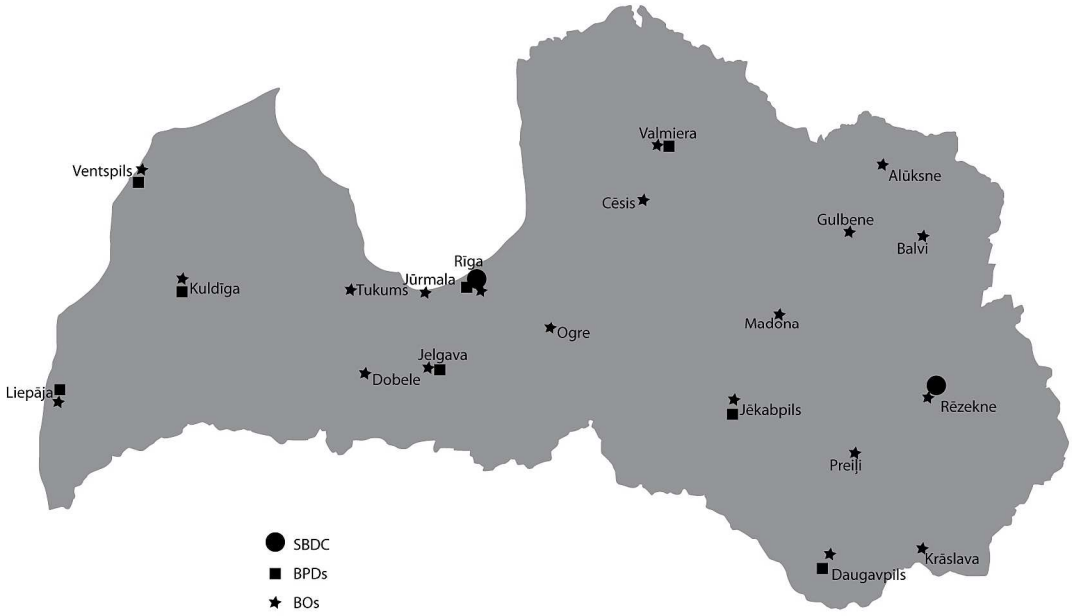
Scheffé's criterion was used to compare the average quarterly quantities of EfT and to identify the quarters, among which significant differences exist.

A chi-square test was done to ascertain whether the distribution of EfT, supplied to the regional medical institutions, significantly differs by blood group during 2008 - 2010. The impact was evaluated by the level of significance p = 0.01.

Results and discussion

1. Institutions responsible for EfT stocks and the factors affecting it

The National Blood Service of Latvia (hereinafter – the NBSL) is a set of regional medical institutions and their units (Figure 1) that produces blood components and supply them to medical institutions. The SBDC with its affiliate in Rēzekne, the BPDs of 9 hospitals, and the Blood Offices (hereinafter – BOs) of 32 hospitals in all the regions of Latvia are included in the regional system of the NBSL *(VADC, 2007)*.



Source: authors' construction based on the SBDC data

Fig.1. **Regional system of the NBSL**

The Cabinet (Republic of Latvia) Regulations No. 77 "Regulations on Obligatory Requirements for Medical Institutions and their Units" sets the requirements for specialised medical centres and hospitals. The terms related to the NBSL are also defined in these Regulations:

- a blood donor centre is a medical institution that prepares blood, tests blood samples, produces blood components, stores and delivers blood components as well as methodically manages, organises, and coordinates the production and supply of blood components;
- a BPD is a unit of medical institution that prepares blood components for the patients undergoing a cure at the medical institution;
- a BO is a unit of medical institution that ensures the circulation of blood components at the medical institution and is responsible for it.

The main task of the NBSL is to provide all the patients undergoing a cure at regional medical institutions with the necessary quantity of safe blood components according to a single system, equal standards, and equal procedures and technologies.

Blood, i.e. blood donors are needed for the NBSL to perform successfully its functions and to prepare blood components in required quantities. Depending on the diagnosis of trauma and/or sickness, the quantity of blood and the number of blood components are different for treating one patient. Therefore, the number of blood donors might differ for equal diagnoses (Table 1). Presently, for the only transplantation of liver in Latvia that took place on 14 January 2011, the quantity of erythrocytes for transfusion, required for the patient, consisted of the blood donated by 52 donors, the quantity of blood plasma was collected from 33 donors, the plasma component **crioprecipitat** was prepared from the blood plasma donated by 26 individuals, the quantity of thrombocytes was prepared from the blood donated by 45

individuals, and the pharmaceutical medicine albumin made of blood plasma was prepared from the blood of 187 donors *(VADC, 2011)*.

In 2009, Natālija Bolbate, mg.sc.TQM, assistant director for quality management, who analysed the efficiency of management of blood stocks in the SBDC has developed a definition: *management of the stocks of blood/blood components is a process, the result of which is directly related to the availability of blood components to the clients of blood preparation institutions and the blood offices of medical institutions, thus to patients/recipients as well*.

Table 1

Necessary number of blood donors per patient in Latvia

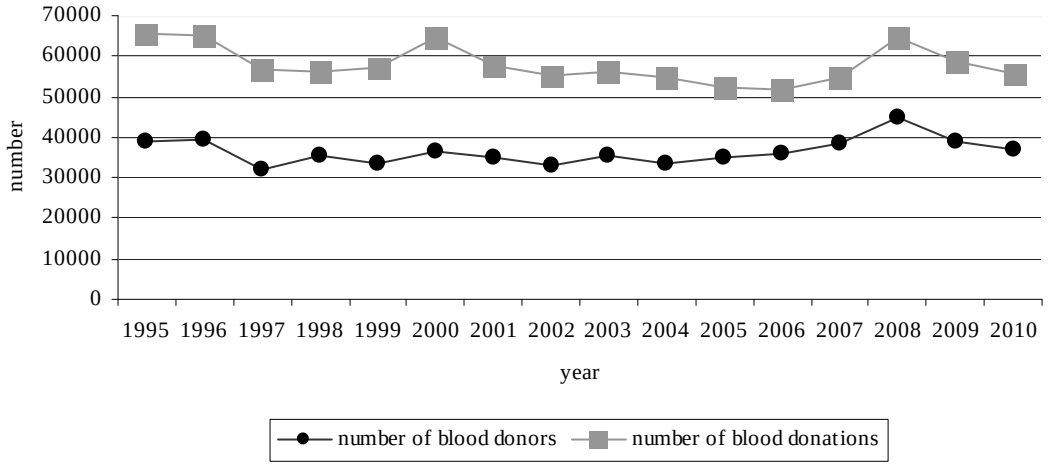
No	Reason for needing a blood donor	Number of blood donors
1.	Poli traumas	20 - 25
2.	Burning traumas	60 - 65
3.	Car accident victim	10 - 20
4.	Abdominal cavity operation	2 - 4
5	Hip prosthetics	4 - 6
6.	Blood cancer, one transfusion	1 - 3
7.	Blood cancer, during the entire period of treatment	200 - 250

Source: authors' construction based on the SBDC data

The main factors affecting the quantities of blood and blood components were identified in the present research:

1) *activity of blood donors* - blood, i.e. blood donors are needed for the NBSL to successfully perform its functions and to prepare blood components in required quantities. The number of blood donors and donations is also one of the main indicators of effectiveness of the NBSL. A potential blood donor is any resident of Latvia aged 18-65 who has the right to donate blood. Yet, since the beginning of the 1990s, along with socio-economic changes in Latvia, the number of blood donors and donations is volatile (Figure 2). It shows that the activity of donors is not a predictable process, however, the authors believe that it can be influenced;
2) *demand of regional medical institutions for blood and blood components* depends both on planned manipulations and unplanned occasions;
3) *periods of validity of blood and blood components* (EfT are valid for 35 days, thrombocytes for 5-7 days, but the period of validity of blood plasma depends on its storage temperature: if stored below minus 25°C – 36 months, within a range of from minus 18°C to minus 25°C – 3 months), which significantly impacts the stocks of plasma if the activity of donors is high or low as well as during national holidays (Easter, Midsummer, Christmas, New Year holidays et at. that coincide with weekdays when donors are not served).
4) *amounts of funds* that are allocated for preparing blood and blood components. The government subsidy to the SBDC was LVL 8314563 in 2008 and 2009 (additional own income: LVL 141000 in 2008 and LVL 161564 in 2009), but after the worsening of economic situation in the country, the amount of funds for health care is also reduced. The total SBDC budget in 2011 is reduced by LVL 1.3 million, which is 20% less than in 2010. This reduction in funds affects the entire regional system of the NBSL, as the BPDs produce the quantities of blood and blood components contracted by the SBDC.

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011



Source: authors' construction based on Mistre Z., Zvaigzne A., 2009; SBDC, 2010

Fig. 2**. Number of blood donors and blood donations in Latvia in 1995 - 2010**

2. Quantities of EfT supplied to the regional medical institutions and their balancing

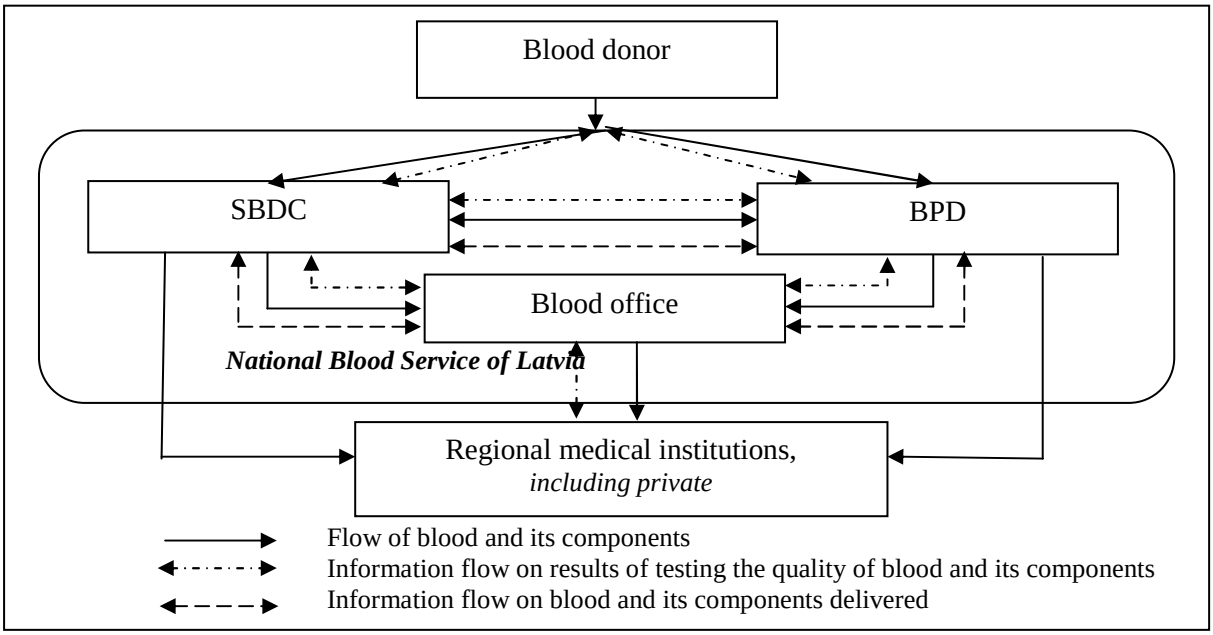
An adequate quantity of blood is directly related to a balance between the lack and surplus of blood, which leads to writing off blood components due to expiration of their period of validity *(Bolbate N., 2009)*. Therefore, planning the quantities of EfT has to be based on a balanced demand of regional medical institutions for blood and blood components.

The main task of the NBSL is to provide all the patients undergoing a cure at medical institutions with the necessary quantity of safe blood components or to meet the demand of medical institutions. To do it, the medical institutions have to provide information on the quantities of blood and blood components that have to be prepared or on the quantities of blood components that are transfused to patients in reality.

On 23 April 2007, the exploitation of the National Blood Service's specialised information system Prosang was started in the SBDC and gradually in the entire NBSL *(Valsts kancelejas Informācijas sabiedrības birojs, ERAF, 2004)*. The system provides the quality and safety standards for blood and its components, the single management of blood stocks (in the system, a stock of any blood production facility is transformed into the common stock of blood of the NBSL), and control in the entire NBSL. Besides, the Cabinet Regulations No. 1037 "Regulations on the Quality and Safety Standards for Collecting, Testing, Processing, Storing, and Delivering Human Blood and its Components" states that the medical institutions, in which blood and its components are transfused, have to introduce a procedure that ensures the registration of data on blood transfusions and operational communication to an institution that has prepared a certain portion of blood in case any serious side-effects are observed during the blood transfusion or after it to the individuals who are recipients of blood and its components and who can be related to the quality and safety of blood and its components.

As of 1 January 2011, the quality and safety standards are ensured by the NBSL ProSang system, yet the management of blood stocks, which includes the feedback from the regional medical institutions regarding the quantities of blood and its components used, is not fully ensured. The authors developed a conceptual model for blood and its components and information flows (Figure 3) that characterises the present situation in the NBSL.

Presently, there is a lack of information on the quantities of blood components transfused at the regional medical institutions in Latvia. Such data have been irregularly submitted to the SBDC only by a few medical institutions since 2007. Yet, it is possible to control the size and number of EfT portions supplied to the medical institutions by using the ProSang data.



Source: authors' construction based on the NBSL information

Fig. 3. **Conceptual NBSL model for blood and its components and information flows**

So far the NBSL has emphasised the impact of seasonality on the demand of medical institutions for blood and its components and paid special attention to winter months when larger quantities of blood and its components are demanded for transfusions compared with summer months. The impact of seasonality on the quantities of EfT supplied to the regional medical institutions was evaluated to verify this affirmation.

Table 2

Changes in the quantities of EfT by blood group supplied to the regional medical institutions in 2008 - 2010 in Latvia (litres)

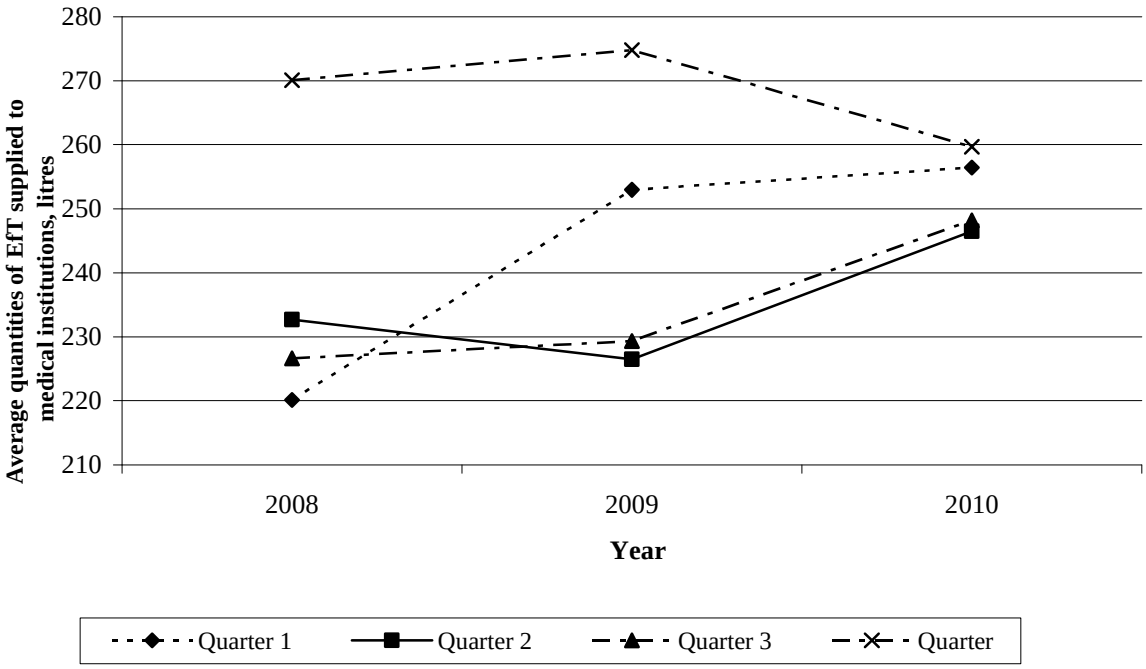
Year	Quarter	Blood group							
		O+	A+	B+	AB+	O-	A-	B-	AB-
2008	I	512.25	491.75	301.25	128.75	114.75	114	64.25	34
2009	I	608.75	584.25	331.75	110.25	132	130.5	94.5	31.75
2010	I	630.75	533.5	344.75	121	157.25	135	92.5	36.5
2008	II	579.25	502.25	303	121.5	146.25	116.75	65.5	27
2009	II	572.25	495	279.75	111.25	142.25	101.75	78.25	31.25
2010	II	633.25	530.5	309	116.75	159.5	117.75	74.75	30.5
2008	III	536.5	505.5	316.75	115.75	132.25	113.25	67	26
2009	III	497	549.75	295	101.5	158	131.75	74.5	27
2010	III	616.25	532.5	330.5	130	143.5	116	80	36.75
2008	IV	636	637.5	394.25	116.75	147	127	78.75	23.25
2009	IV	646.25	626.5	389.75	142.25	146.75	141.25	77.25	28.25
2010	IV	602	591.25	370.75	105	157	137.75	86	27.5

Source: authors' construction based on the NBSL information system ProSang data for 2008 - 2010

After analysing the data, one has to conclude that the quantities of EfT supplied to the regional medical institutions are significantly impacted by both blood groups ($p = 0.00$)[1] and quarters ($p = 0.00$)* as well as a year ($p = 0.003$) *. A correlation between yearly and quarterly data ($p = 0.00$) * is observed as well.

Figure 4 shows that there is a correlation only in 2008 when a significantly smaller quantity of EfT was supplied in Quarter 1 if compared with 2009 and 2010.

After analysing the quarterly quantities of EfT supplied to Latvia's regional medical institutions, the test result shows that there are significant differences in the supply of EfT only in Quarter 4 ($p = 0.000$) *. The quantities of EfT supplied in Quarters 1, 2, and 3 are not significantly different ($p = 0.429$).



Source: authors' construction based on the NBSL information system ProSang data for 2008 - 2010

Fig. 4. **Interaction effect of the factors "quarter" and "year" in 2008 - 2010**

The demand of regional medical institutions for EfT is impacted by many factors that can be classified into predictable and unpredictable ones. An effective and capable scheme for calculating the quantities of EfT has to provide a possibility that the demand for the EfT of some blood group could increase or decrease. It is necessary to calculate the proportional distribution of blood groups supplied to the regional medical institutions to calculate a standard quantity of EfT of certain blood group (Table 3).

After comparing the proportions of EfT by blood group supplied to the regional medical institutions during 2008-2010, one can conclude that no significant differences exist for a certain blood group ($p < 0.00$) in the proportions of EfT supplied every year. Therefore, one can assume that these proportions will not change over the next years.

The data of Table 3 show that the demand for the EfT of Rh (D) positive blood compared with the demand for the EfT of Rh (D) negative blood during 2008 - 2010 had a ratio of 4:1. This difference in the demand can be explained by the SBDC data indicating that the majority of individuals in Latvia have blood groups O and A Rh positive; while only 15% of them have the negative Rh groups. Besides, only 1% of Latvia's population has blood group AB Rh(D) negative *(VADC, 2010)*.

[1] Significant; the level of significance $p = 0.01$

Table 3

Percentage distribution of the quantities of EfT by blood group supplied to the regional medical institutions and p - values during 2008 – 2010

Group	Year			p- value
	2008	2009	2010	
O+	29.81%	29.54%	30.70%	0.00018*
A+	28.13%	28.67%	27.06%	0.00007*
B+	17.32%	16.47%	16.76%	0.00002*
AB+	6.36%	5.91%	5.85%	0.00001*
O-	7.11%	7.36%	7.63%	0.00001*
A-	6.20%	6.42%	6.26%	0.00000*
B-	3.63%	4.12%	4.12%	0.00001*
AB-	1.45%	1.50%	1.62%	0.00023*

Source: authors' construction based on the NBSL information system ProSang data for 2008 - 2010

Taking into account the period of validity of EfT (35 days), the authors improved the formula developed by the SBDC *(Bolbate N., 2009)* for determining a balanced quantity of EfT for one day, in which a 30-day cycle is used for calculating a standard quantity of EfT, including an average number of EfT portions supplied during a month.

standard quantity = X/35 x Y,

where:

X – number of EfT portions supplied during a 35 - day period;

35 – period of validity of EfT – 35 days;

Y – percentage distribution of EfT for certain blood groups and Rh factors.

The goal of improving the formula is to set a point of reference for NBSL employees in situations when blood donors are too much responsive (for instance, during blood donation campaigns, due to increased activity of blood donors), so that no unbalanced stocks of blood are collected.

Conclusions, proposals, recommendations

1. As of 1 January 2011, the quantities of blood and its components are determined in the NBSL according to the government procurement plan at the beginning of every calendar year. The NBSL plan of producing EfT has to be based on a balanced demand of regional medical institutions or on a consumption that leads to a reduction in writing off EfT due to expiration of the period of validity.
2. The demand of regional medical institutions for the EfT of Rh (D) positive blood compared with the demand for the EfT of Rh (D) negative blood during 2008 - 2010 had a ratio of 4:1. This difference shows that the majority of individuals in Latvia have Rh-positive blood groups (85%).
3. The impacts of quarter, year, and blood group on the supply of EfT to the regional medical institutions are significant, besides, an interaction between yearly and quarterly data is observed.
4. No significant differences exist for a certain blood group ($p < 0.00$) in the proportions of EfT supplied every year. Therefore, one can assume that these proportions will not change over the next years.
5. In calculating the standard quantity of EfT requested by the medical institutions, it is important to take into account the period of validity of EfT, the number of EfT portions supplied to the regional medical institutions as well as the percentage distribution of the quantities of EfT by blood group and Rhesus factor.

Bibliography

1. Bolbate, N., (2009). Efektīva asins krājuma vadība. *Kvalitāte asins lietās*. Valsts asinsdonoru centrs, Rīga, Volume 37, Issue 1, pp. 4 – 14.
2. Bolbate, N., (2009). Efektīva asins krājuma vadība. *Kvalitāte asins lietās*. Valsts asinsdonoru centrs, Rīga, Volume 39, Issue 2, pp. 5 – 22.
3. Mistre, Z., Zvaigzne, A. (2009). Main Problems in the Regional System of the Latvian Blood Donor Service. In: *Economic Science for Rural Development*: Proceedings of the International Scientific Conference, No 19. Jelgava: Latvian University of Agriculture, pp. 181–188.
4. Maxwell, S.E., Delaney, H.D. (2004). *Designing Experiments and Analysing Data A Model Comparison Perspective*. Lawrence Erlbaum Associates, Publishers Mahwahl, New Jersey, London, pp. 69-71.
5. Valsts asinsdonoru centrs, (2007). Rokasgrāmata asins, asins komponentu sagatavošanai, kvalitātes nodrošināšanai, pielietošanai. Valsts asinsdonoru centrs, Rīga, Volume 148, Issue 1, pp. 8 – 29.
6. Eiropas Parlaments un Eiropas Savienības Padome (2003). Direktīva 2002/98/EK ar kuru nosaka kvalitātes un drošības standartus attiecībā uz cilvēka asins un asins komponentu savākšanu, testēšanu, apstrādi, uzglabāšanu un izplatīšanu, kā arī groza Direktīvu 2001/83/EK. Retrieved: http://ec.europa.eu/health/files/eudralex/vol-1/dir_2002_98/dir_2002_98_lv.pdf. Access: 6 January 2011.
7. Eiropas Savienība (1957). Eiropas Ekonomikas dibināšanas līgums. Retrieved: http://eur-lex.europa.eu/lv/treaties/dat/11957E/word/11957E.doc. Access: 15 January 2011.
8. Latvijas Republikas Ministru kabinets (2005). Noteikumi par cilvēka asiņu un asins komponentu savākšanas, testēšanas, apstrādes, uzglabāšanas un izplatīšanas kvalitātes un drošības standartiem. Noteikumi Nr. 1037. Retrieved: http://www.likumi.lv/doc.php?id=125683&from=off. Access: 22 December 2010.
9. Latvijas Republikas Ministru kabinets (2005). Valsts asinsdonoru centra nolikums. Noteikumi Nr.138. Retrieved: http://www.likumi.lv/doc.php?id=102423. Access: 6 January 2011.
10. Latvijas Republikas Ministru kabinets (2009). Noteikumi par obligātajām prasībām ārstniecības iestādēm un to struktūrvienībām. Noteikumi Nr.60. Retrieved: http://www.likumi.lv/doc.php?id=187621.Access: 6 January 2011.
11. Latvijas Satversmes Sapulce (1922). Latvijas Republikas Satversme. Retrieved: http://www.likumi.lv/doc.php?id=57980. Access: 15 January 2011.
12. Valsts asinsdonoru centrs (2010). Kāpēc vienmēr pietrūkst rēzus negatīvo asins grupu asinis? Retrieved: http://diena.lv/lat/dzive/veseliba/kapec-vienmer-pietrukst-rezus-negativo-asins-grupu-asinis.Access:
16 January 2011.
13. Valsts kancelejas Informācijas sabiedrības birojs, ERAF (2004). Valsts asins dienesta vienotas informācijas sistēmas izveidošana. Retrieved:www.eps.gov.lv/files/projekti/np/5_proj.doc Access: 10 January 2011.

Teaching Mathematics at the Faculty of Economics and Management

Daiva Rimkuvienė, *Dr. associate professor*
Janina Kaminskienė, *lecturer*
Eligijus Laurinavičius, *lecturer*
Lithuanian University of Agriculture

Abstract. Mathematics is an auxiliary subject for students of the University of Agriculture. Nowadays, in many fields specialists find the right activity development complicated unless the sufficient level of mathematical literacy is possessed. Traditionally, Lithuanian University of Agriculture is more attractive to students from rural schools. They have lower academic achievements than those applying to other higher education institutions. Quite a high percentage of students lack elements of mathematics. Mathematical preparedness has been determined with 15-question test, developed by lecturers of Universities of Agriculture from Sweden and Latvia. The authors of the paper consider differentiation of the first-year students for teaching mathematics based on the level of their preparedness expedient. Weak students find the pace of learning mathematics too high. The research shows that the Diploma and test results determine 40 per cent of the examination result variation. Many years of observing show that changes in environment affect the behaviour of the first year students differently. Grouping talented first-year students with weak, unmotivated ones, results in a negative situation. When it is difficult for most of the audience to understand some concepts, order and aim of the transformed phenomena, and the results obtained, the course of teaching and learning is impeded. Either in this case, gifted students do not receive sufficient attention, or the weaker ones are acquainted with the course material superficially. Motivated students, even if they have gaps in basic knowledge, having put some additional efforts master fundamentals of the university mathematics course successfully.
Key words: mathematics, teaching, education.

Introduction

The economy of a country depends on the mathematical literacy of its citizens that shows their ability to analyse the occurring problems as well as formulate and solve real life issues. Most of the graduates of the Faculty of Economics and Management of Lithuanian University of Agriculture are employed within the infrastructure of agriculture and rural development, in state management and structural funding administration institutions, and modern farms. Therefore, it is of relevance to prepare highly skilled specialists who are able to manage both small scale and large scale agricultural companies as well as shape state agricultural politics and carry out scientific research. Economics studies are related to so much more than general mathematical ideas: they involve specific areas such as optimisation, stochastic modelling, and neural networks. Mathematical knowledge is indispensable to specialists to draw certain conclusions, make rational decisions, and foresee their consequences in the near future.

Currently, higher education is becoming a mass scale phenomenon. Students with various levels of knowledge, skills, and abilities enter universities. Student attitudes regarding studying at institutions of higher education as well as their knowledge and skills acquired beforehand are being constantly analysed in the works of various education science specialists (Changes in Society…, 2006; Liston M. and O'Donoghue J., 2009; Metje N., 2007; Metje N., Frank H. L. and Croft P., 2007; Report on the International Research…, 2006). Most of the works of the aforementioned authors denote that there is a difference between the actual result of mathematical preparation in high schools and the expectations held on a university level.

Traditionally more students who enter the University of Agriculture come from rural schools and have lower scores than those who apply for other higher education institutions. Due to economic reasons, most of the applicants are accepted into the university and hence, the requirements to enter are lower. The results of the mathematics examination of the first years

are usually on a medium level. Therefore, the teachers of mathematics hold it of great relevance to assist the first-year students in overcoming their learning obstacles and eliminating the gaps in their knowledge. It is important to analyse the current situation, and foresee possibilities and methods of better education based on the experience of our own country as well as that of other countries.

The aim of the research is to analyse the changes in teaching mathematics at the Faculty of Economics and Management.

The object of the research is the structure of teaching mathematics and student preparation level for studies.

The methods of the research. A mathematics test of 15 questions created by the teachers from the Universities of Agriculture of Latvia and Sweden was used to determine mathematical preparation. During 2000-2005, the same test was used in universities of agriculture located in Denmark, Latvia, Estonia, and Lithuania (Aboltins A., 1999; Aruvee, 2006; Edlund, 1999; Raškinienė D. and Kaminskienė J., 2000, 2001). The duration of the test is 45 minutes and the students are not allowed to use calculators.

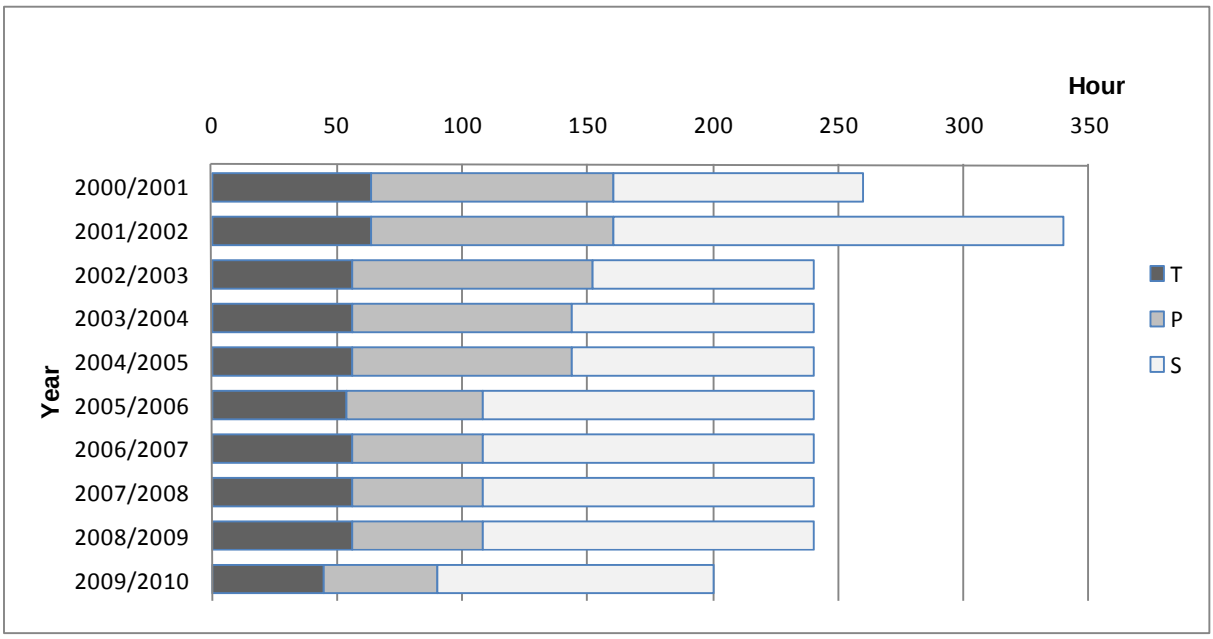
In Lithuania, the final mathematics examination is not compulsory. In addition, until the study year of 2010/2011 the students were allowed to choose the type of final examination: school or state examination. The school examination is held at the same school were a student has been studying; whilst the state one is taken in an examination centre. The results of the school examination are assessed in a 10-point criteria system and the evaluation scale of the state examination is a standard one. The students taking the aforementioned test in mathematics had to indicate their grade point average of mathematics as well as their final examination type and its evaluation (in case of not taking the examination, it had to be marked accordingly). The analysis of scores of the mathematics examination at the university was carried out pursuant to the data of the study year 2009/2010. The statistical data were analysed using descriptive statistics, non-parametric statistics, and regression analysis.

Results and discussion

Changes in teaching mathematics

During the first term of their first year, the students of the Faculty of Economics and Management of Lithuanian University of Agriculture gain knowledge in the fields of linear algebra, differential and integral calculus, and differential equation solving; whilst in their second term they study probability theory and statistics. In later years, the students attend courses that are closely related to mathematics including statistics in economics, econometrics, etc.

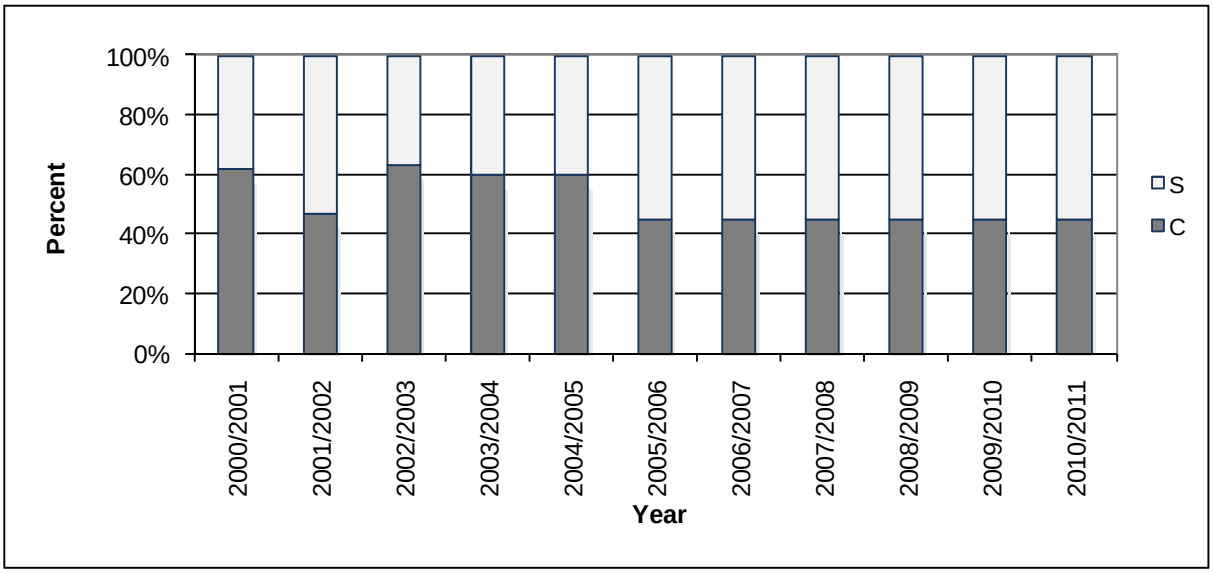
The scope of mathematics taught to the students has changed during the last decade (Figure 1). In the study year 2000/2001, totally, 260 hours were allocated for teaching, in study year 2001/2002 their number amounted to 340 hours, and in the study year 2009/2010 the number of hours dropped to 200 hours. During the years of 2002-2009, the hours allocated to mathematics remained at a steady amount of 240 hours. A significant drop in mathematic course volume (200 hours) was noticed in the study year 2009/2010. Usually, linear algebra, differential and integral calculus as well as differential equation are taught in the first term; while probability theory and statistics are studied in the second term. It was only in study year 2009/2010 that due to a significant decrease in course volume all of the topics were taught during the same term. These tendencies influenced a constant change in the study programme and certain topics had to be withdrawn from the programme. Even though in our point of view some of these topics were worthwhile to be taught, the experience of the research authors has shown that an increase in topic amount causes the first year students to be unable to learn such a huge amount of information.



(*T – lectures, P – practical assignments, S – independent studies*)

Fig. 1. **The change in the scope of teaching mathematics**

One should note that not only the teaching scope had changed. The amount of lectures, practical assignments, and independent learning hours were modified accordingly as well. Contact hours (contact between students and their teacher) including both lectures and practical assignments decreased; while more time was allocated to independent studies (Figure 2).



(*C – contact hours: lectures, practical assignments, S – independent studies*)

Fig. 2. **Distribution of hours**

An increase in independent studies requires a lot of independent work by analysing the corresponding literature of the studied subject. Even though many e-books and examples of various tests can be found on the Internet, the first year students usually are unable to read mathematical literature written in a foreign language. Therefore, it is relevant to renew constantly the literature required for studying. Both the aforementioned literature and

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

independent study assignments have to correspond to the topics of the subject taught during the study year and the preparation level of the first year students.

Analysis of the mathematical preparation level of the first year students

The mathematical knowledge test using the same test is carried out every year starting with the study year 2000/2001 at Lithuanian University of Agriculture. In the study year 2000/2001 totally 186 first year students from the Faculty of Economics and Management took part in the test. The statistics of student participation is as follows: in 2001/2002 - 214 students; in 2002/2003- 216 students; in 2003/2004 - 126 students; in 2004/2005 - 127 students; in 2005/2006 - 85 students; in 2006/2007 - 118 students; in 2007/2008 - 78 students; in 2008/2009 - 235 students; in 2009/2010 - 223 students; and in 2010/2011 - 123 students. The test results were announced to the students, and the ones who received lower scores were recommended to study additionally independently or to take classes on school mathematics course held by the Department of Mathematics.

According to the data provided in Table 1, the annual grade point averages of mathematics taught at school and mathematics examination evaluation of the respondents had decreased during the recent years.

Table 1

Evaluation of knowledge in mathematical on school level of the first year students

Study year	Annual* grade point average	Percentage of the students who took the school examination	Grade point average of the school examination*	Percentage of the students who took the state examination	Grade point average of the state examination**
2000/2001	7.74	73.66	8.55	26.34	52.45
2001/2002	8.16	28.50	8.26	71.50	48.22
2002/2003	8.13	7.87	8.18	91.67	43.79
2003/2004	7.35	3.17	9.25	96.83	42.00
2004/2005	7.34	*no data*			
2005/2006	7.38	9.41	7.13	90.59	46.73
2006/2006	6.92	5.93	7.86	94.07	44.29
2007/2008	7.42	6.41	8.60	93.59	39.60
2008/2009	6.88	27.23	7.81	71.91	38.52
2009/2010	6.36	56.05	7.10	41.70	37.02
2010/2011	6.14	7.32	6.64	68.97	22.96

Notes: * – maximum score: 10, ** – maximum score: 100.

These data show that the knowledge of students entering Lithuanian University of Agriculture is constantly getting lower. In 2009, students with significantly poorer mathematical skills chose to study Agricultural Economics and Management. The same tendencies also remained in 2010. In 2009, many of the first year students chose to take the school mathematics examination, the preparation for which required fewer endeavours. In 2010, the students could choose either to take the state mathematics examination or not to take it at all. Totally, 23.71% of the students who did not take the aforementioned state examination entered the Faculty of Economics and Management. In total, 7.32% of the students who took the school examination had graduated in the previous year. In the study year 2010/2011, the knowledge in mathematics of the first year students was even poorer as shown by the grade point averages of their annual grades as well as state and school examination evaluations.

The rectangular chart of the testing results in various study years is provided in Figure 3. Evidently, in the recent years the average number of correctly answered questions in the mathematics test has grown smaller. The Kruskal-Wallis test shows (p=0.00) that the average test values have significant statistical differences.

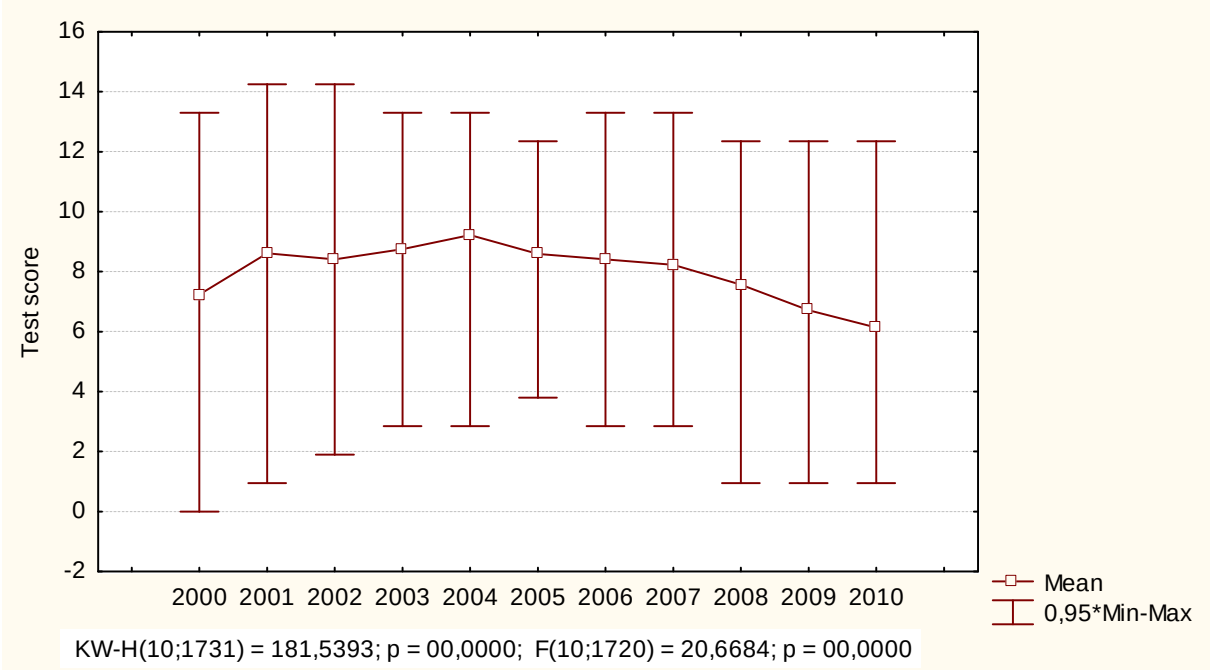


Fig. 3. **Results of the mathematics test of the first year students**

The current situation is nothing to rejoice at. One can see that according to the general tendencies of higher education and pursuant to university provisions the students are required to spend more time for independent studies. However, teaching experience shows that the first year students face difficulties when trying to understand the language of mathematics; they are not used to studying independently and come to universities with poor knowledge. They find it hard due to their lack of knowledge in the subject and psychological issues – their attitudes that mathematics is an insurmountable or heavily overcome subject.

Result analysis of studying mathematics at university

Regression analysis of the dependence of the university mathematics examination scores on the school grade point average of mathematics and test results was carried out based on the data of the study year 2009/2010. This means that otherwise the comparison and summing up could be unreliable due to the changed mathematics scope (topics and hours) and possibly varying requirements of the lecturers in different years. In addition, this year all the topics were taught during one term. The examination results were assessed using a 10-point evaluation system.

The examination was taken by 203 students and its grade point average was equal to 4.96, median and mode to 5 (frequency of mode 52), the lowest value was 1 and the highest value was 10, skewness was -0.006 and kurtosis was equal to -1.001. The distribution of the examination results is presented in Figure 4. The probability distribution is symmetric and the evaluation distribution is rather large-scale. Fifty of the students collected 1-2 points, meaning that realistically speaking they did not manage to solve any of the problems. The low scores of the examination could have been influenced by the students' attitudes to come to the examination considering it a "test examination". Students can retake the examination free of charge; however, they must pay for taking it for a third time. If a student fails the examination three times, he/she must repeat the course. Approximately 25 students had to repeat the course after the retakes.

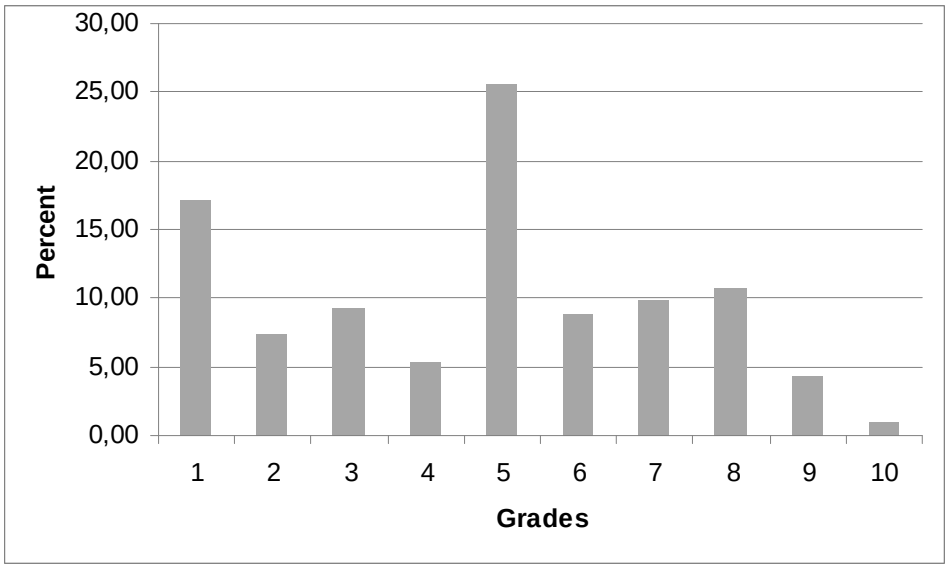


Fig. 4. **The distribution of the examination results**

An analysis of the correlation of the grade in the High School Diploma, the test score and examination results allowed determining a small relation between the grade in the Diploma and the examination evaluation (r = 0.39, *p*-value < 0.01) as well as a medium relation between the test and the examination results (r = 0.60, *p*-value < 0.01).

As a result of regression analysis, the following equation was formulated:

$$examination = -1.04 + 0.38\ diploma + 0.49\ test$$

The acquired coefficient of determination $r^2 = 0.40$ shows that the *diploma* and *test* results determine 40 percent of the examination result variation ($F = 67.74$, $t_{diploma} = 3.78$, $t_{test} = 9.14$, *p*-value < 0.01). Many years of observing show that changes in environment affect the behaviour of the first year students differently. Some of the students who have clear goals and can assess their own knowledge impartially are able to make progress; while others find a hard time adapting. An unfavourable situation occurs when a larger part of the group is made up of weak, poorly motivated students with no mathematical literacy foundations. In such a case, either the weaker students are only skin-deep introduced to the study topics or the highly skilled students are forced to solve simple problems too easy for their level of knowledge. Of course, even though lacking the required knowledge, highly motivated students can learn the basics of mathematics taught at the university after putting in additional work.

According to the authors, it would be purposeful to group the first year students to learn mathematics based on their mathematical preparation level rather than the chosen study program by forming student groups after interim tests or Term 1 taking into consideration the marks of their tests or examinations.

At Lithuanian University of Agriculture, the first years are offered an additional basic course of mathematics (30 hours). However, the students are reluctant to choose the course once they find out it is a repeat course of the school mathematics study programme. They prefer consulting lectures or an extended course on higher-level mathematics, which would assist them in preparing independent assignments. Pursuant to the analysis of Internet sources, such consulting courses are provided at universities of other countries (Parsons S., 2008; Mac an Bhaird C., Morgan T. and O'Shea A., 2009). It would be relevant to propose similar assistance to the students of Lithuanian University of Agriculture.

The necessity to prepare teaching tools that could help the students had better understand the mathematical language and problem-solving methods remains. Using new technologies such as multimedia and testing systems is of great relevance as well.

Conclusions, proposals, recommendations

The analysis of knowledge in mathematics held by the first year students of Lithuanian University of Agriculture and carried out during the years of 2000–2010 show that the level of mathematical preparation of the students of the Faculty of Economics and Management is getting lower. The mathematics grade point average of the applicants is lower and the number of students taking the state mathematics examination is growing thin. These changes are related to the alterations in education system and lower requirements for the applicants.

After the research, it was determined that during the analysed year the first year students could solve problems of the same type equally well. However, during the recent years the number of students who answer poorly to the test questions given at the start of the term is increasing. In the study years 2008/ 2009 and 2009/ 2010 approximately half of the students gave correct answers to no more than 40 percent of the test questions (6 out of 15).

Many years of experience of the lecturers show that the poor studying results at universities are influenced not only by the insufficient knowledge attained at school but by the changed living and education environment and lack of independent studying skills as well.

Considering the problems of student preparation for studies, the number of contact hours should not be decreased and the amount of time allocated for independent studies should not be increased.

According to the authors, it would be purposeful to group the students separately according to their test, examination and final high school examination evaluations at the start of the term to ensure a better level of studying for the students who are skilled and motivated. These groups could be formed anew after each term.

Preparing assignments that are more independent would hold certain purpose as well.

Bibliography

1. Aboltins, A. (1999). Some Aspects of Mathematical and Statistical Teaching at the Latvian University of Agriculture. *Second Nordic – Baltic Agrometrics Conference Karaski*. *Conference report, Uppsala*, pp. 9 – 18.
2. Aruvee, E. (2006). The Analysis of Mathematics and Statistics Learning Process*. Fifth Nordic – Baltic Agrometrics Conference Otepaa. Conference report, Uppsala*, pp. 13 – 16.
3. Changes in Society: a Challenge for Mathematics Education. (2006). *Proceedings CIEAEM 58 – SRNI*. Retrieved: http://math.unipa.it/~grim/cieaem/. Access: 20 October 2010.
4. Edlund, T. (1999). Basic Mathematical Knowledge Possessed by Our Students. *Second Nordic – Baltic Agrometrics Conference Karaski. Conference report*, *Uppsala*, pp. 17 – 22.
5. Kaminskienė, J., Raškinienė, D. (2001). Apie stojusiųjų į LŽŪU 2000 metais matematinį pasirengimą. Liet. mat. rink., T. 41, spec. No., pp. 362 – 368.
6. Liston, M., O'Donoghue, J. (2009) Factors Influencing the Transition to University Service Mathematics: Part I a Quantative Study. *Teaching mathematics and its applications*, Vol. 28, pp. 77 – 87.
7. Mac an Bhaird, C., Morgan, T., O'Shea, A. (2009). Evaluating the Impact of Mathematics Support on Students' Attitudes towards Mathematics in the National University of Ireland, Maynooth. Retrieved: http://www.maths.nuim.ie/preprints/Attitudes_Feb2009.pdf. Access: 20 October 2010.
8. Metje, N. (2007). Observing Mathematics Teaching in Three Different Countries – Lessons Learnt? *Teaching mathematics and its applications*, Vol. 26, No.3, pp. 145 – 153.
9. Metje, N., Frank, H. L., Croft P. (2007). Can't do Maths – Understanding Student's Maths Anxiety. *Teaching mathematics and its applications*, Vol. 26, No.2, pp. 79 – 88.
10. Parsons, S. (2008). Overview of the Provision of Mathematics Support to Students in a University College. Retrieved: http://www.ltsn.gla.ac.uk/headocs/8229_parsons_s_mathsupport.pdf. Access: 10 January 2011.
11. Raškinienė, D., Kaminskienė, J. (2000). Matematinio pasiruošimo problemos stojančiųjų į žemės ūkio universitetus. *Mathematics and teaching mathematics: conference report material*. Kaunas University of Technology, pp. 29 – 33.
12. Report on the International Research of fifteen-year-olds PISA 2006. (2006) Retrieved: http://www.smm.lt/svietimo_bukle/docs/tyrimai/tmp/PISA%20ataskaita%202006.pdf. Access: 20 December 2010.

Assessing Gaps in Rural Advisory and Training Services' Quality

Baiba Rivza, *Dr.hab.oec.,* **Gunta Grinberga-Zalite,** *Mg.oec.*
Faculty of Economics, Latvia University of Agriculture

Abstract. The research presents findings on empirical investigations of services' quality gaps at Latvian Rural Advisory and Training Centre. The authors reveal the role of rural advisory and training services in the process of rural and agricultural development emphasising the constant need to monitor, control and evaluate the quality of these services. The research authors have analysed the current gaps in services' quality and have suggested further directions how to detect and eliminate them in time.
Key words: service quality, evaluation, expectations, gaps.

Introduction

Farming has traditionally been a way of life and is now turning more and more into a business. Nobody can just start farming without at least a minimum of assets and knowledge. In traditional settings, basic farming knowledge is common and even non-farming professionals, such as teachers, priests and craftsmen, continue some basic farming for self-sufficiency in food. Until 100 years ago, this could also be observed in industrialising countries. Nowadays farming in post-modern societies is a highly sophisticated and commercialised activity based on high amounts of investment capital and specialised knowledge. It is also supported by a network of input and service providers, and upstream partners and institutions in value chains producing and marketing food, drinks, feed, fibre, fuel, medical plants, and other raw materials gained from land use, often in combination with specialised service provision, including land care, communal work and services for tourism (Rural extension…, 2009).

Latvian Rural Advisory and Training Centre (LRATC) with its 26 regional offices provides services both for small farmers who are striving for livelihood, not just for money and for emerging farmers who have already mastered farm development and are progressive towards more commercial farming. The main aim of LRATC regarding small farmers is to motivate them to improve the current living conditions, reorganising their farms and focusing to non-traditional and niche product production. While commercial farmers usually receive assistance from LRATC in the form of economic advisory services, and specialised advice on production and related technologies. Thus, rural advisory and training services' function must be seen in relation to different population groups which require a sophisticated balancing of all customers' needs. Moreover, since the evaluation of services' quality is more complicated than the evaluation of goods' quality, a special attention shall be paid to the quality measuring system.

The aim of the current research was to assess gaps in LRATC services and suggest directions how to detect and eliminate them in time on a regular basis.

The tasks of the research were:

1) to investigate the dimensions of the rural advisory and training service product;
2) to evaluate the models for service quality measuring;
3) to perform an empirical investigation of service quality disconfirmation model and present the quality gaps analysis of LRATC services;
4) to suggest further directions how to detect and eliminate LRATC services' quality gaps.

The descriptive method was applied in the research to perform a detailed research of LRATC services. Analytical method was applied to investigate the dimensions of a service product and perform gap analysis of its quality. Statistical method (SERVQUAL survey) was applied to aggregate LRATC customers' service evaluation. Logical construction method was applied in the concluding part to present the authors' conclusions on the research results.

Discussion and results

1. The role of Latvia Rural Advisory and Training Centre's activities in the context of agricultural and rural development

The accession to the European Union (EU) in 2004 was an important turning point for Latvia, which resulted in adopting the EU normative acts, inter alia requirements regulating agricultural activities. At the same time and along with establishing single area payments' structural measures support mechanisms changed. One of the often claimed basic benefits before and after the EU accession was the prospect of increasing support to Latvian farmers and following growth of economics and prosperity. Consequently that was implemented according to the first programming period 2004-2006 main priorities: uptake support appropriations assigned by the EU and organise agricultural development to integrate successfully in the EU Common Agricultural Policy (Grīnberga, 2010)

The second programming period requires continuing facilitation of rural development according to the country's rural development strategy. Therefore, the Ministry of Agriculture has prepared a middle term political planning document "Latvia Rural Development National Strategy Plan 2007-2013". If in the period from 2004 to 2006 the main strategic purpose was to acquire the EU financial support, then in the second programming period 2007-2013 rural development itself takes the central role in the Rural Development Strategy. In the authors' opinion, however, the development of agriculture, as industry of the national economy, providing production of agricultural products and provision of its related service, should not be disregarded, since in declining economies agriculture provides a safety net for survival for all those who cannot find work or who lose their jobs outside agriculture.

Exchange of information and expertise today has been recognised as a precondition for sustainable development of agriculture, which has become apparent also in the Common Agricultural Policy of the European Union. The Regulation No.1783/2003 of Council of Europe defines that all the EU Member States, including Latvia, have to establish their household advisory services' system. This is necessary to help the farmers meet modern and high quality agricultural standards related to environment and animal protection, plant protection and food harmlessness, animal well-being and good agricultural and environment conditions (Regulation No.1783/2003 of Council of Europe). Consequently, on 9 May 2005 the European Agriculture Guidance and Guarantee Fund approved the National programme "Establishment of Rural Advisory and Farms' Extension Service" and its project "Establishment of Rural Farms Advisory System" (furthermore - Project). In Latvia the recipient of the project finance was the Latvian Rural Advisory and Training Centre. The total amount of the project was LVL 2 151 756 (Latvia Rural Development Plan for Implementation of Rural Development Programme 2004-2006)

LRATC with its 26 regional offices is the largest provider of rural advisory services in Latvia countryside. Of course this organisation was chosen for the implementation of the Project due to its durability, accumulated experience and good network of regional offices. Rural entrepreneurs can receive there help in problems connected with agricultural and non-agricultural entrepreneurship, including project development for receiving of support from the EU Structural Funds, applications for loans to be received from banks and compiling of business plans. The direct purpose of the Project was to increase the capacity of LRATC in order to adjust agricultural activities to the standards of the European Community related to environment protection, hygiene, animal well-being and good agricultural practice, and to work out computer software for management of farms and agro environment planning, and to provide availability of information for farmers in order to favour the development of economically viable farms. Other purposes of the project were to favour the development of professional skills for those rural entrepreneurs who were involved in agricultural, forestry and other activities which were provided by memorandum of the European Parliament on lifelong learning. The significance of preparing the farmers for qualitative reorganisation of the production was emphasised in the document.

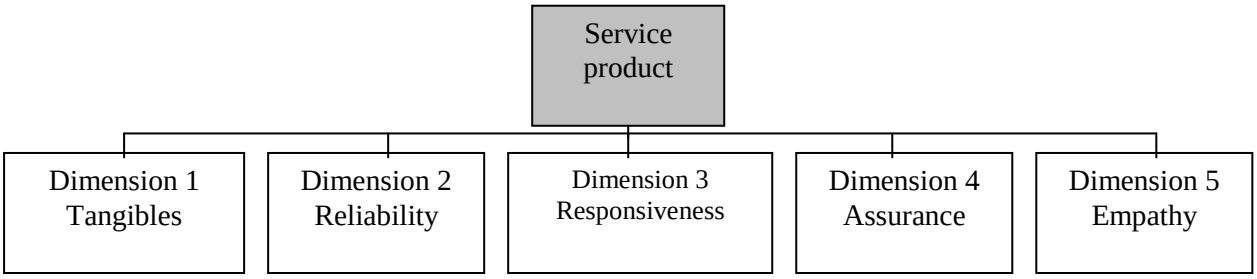
However, today the consequences of the Project finance allocation to LRATC has brought it in a more privileged situation than other advisory services' providers, and farmers often express dissatisfaction with LRATC passive service adoption to the market needs, claiming concern of its inability to provide competitive and market driven advisory services.

2. Rural advisory and training service product and its quality assurance problems

A significant tool for enabling a constant monitoring and perfection of provided services for all customer groups is a company's quality assurance programme. The headstone of LRATC quality assurance is its employee's certification system. The present advisors' certification system, adopted by LRATC, provides internal certification attributing advisors to five qualification levels: junior specialist, specialist, senior specialist, consultant, and consultant-expert. Besides, skills and expertise are evaluated in the scope of particular area the advisor is intended to work (horticulture, cattle breeding, project compiling etc.) (Grīnberga, 2010).

The study of scientific literature on service management and marketing reveals the complicated nature of a service product. The basic attributes that make it different from a commodity are services' intangible character, inconsistent performance, the fact that services are more a chain of activities but not goods, the fact that services in most of cases are produced and consumed simultaneously and at last the fact that a service product value is created in the process of a seller's and buyer's interaction (Grönross, 1990). Because of lack of hard measures, statistical quality control techniques are not always as successful in services as they are in manufacturing. Therefore, service quality measurement requires other tools specially designed to measure service product as a set of tangible and intangible benefits.

Service quality researchers group, represented by Zeithaml (1988) have aggregated all service product contents in the so-called five service quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Each of the dimensions includes 4-5 criteria; consequently a service product is composed of 22 criteria from five dimensions (Zeithaml, Parasuraman, Berry, 1988). The service product five quality dimensions are illustrated in Figure 1.



Source: authors' logical construction based on Zeithaml, Parasuraman, Berry, 1988

Fig.1. **Service product dimensions**

Given the complex nature of services quality, it is not surprising that there have been divergent views about the best way to conceptualise and measure it (Palmer, 2007). According to Palmer (2007) there are three basic approaches to measure service quality: performance-only measures (hereinafter -SERVPERF), disconfirmation models (hereinafter - SERVQUAL), and importance-performance approach (hereinafter - IPA).

SERVPERF is a performance measurement tool, which is a survey, consisting of 22 questions about the performance of the five quality dimensions. Usually a Likert scale from 1 (strongly agree) to 7 (strongly disagree) is used for the evaluation of a service quality.

It is the simplest approach to measuring service quality asking customers to rate the performance of a service. The approach, which is revealed in the formula below, developed by Cronin and Taylor in 1992, illustrates the way how it is accomplished in practice.

$$SQ_i = \sum_{j=1}^{k} Pij$$

SQi – person's 'i' perceived service quality;
k = service criteria/units;
P= person's 'i' perception regarding the service criterion 'j' performance.

Another approach is SERVQUAL. By this approach a service is deemed to be of high quality when customers' expectations are confirmed by the subsequent service delivery.

Because of the emphasis on differences between expectations and perceptions, this model is often referred to as disconfirmation model. The same survey questions as in SERVPERF are asked, only in this approach there are two survey parts: Part A – expectations regarding a service product quality and Part B – real performance of a service product quality. Measures of service quality can be derived quite simply by subtracting expectation scores from perception scores (Palmer, 2007). This approach, which has been developed by Zeithaml, Berry and Parasuraman in 1988, is illustrated in the formula below.

$$SQ_i = \sum_{j=1}^{k} (P_{ij} - E_{ij})$$

SQi – person's 'i' perceived service quality;
k = service criteria/units;
P= person's 'i' perception regarding the service criterion 'j' performance;
E = person's 'i' expectations regarding 'j' criterion of service quality.

The SERVQUAL methodology highlights the difficulties in ensuring high quality of service for all customers in all situations. More specially, it identifies five gaps where there may be a shortfall between expectations and perceptions of actual service delivery.

- Gap 1: Gap between consumer expectations and management perceptions. Management may think that they know what customers want and proceed to deliver this, when in fact consumers may expect something quite different.
- Gap 2: Gap between management perception and service quality specification. Management may not set quality specifications or not set them clearly. Alternatively, management may set clear quality specifications but they are not achievable.
- Gap 3: Gap between service quality specifications and service delivery. Unforeseen problems or poor management can lead to a service provider failing to meet service quality specifications. This may be due to human error but also mechanical breakdown of facilitating or support goods.
- Gap 4: Gap between service delivery and external communication. There may be dissatisfaction with a service due to the excessively heightened expectations developed through the service provider's communications efforts. Dissatisfaction occurs where actual delivery does not live up to expectations held out in a company's communications.
- Gap 5: Gap between perceived service and expected service. This gap occurs as a result of one or more of the previous gaps. The way in which customers perceive actual service delivery does not mach up with their initial expectations.

The gaps model is useful as it allows management to make an analytical assessment of the causes of poor service quality. If the first gaps are great, the task of bridging the subsequent gaps becomes greater (Palmer, 2007).

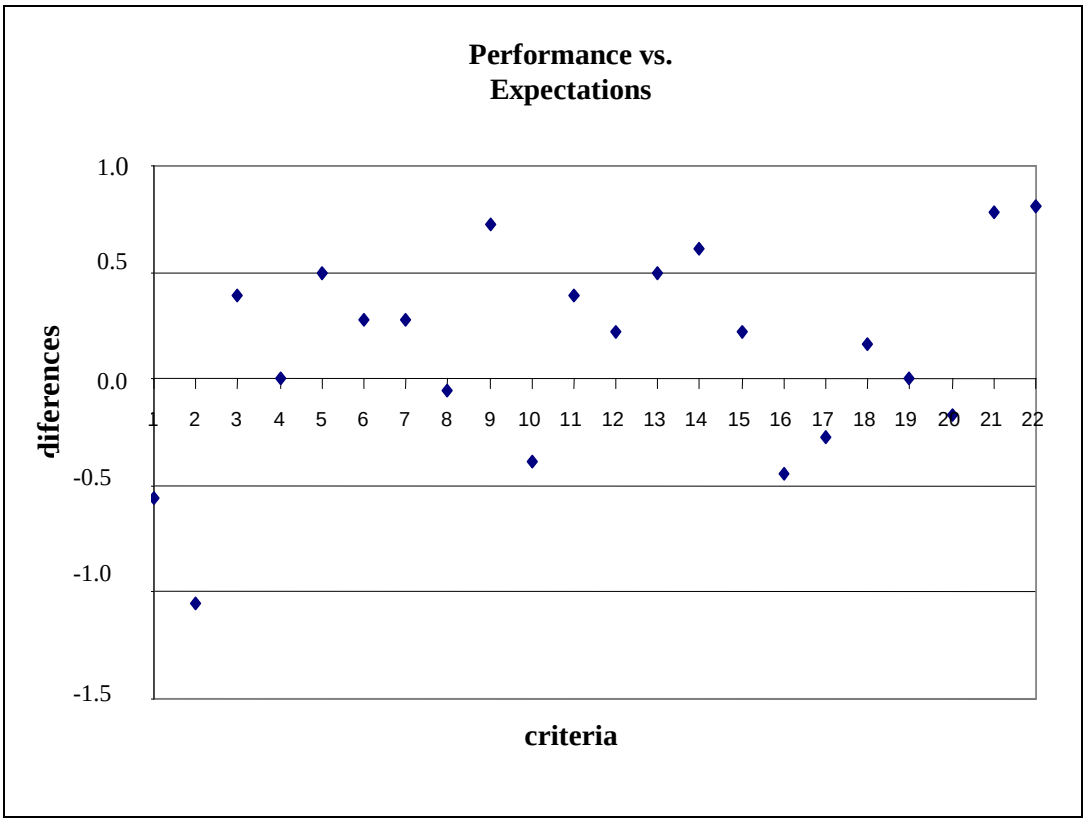
The theoretical service quality evaluation models SERVPERF and SERVQUAL have already been performed and analysed in scope of the authors' previously performed research projects. However, the SERVQUAL survey results have not yet been analysed in scope of the quality gaps model. In order to perform the gaps analysis it is necessary to detect customers' expectations regarding the planned service and then their evaluation of the service perception – what it was like in reality. The authors elaborated and used a special inquiry form which was adopted for LRATC customer SERVQUAL survey in scope of the empirical research. The inquiry embraced 94 respondents from all regions of Latvia. The quality expectations and performance was evaluated in five quality dimensions where 22 criteria were included as follows:

- Dimension 1 – tangibles (Criteria 1-4 which reveal the appearance of the LRATC office; its physical elements, inventory etc.);
- Dimension 2 – reliability (Criteria 5-9 which reveal ability of advisors and lecturers to perform the promised service dependably and accurately);
- Dimension 3 – responsiveness (Criteria 10-13 which reveal promptness and helpfulness of LRATC, e.g. reaching the necessary person on the telephone or at the office);

ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

- Dimension 4 – assurance (Criteria 14-17 which reveal competence, knowledge and professionalism of the advisor or lecturer in the particular area);
- Dimension 5 – empathy (Criteria 18-22 which reveal individualised attention, understanding of the customer's special requirements) (Palmer, 2007).

As it is illustrated in Figure 2, the customers' expectations are not delivered in the performance of Criteria 1, 2, 8, 10, 16, 17, and 20.



Source: Grīnberga, Liepa 2010

Fig.2. **SERVQUAL model results**

According to the SERVPER model results the customers have been most of all disappointed in tangible benefits - Criterion 1 and 2, which reveal the evaluation of "comfort at the working place" and "study room appearance". This disappointment belongs to the Gap 1 conflict – as LRATC is exposed to announcing a tender for office and study rooms equipment, a tenderer is often selected according to the criteria set by LRATC managers. Yet the managers' chosen set of requirements apparently does not comply with the customers' wishes.

Next disappointment, which is not as distinctive as the first two, has been in Criterion 16 performance which is the overall LRATC personnel (not only lecturers and advisors) attitude towards the customers, i.e. courtesy, ability to help fill in applications, giving directions etc. This disappointment belongs to Gap 2 - management might have not set the quality specifications clearly. Of course there are official instructions for the employees; however, attitude and courtesy are again those qualities which are very difficult to measure. Actually, in the present economic decline situation which has resulted in salary cuts, it is very difficult to motivate the employees to work with perfect devotion. Therefore overall dissatisfaction with work and lack of motivation could be explained by the social and economic consequences of the economic crisis.

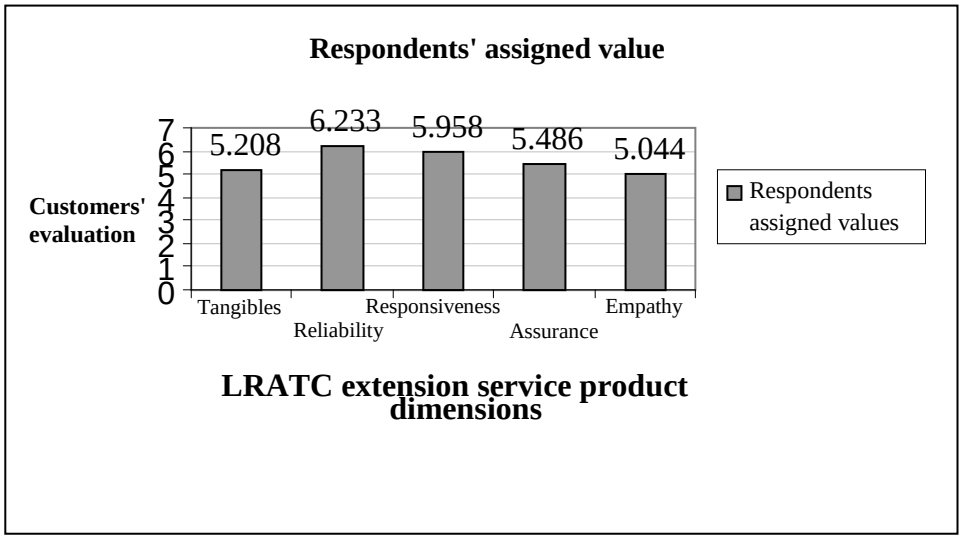
Also Criterion 10 is under-delivered which is a prompt and timely informing of customers about the changes in the working schedule. It was most often described as replacing of the study course topics or lecturers at the last moment with other completely different from those mentioned in the course programme. This disappointment belongs to the

Gap 3 conflict – human errors, problems with transport and tough schedule of lecturers and advisors who often combine work at LRATC with other duties in ministries, universities etc. that cause such situations. However, the main problem of LRATC is that customers do not receive information in time. Therefore, the LRATC support staff should work more actively providing customers with the latest changes at least by sending SMS.

Criterion 17 in its turn reveals possibility to receive consultation regarding the course topics, advisor's competence and other information at the LRATC personnel, i.e. their competence about the rendered services has been expected to be on a higher level than it was in reality. This disappointment belongs to the Gap 2 conflict, the same as in case of Criterion 16, which could be given the same explanation.

And finally Criterion 20 which reveals the convenience of the service rendering place, although slightly, yet it is not completely satisfactory for the customers. This disappointment belongs to the Gap 1 conflict – the place for LRATC organised events is normally selected by its managers, which of course has a logical explanation – there is a limited number of offices owned by LRATC. However, some advisors have admitted in the interview that nowadays there is a part of customers who would like to uptake a self impose duty to organise customer boards, involving customers in a more active participation in the settlement of various issues int. al choice of a meeting place.

The authors of the article in their previous research papers have already investigated the LRATC services' five quality dimensions using the SERVPERF tool (Figure 3).



Source: Grīnberga, Liepa 2010

Fig.3. **SERVPERF model results**

The present survey results reveal that all-in-all LRATC customers are satisfied with its services which mean that the way how customers perceive actual service delivery in general mach up with their initial expectations. Therefore, LRATC services for the present are not threatened by the Gap 5 conflicts. However, the existing gaps are the first signals indicating that the present practice in force, when LRATC initiates, designs and tailors services for rural entrepreneurs with little or no involvement of customers in decision taking process is unreliable position, as there is always a risk that when quality is defined too narrowly, quality programmes become too narrow in scope. In the company one has to define quality in the same way customers do, otherwise, in quality programmes, wrong actions may be taken and money and time may be poorly invested. It should always be remembered that what counts is quality as it is perceived by customers (Grönroos, 1990). Consequently, all LRATC services' quality assurance system should be customer-guided but not imposed by the governing bodies like it is being practised at present.

Conclusions

1. The research results revealed that emphasis is needed in almost all quality dimensions (except Dimension 2 – reliability). The authors conclude that although several service quality problems were detected, all-in-all serious conflicts due to under delivered customers' expectations are not present at LRATC.
2. The gaps analysis indicated that currently LRATC services' quality problems appear due to the LRATC management's quality specifications which are not set clearly to employees. Especially this regards the support staff which although indirectly but yet plays a relatively important role in the total service quality product. Consequently, the LRATC quality programmes are possibly too narrow in scope mostly focusing on lecturers' and advisors' competence perfection.
3. The gaps analysis detected that LRATC chosen set of requirements, especially regarding tangible benefits of the service, does not comply with the customers' wishes. The most feasible explanation of this problem is current budget restrictions which by force of economic decline (starting in 2008) have become apparent in almost all industries of Latvia. Seemingly it is unlikely that a rapid improvement of material and technical base of LRATC could take place in the near future. Therefore, it would be sensible to organise customer boards which is already being practised in some regions of Latvia. The active involvement of customers in the decision taking process could result in comprehension of the current problems, awareness of possible quality improvements, and possibly suggestions for better rendering of services within the existent limits.
4. The SERVQUAL model is a service quality measurement tool which is easy to adopt and put in practice to detect differences between the customers' expectations and perceptions. SERVQUAL surveys should be enforced as a complementary tool for LRATC services' quality monitoring, control and improvement.

Bibliography

1. Rural Extension (2009). Ed.: V.Hoffmann, M.Gerster-Bentaya, A.Christinck, M. Lemma. 3rd edition. Weikersheim: Margraf Publishers GmbH, Scientific books. Vol.1: Basic Issues and Concepts, pp. 5-11.
2. Palmer, A. (2007). Principles of Services Marketing. Mc.Graw Hill Higher Education. 5th edition. pp. 267-273.
3. Zeithaml, V., Parasuraman, A., Berry, L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Customer Perceptions of Service Quality. Journal of Retailing, Spring, pp.12-40.
4. Grīnberga, G. (2010). Problems of Customer-Guided Services Quality Assurance in Rural Extension. In: "Economic Science for Rural Development 2010": Proceedings of the International Scientific Conference - 2010, April 22-23 2010, Latvia University of Agriculture, Faculty of Economics, 2010.Volume No. 23: Home Economics and Sustainable Consumption, pp.163 – 168.
5. Grinberga,G, Liepa,, E. "Customer Guided Services' Quality Assurance Model for Rural Extension Services". The 3rd Jonas Pranas Aleksa International Scientific Conference "Vision of the Modern Village", Siauliai: the Social Sciences Faculty of Siauliai University, 24 – 25 September 2010.
6. Grönroos, C. (1990). Service Management and Marketing. Lexington Books, D.C. Health and Company, Lexington, Massachusetts, pp. 36-42.
7. Latvia Rural Development Plan 2007-2013.
8. LLKC website www.llkc.lv, "About us", "Services", "Annual Report 2007". Retrieved: http://www.llkc.lv/upload_file/400319/gadaZinojums_2007_2a.pdf. Access: 29 January 2009.
9. Regulation No.1783/2003 of Council of Europe.

Comparative Analysis of Stress in Women from Rural and Urban Areas

Mona Vintilă[(1)], Cosmin Goian[(2)], Daliana Istrat[(3)]
[(1)] *Professor, PhD [(2)] Senior Lecturer, PhD ([(3)]Assistant professor*
West University of Timişoara, Romania

Abstract. Stress has become a part of everyday life even in the more peaceful and traditional rural environment. The present investigation compared women from rural and urban areas belonging to the same age group and having similar family roles. The authors found that women from rural areas prove to have better stress management strategies than those from urban areas. In the rural environment the social network proves to be better than in the urban areas - this factor helps women overcome the effects of stress. In the rural areas the cohabitation or closeness of several generations or relatives is a traditional feature and persists significantly more than in the urban areas. Women from the urban environment are left much more alone to deal with the stresses of modern life and are less supported by the extended family. The authors found a positive correlation between the level of social support and stress management.
Key words: rural environment, urban environment, couple relationship, stress.

Introduction
According to family system theory family stress is defined as a pressure or tension in the family system, a disturbance in the steady state of the family. Stress is a normal, and occasionally even desirable, feature in the lives of both couples and families. It is inevitable because people develop, mature and change over time, and with any change comes disturbance that generates stress. Family routines change, patterns of interaction change and also the system's size. People enter and exit the family, some are born and some die. This is a part of the events of a normal life cycle, as is homeostasis. People tend to conserve a certain status, whether job or family related, even if it is bad. This can be attributed to our resistance to change, although often the change can be beneficial in the long term. Change happens even in the larger societal context being generated by social events – some positive and some negative. In either case there is disturbance to the steady state of the family which requires management. Family stress becomes problematic when its degree reaches a level – either too low or too high – at which family members become dissatisfied or show symptoms of disturbance. If one member is dissatisfied or manifests physical or emotional symptoms then the degree of family stress is not optimal – the family is in trouble.
It is important to keep in mind that stress does not have to mean that there will be problems in the family. Some high-tension families remain solid and functional. In this type of stressed but functional family there must be flexibility in family rules, roles, and problem-solving skills. Such families must be able to change constantly to adapt to their situation and there must be a continuous negotiation to adjust the family's support mechanisms to the level and kinds of pressure it is experiencing. It is likely that some families simply enjoy and tolerate more stress than others. This characteristic also indicates the importance of the family's perception of a stressor event or situation. It may be that some families become bored without a constant string of stressful events or without the challenge of constant problems to solve. Such families may actually seek out new stressors. They like to move often, to travel, they seek competition and they like challenges.
Therefore one can say that family stress is a neutral construct, it is neither negative nor positive. It simply means pressure on the family. Family stress means change, a disturbed equilibrium in the family system.
Researchers and clinicians report observing differences in family and individual perceptions of stress. Families have unique systemic characters and the family perception of stress represents the group's unified view of a particular stressor event or situation. Family perception and individual perceptions frequently differ, so both are needed to get the full

 ISSN 1691-3078; ISBN 978-9984-9997-6-0
Economic Science for Rural Development
No. 25, 2011

family picture. A person dying of cancer may have a different perception on the situation of dying than his/her mother, father, siblings, or partner. Each may have his/her own private response and draw on different coping resources. It is to be hoped that some agreed-on collective perceptions of what the situation means can emerge or be negotiated. However, sometimes a collective family meaning is never, or only with difficulty, reached. Sometimes signs of everyday stress appear in individuals first and serve as an early warning that something is amiss between the couple or within the family.

Researchers have found that women report significantly higher rates of psychological distress than men. Women appear to be more affected emotionally than men not only by their own stressful experiences but also by the stressful experiences of the people they care about, due to their empathy. Some researchers say that a woman's family and social roles are more stress-producing than the roles occupied by men, others have stated that women's socialisation experiences produce susceptibility and even depression through the learning of a helpless style in coping with stressors. Also a married woman have higher stress than a previously married woman or women who have never been married. Although men and women do not differ greatly in the number of undesirable life events they experience, women are significantly more affected emotionally.

This greater female vulnerability accounts for a substantial portion of the overall relationship between gender and psychological distress but there may also be strains inherent in the social roles of men and women, as exemplified by the way women's position in the US society became less meaningful when most of the men returned home after the Second World War. This conclusion is based on the observation that more men than women were admitted to mental hospitals before the Second World War and more women than men after it (Gove and Tudor apud Boss P., 2002). Even allowing for the biological and genetic predisposition to mental illness there still appears to be a social construction of gender roles that influences gender differences in stress outcomes. Women are the central part of family life and child care, the stressor does not seem to be homemaking per se but, rather, the conditions of feeling unappreciated, bored, fatigued, and lonely.

Not surprisingly, Pearlin and Liberman (Boss P., 2002) also found gender differences in the workplace arising from conditions of the role, not the work. Women are more likely to experience stress from receiving inadequate compensation for their work, lack of security, inadequate fringe benefits, and fewer opportunities for advancement.

Family stress management can be influenced by external and internal factors, by influences that can be controlled and others that cannot.

The external context is composed of components that cannot be controlled by the family. It consists of constraints – development, genetics, economics, history, and culture. The cultural context, for example, provides the canons and mores by which families define their way of life, whereas private beliefs and values are part of the internal context. The elements that the family can change and control compose the internal context. This allows some choice about how and whether to change.

The internal context consists of three dimensions:

- the structural context refers to the form and function of the family boundaries, role assignments and rules regarding who is inside and who is outside these boundaries;
- the psychological context refers to the family's perception of a stressful event;
- the philosophical context of the family refers to its values and beliefs.

One cannot say that the internal control is more important than the external one or *vice versa*, but the internal control provides support for change. In family therapy the therapist must ascertain each family's internal context before trying to understand and assess what that family is experiencing and what changes are possible.

The rural/urban environment with their culture and values represent part of the external context that may have an important influence on the level of family stress and coping strategies.

Urban and rural communities, and thus families, differ in terms of value structures. Certain life values, given the environmental residential context, are comparatively more fully rewarded and, consequently, attain a higher relative priority in the value structure of families. For urban

families, the economic and cultural aspects of community life are perceived as most important, whereas rural families emphasise non-economic values, particularly family and community interaction. This does not mean that interpersonal relationships are not important to urban families, rather that urban families tend not to value interpersonal interaction as highly as rural families do.

Contemporary rural families are affected by recent changes that have appeared on the "new" rural scene. Such families face the need to adapt their traditional culture and values to these social changes. There is an urgent need to understand better the dynamics of rural family life in a changing society.

Change, whether positive or negative, generates stress. So it is important to ask how stress affects rural families. What do we know about the capacities of rural families to cope with and adapt to life changes? And do rural families differ from other families, particularly urban families, in their comparative abilities to deal effectively with stress?

In general, the authors did not find information about how, or even if, stress affects the functioning of typical rural families, and whether there are differences between rural and urban ones.

Accumulated life changes may affect rural and urban families in different ways. What if families migrating to rural areas, and seeking to enhance the quality of their family interaction, are affected by stress in ways that negatively affect the very life perceptions they most hope to influence positively? Support for this query is to be found in the findings of a study investigating the comparative rank orderings of selected stressor events experienced by both urban and rural families. Miller *et al.* (Imig D.R., 1983) found that certain stressor events apparently influence the interpersonal climate of rural families, while the same stressors influence the relationships of urban families with the community. These findings suggest that there is reason to believe that stress, as caused by accumulated life changes, will, because of environmental influences, be perceived differentially by urban and rural families. Specifically, it is speculated that stress may influence the interpersonal relationships of rural families to a greater degree than those of urban families.

A study conducted by Imig D. R. set out to investigate comparatively the differential influence of stress on the interpersonal relationships of representatives from rural and urban families. The findings of this study have direct implications on rural families and communities showing that stress differentially affects the interpersonal relationship of rural and urban families. It was found that the rate of stress (accumulated life change events) was associated with variation in the self-perceived effectiveness of intra-familial interaction within rural, but not within urban, families. For rural families, high rates of stress were associated with low levels of interaction and, conversely, low rates of stress were associated with comparatively higher levels of interaction. The data suggest that the relationship between stress and family interaction may, in fact, be causal. In conclusion, it was found that the comparative influence of accumulated stressors on the functioning of rural and urban families supports prior findings that rural and urban families differentially rank-order the importance of interpersonal relationships. Since stress apparently influences interaction more in rural than in urban families, the researchers have speculated that family interaction is, comparatively, more highly valued in the rural family.

Rural/urban differences were studied in self-reported stress (Elgar F.J., 2003) (life events, daily hassles, and conflict), coping and behavioural problems in a community sample of adolescents. Despite challenging socio-economic conditions in rural areas, levels of stress and ways of coping were similar in rural and urban adolescents. However, urban males reported more conflict and externalising behaviours than females and rural males. Stress, coping, and behavioural problems were interrelated, yet the approach to coping did not moderate the influence of stress on psychological functioning. Results suggest that adolescents may utilise many coping strategies that serve little benefit in terms of behavioural outcomes.

A study conducted in Australia tried to differentiate between the level of stress in rural and urban communities (Kerby J., 1991). The findings showed very little difference overall, with a slight tendency for people in the South Australian country regions to suffer from lower levels of stress than their metropolitan counterparts. The rural sample was, for pragmatic reasons, confined to people living in communities of 1 000 or more. Some further analyses were

undertaken in view of the small difference in stated stress levels between metropolitan and country respondents. For example, among those who said they had been more or much more stressed during the previous six months, there was a slight tendency for younger people (under 30 years) in the metropolitan area to fall in this category with people aged 46 to 60 tending to fill it in the country area. Of all the people whose stress levels had changed (for better or worse), people in the country tended to attribute the change to death in the family or sickness; whereas metropolitan respondents were more likely to have had an increase in workload, to have lost a job or to be suffering from the hectic pace of life. However, these and other differences were too small to be significant.

In this context the authors consider relevant to study the differences between rural women and those from urban areas in Romania regarding stress levels. In Romania there is a large discrepancy between urban and rural areas in terms of social and economic development, especially social and family status of women. The authors can say without reserves that these differences are based on the traditionalism-modernism balance which is reflected at the level of psychological variables that characterise the female population, such as stress.

Methods

The authors' **objective** is to assess the differences between women belonging to urban versus women belonging to rural areas in terms of stress level.

For this purpose the authors designed a study to compare the stress level as it is felt by rural women, adherents of traditional patterns of torque and by women in urban areas, representing the modern couple. The authors comparatively investigated women from rural and urban area belonging to the same age group and having similar family roles.

The present study hypothesis is that rural women show better management of stress than those in urban areas. Stress management was measured by Epstein Stress Management Inventory, a questionnaire aimed at how to manage stress designed by Robert Epstein.

The questionnaire contains 28 items to which subjects had to respond using a 5-step Lickert scale, where 1 is disagreement and 5 is agreement. Each subject shall fill in the questionnaire. The scoring is done by summarising the item scores for each subject, representing the stress level. The authors obtain scores for each of the fourth subscales:

1) *manages or reduces sources of stress* – the subject routinely manages to reduce sources of stress, both real and possible, in its life;
2) *practices relaxation techniques* – the subject regularly practices a variety of relaxation techniques to prevent or relieve stress;
3) *manages his or her thoughts* – the subject manages his/her thoughts in order to reduce the likelihood that s/he will perceive events as threatening.
4) *plans and analyses to minimise stress* – the subject practices self-management techniques, avoids destructive methods of stress management, and takes a proactive approach to stress management.

Sixty participants were selected to form two samples of 30 subjects each to verify the proposed hypothesis in the survey. The participants were selected according to their living environment (village/urban or city/rural). In terms of age, participants were women aged between 50 and 60 years. Women were selected because they fulfilled multiple roles not only in the society, but also in the family.

Results

The statistical result ($t(58) = 5.1$, $p < .05$) supports the statistical hypothesis. Therefore there are differences between the two categories of women (from rural and urban environment) regarding stress management. Thus, the authors found that women living in rural areas presented a better stress management than women from urban areas. The authors have calculated the size effect, $r2 = 0.30$ (this value indicating a large difference) to determine the difference intensity between the two groups, and give practical value of the research results.

The results are consonant with the previous studies in other populations. They can be explained by family roles, and the ways in which they are established, but especially by their degrees of clarity / ambiguity.

Thus the social evolution of women has allowed them to leave the family house space and has increased their access to education, and professional and social inclusion. This greater openness, of opportunity, from which women in urban areas have especially benefited, although very desirable, in fact provided a wider range of freedoms for women without relieving them of the responsibilities arising from household and childcare roles. This ambiguity of roles that women fulfil in the urban family may explain the increased level of stress and their lower efficiency in stress management compared with rural women.

Whereas, rural women tend to know clearly their responsibilities at home, and specific cultural norms do not allow the sharing of these responsibilities with their husbands, the urban woman shares with her husband the responsibility of maintaining the family financially (an assumed role) while also wishing to share household responsibilities. This pattern of division of responsibilities creates confusion of roles between the two spouses - a stress-generating confusion.

Table 1

Results obtained for stress management - independent samples t test

		Levene test of equal variances		t test of averages equality		
		F	Sig.	t	df	Sig.(ip. bilateral)
Total Epstein	Homogeneous dispersion	8.605	0.005	5.106	58	0.000
	Heterogeneous dispersion			5.106	51.275	0.000

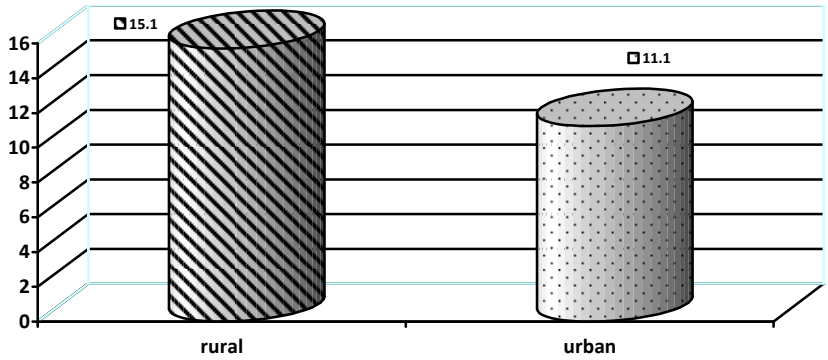


Fig. 1. **Differences in terms of stress management**

It is well known that occupational stress plays a large role in social distress faced by a person. This stress level also influences the family life.

In the rural environment the social network proves to be better than in the urban areas, this situation helping women overcome the effects of stress. In rural areas the cohabitation or the closeness of several generations or relatives is a traditional social feature which is still much more frequently encountered than in urban areas. In Romania, in rural areas, there is still a large number of families with several generations sharing the same house. The support, both emotional and physical, provided by other members of the extended family is important in such situations. Women in an urban environment find themselves much more left alone to deal with the stresses of modern life and are less supported by the extended family. The authors found a positive correlation between the level of social support and stress management.

The differences obtained may be due to the traditionalism characterising rural areas compared with the modernism characterising the urban ones. Stress is considered to be a disease of the modern world. It was described and analysed along with the urban development

and industrialisation. In conclusion the authors can put it in relationship with the urban modern world rather than with the rural, traditional one.

The statistical results can also be explained based on the link between stress and change (which should not necessarily be negative). Rural environment has a much slower life rhythm than the urban one, life flows by clear rules which are not easily changed by people, and changes occur slowly in comparison with urban areas. Here, in the urban environment, change accompanies every day, and the fast rhythm of city life is experienced in traffic, the bustle of the street, people's work schedule, and family organisation.

Statistical results obtained by comparing the results of the questionnaire scores of the two subject samples support and underline the difference between the two areas of life. Rural women obtained higher scores than their urban counterparts in terms of stress reduction and relaxation techniques. Regarding the control of thoughts and planning of the future the results do not show statistically significant differences.

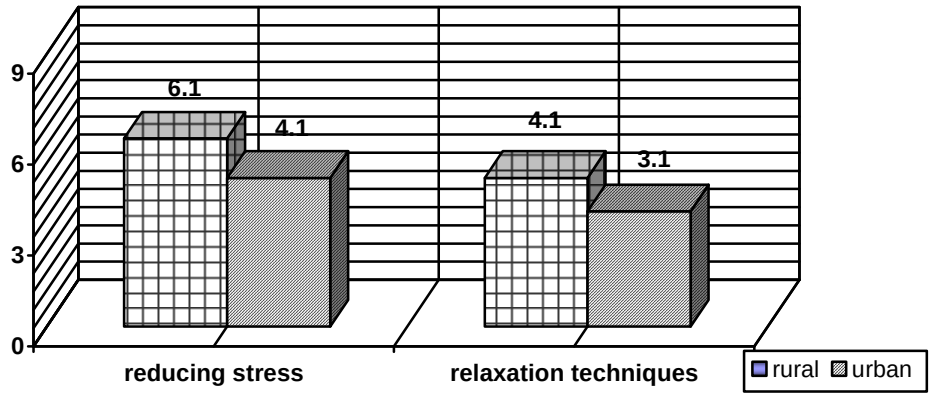


Fig. 2. **The difference between the two groups in Epstein scales**

Conclusions

Stress is one of the most frequently encountered phenomena of the society today. It influences both the onset of psychosomatic diseases and the aggravation of existing diseases. Along with psychosomatic influences on the individual the aspects of the relationships are also affected impacting both the marital bond and social networking. Contrasting lifestyles mean that the degrees of stress management, social support, and marital satisfaction differ between women from rural areas as compared with urban women. Differences between the two groups of participants are significant.

Women in rural areas have a greater capacity for stress management than urban women.

Bibliography

1. Băluţă, I., Ghiţulescu, C. Ungureanu, R. (2008). *Social Behaviour and Family Strategies in the Balkans (16th -20th centuries)*, Bucureşti: New Europe College, p. 344.
2. Bernea, E. (2006). *Civilizatia romana sateasca*, Bucureşti: Editura Vremea, p. 168.
3. Boss, P., (2002), *Family Stress Management*, Thousand Oaks, California: Sage Publications, p. 217.
4. Dumitru, S. (2001). *Sociologia ruralului tradiţional românesc*, Iaşi: Editura Universităţii Al.I. Cuza, p. 353.
5. Elgar, F.J., Arlett, C., Groves, R., (2003), *Stress, Coping, and Behavioural Problems among Rural and Urban Adolescents*, Journal of Adolescence, Volume 26, Issue 5, October 2003, pp. 574-585.
6. Imig, D.R., (1983), *Urban and Rural Families: A Comparative Study of the Impact of Stress on Family Interaction*, Rural Education, Volume 1, Number 2, Winter, 1983, pp. 43-46.
7. Kerby, J., (1991), *How Stressed are Rural People?*, Rural Society Journal, Vol. 2, Issue 3, pp. 15-16.