

LATVIA UNIVERSITY OF LIFE SCIENCES AND TECHNOLOGIES

DEVELOPMENT STRATEGY

2015 – 2020

Latvia University of Life Sciences and Technologies (further LLU or the university) is one of the largest universities in Latvia providing studies and conducting research in various economic sectors in which the university implements education and research competences.

- **unique areas** – agriculture, forestry, veterinary medicine, food technology and landscape architecture;
- **universal areas** – information technologies, economics, social sciences and social sciences, rural engineering, civil engineering and pedagogy.

The strategy contains four chapters: 1) long-term future vision, 2) research programme, 3) education programme, 4) management improvement programme.

The research programme includes an outline of scientific specialisations and research fields, research aims and descriptions of their relevance to the European Union, national, regional policies and planning documents. It also discusses substantiation of specialization selection in relation to the needs of the national economy, specifically regarding sectors included in the smart specialization strategy for Latvia, action plans, performance assessment indicators and their values. The design of the research programme is based on the recommendations of external experts during an international evaluation of the research activities.

The education programme includes objectives of the university education, substantiation of specialization selection in relation to the sectors mentioned in the smart specialization strategy for Latvia, action plans, performance assessment indicators and their values.

The management improvement programme is comprised of the aims and action plans including the plan of management improvement (institutional development).

VISION OF FUTURE

VISION

Latvia University of Life Sciences and Technologies is one of the leading universities of science and technologies in the Baltic Sea region, specializing in the sustainable use of natural resources aimed at the enhancement of quality of life for society.

The vision of the university is to become one of the leading universities of science and technologies in the Baltic Sea region. The territorial approach is chosen taking into account:

- the geographic location of the university,
- economic sectors which the university provides intellectual potential for and conducts research, the presence of the most significant resources in the Baltic Sea region,
- the necessity to promote the international competitiveness of related economic sectors focusing on the competitiveness of the Baltic Sea region's companies,
- relationships with international universities and research institutions, including those in the Baltic Sea region.

Scientific and technological status means that the university focuses on the development of theoretical knowledge, carrying out applied research activities, creating technologies and innovations necessary for industries of the national economy and promoting their commercialization.

The research specialisation is related to the accumulated knowledge and the competence of the university in the management and exploitation of biotic and abiotic natural resources.

Sustainable use of natural resources for enhancement of quality of life is a topical issue concerning the challenges of Latvia, the Baltic Sea region, the European Union and global development, the most important of which are the following:

- increasing demand for natural resources to satisfy society's needs,
- demand for technologies for the efficient management of natural resources, their profitable use and the creation of competitive products and services,
- related to a wide range of problems: economic and social development of regions and communities, sustainable access of natural resources, quality of environment, availability of safe and healthy products, availability of services.
- the need to increase the competitiveness of the Baltic Sea Region on a global scale, where one of the essential aspects is ensuring the sustainability of the environment and its natural resources.

MISSION

To develop competitive intellectual capital on the basis of excellence in research, application of research findings, high quality of education and effective management of the university.

There are four strategic goals to achieve the mission of the university:

- to achieve excellence in research specialisation areas,
- to promote the application of fundamental and applied research results in the national economy,
- to provide high quality study and lifelong learning services,
- to provide an efficient university management system.

The university's activities will contribute to the development of an internationally competitive intellectual potential. The intellectual potential in this case is both knowledge and people who will use this knowledge.

In order to achieve the mission and fulfil the vision, it is necessary to strengthen the university's operational capacities through the use of internal forces and opportunities provided by the external socio-economic processes, as well as to implement measures that will improve those factors of performance that are identified as inhibiting and limiting factors. At the same time, it is necessary to take into account external conditions which cannot be changed or prevented by the university.

OBJECTIVES

Long-term objectives of the university:

- ***Excellence in research***, which promotes technology and innovation and is integrated into the study process.
- ***High quality studies***, which provides education for students to become internationally competitive specialists.
- ***Effective university management system***, which provides purposeful and useful use of resources for the implementation of high quality studies and excellence-oriented research.

The university's *medium-term goals* are evident from the vision, mission and long-term goals: they are the following:

- Excellence in research.
- The application of the research results in the national economy (knowledge, technology and innovations accumulated and generated by the university are understood as the research results).
- Integration of studies and research.
- Internationalisation of studies and lifelong learning.
- High quality, competitive, demand-compliant studies.
- Varied and demand-compliant programmes for lifelong learning.
- Effective management in all levels.

Three action programmes have been worked out to achieve the objectives which aim at reaching both long-term and short-term objectives:

1. ***Research programme.***
2. ***Education programme.***
3. ***Management system improvement programme.***

The final part of the education programme and the research programme comprises the outcomes of each area and indicators according to which LLU education and research performance is supposed to be assessed. The indicators defined in the informative report “On the development progress of the action plan for the implementation of Science, Technology Development and Innovation Guidelines 2014-2020 that includes a description of the measures plan and result indicator system of the Smart Specialisation Strategy, and development progress” reviewed by the Cabinet of Ministers on 21.10.2014, and used for the evaluation of research results on a national level, were taken into account when determining the indicators.

VALUES

The university, its employees, students, graduates and stakeholders understand, respect and observe the common values that are expressed in the words of confidence (in other words “creeds”) and action principles (in other words “maxims”).

Values as confidence (creeds)

Scientific approach

We believe that scientifically grounded knowledge is the main driving force of development. We develop such knowledge giving our contribution to the development of Latvia and the whole world.

Creativity

Our employees and students create, maintain and improve an environment that inspire and support ideas and innovations that result in original and significant works and solutions.

Freedom of opinion

Ideas and knowledge are the result of diversity and exchange of opinions. The university is the place where everyone has the freedom of opinion and expression, as well as different opinions should be listened to and respected.

Openness

It is important for us that everyone is willing to receive and create knowledge, to develop new ideas and get involved in creativity would have a sense of belonging to the university. We are open to opinions, ideas, knowledge, open and mutually enriching cooperation that is rooted in tolerance and prevents discrimination.

Sustainability

We are aware of our responsibility for what is happening in the world around us. Responsibility for us means being able to see challenges, to search, find and implement sustainable solutions based on scientific knowledge. Every solution is found and implemented in accordance with ethical and moral principles.

Values as principles for action (maxims)

Purposefulness

We set meaningful goals, we search for the ways to achieve them, and we put effort into achieving them.

Responsibility

We take responsibility for our words and deeds, we act in full understanding of the goals and results to be achieved, we ensure succession and we are responsible partners.

Honesty

Our employees and students are conscientious and committed, with a high sense of responsibility.

Improvement

We believe that achievements and excellence are the result of continuous improvement of ourselves and our processes.

Cooperation

We encourage cooperation between all levels and areas of activity for employees, students, graduates and partners.

RESEARCH PROGRAMME

The research programme is based on LLU vision, mission, evaluation of the current situation, opportunities and challenges. The aim of the programme corresponds to the aims set out in the strategic development and planning documents of the EU and Latvia, and fosters their achievement. The research specialisation of the university was based on the analysis of the importance of scientific branches and research fields in the framework of priority fields of economy for the Latvian smart specialisation and achievement of the strategy's aims. The recommendations of the external experts during the international evaluation of the research activities in 2013 were taken into account in the design of the programme. The long-term goal here is excellence in research promoting technologies and innovations and is integrated in the study process. The medium-term research goals correspond to the vision, mission and the long-term goal and they are the following:

- Excellence in the research;

- Application of the research results in the national economy (accumulated and created knowledge, technologies and innovations are meant as the research results).

Priority research fields:

- Biosciences
- Engineering sciences
- Social sciences

Biosciences include agricultural sciences, as well as related sub-branches in life-sciences, medical and health sciences. The main research activities are connected with agriculture, forestry and veterinary medicine.

Engineering sciences refer to engineering sciences and technologies as well as related sub-branches in life sciences, agricultural sciences, medical and health sciences. The main research activities are conducted in the fields of food technology, sustainable energy, smart vehicles and technologies (mostly focusing on agriculture and forestry), information technology, civil engineering, wood processing, geodesy, environment and water management (including greenhouse gases and agricultural runoff).

Social sciences refer to social sciences as well as related scientific sub-branches in humanities. The main research activities are conducted in economics and business (mostly focusing on agrarian and regional economics), sociology, landscape architecture, pedagogy, land management.

Medium-term research fields

Medium-term period is envisaged from 2015 until 2020. Medium-term research fields match the short-term research fields. Fields may be adjusted when analysing the research results of the time period from 2015 to 2017. Fields with insufficient research results will be scrutinized in order to identify factors that either fostered or hampered the achievement of the planned results and ways to improve the situation will be proposed. The scientific council of the university in cooperation with the respective department will find solutions for ensuring the relevance, quality, results and application of the research results.

Cooperation with institutions under supervision of the university

There is a close cooperation with institutions under the supervision of the university in several research fields. They are: the Institute of Agricultural Resources and Economics, the Institute of Horticulture and the Latvian Plant Protection Research Centre. The main mechanisms for working together: joint research activities, joint scientific groups, data exchange.

PRIORITY RESEARCH FIELDS IN BIOSCIENCES

- Investigation of important microorganisms and invertebrates in agriculture
- Studies of soil and land as basic resources for agriculture
- Improving plant productivity and yield quality through environmentally-friendly technologies
- Improving animal productivity and functional efficiency
- Morphofunctional studies of animal digestion system from the aspects of ontogenesis and pathogenesis of diseases

- Research on new diagnostics, treatment methods, medications, feed and nutritional supplements
- Infectious and invasive disease control and prevention
- Forest ecology and forestry studies
- The impact of forest work and technology on the forest ecosystem, the results of the output, the assessment of quantitative and qualitative indicators
- Forest resource economics and forest management planning
- Ecology of work environment
- Food safety and risks

PRIORITY RESEARCH FIELDS IN ENGINEERING SCIENCES

- Research in wood materials and technologies
- Use of sustainable energy in vehicles
- Smart technologies and robots in biosystems
- Sources and use of renewable energy
- Reduction and rational use of by-products and residues
- New products from raw materials of plants and animals, their nutritional studies
- Research of biologically active substances in raw materials of food and products
- Research of environmental and climate change reducing technologies, hydrology and agricultural runoff
- Remote sensing, geodesy and geospatial research
- Sustainable civil engineering, development of new, innovative building materials, research of their properties
- Safety and performance of building structures with long-term load
- Systems biology, modelling and optimization of metabolic network
- Information technology solutions, application of mathematical modelling and statistics in agriculture, environmental and forestry sciences
- Development and evaluation of intercultural information systems

PRIORITY RESEARCH FIELDS IN SOCIAL SCIENCES

- Sustainable development of territories
- Sustainable economics of the bioresource industries
- Efficiency of manufacturing processes and competitiveness of companies
- Land and property management studies
- Urban and rural landscape research and development
- Professional education and career support in the society

RESEARCH RESULTS AND INDICATORS

The goal - excellence in research:

- to address public issues related to efficient use of resources, the development of eco-friendly production methods and improvement of land management approaches as well as the development and implementation of new methods and approaches, the development of joint research programs with EU Member States and regions,
 - to develop cooperation with companies and promote private sector investments in research activities,
- to positively influence the intensity of research and innovation,

- to lay the foundations for the excellence of the university of the Baltic Sea Region in science and technologies

LLU, conducting research in the selected fields of specialization and fulfilling plans for reaching the research objective:

- 1) will address public issues related to: efficient use of resources, the development of environmentally friendly production methods and land management approaches, and the development and implementation of new methods, approaches and the development of joint research programs with EU Member States and regions;
- 2) will develop the cooperation with companies and increase the investment share of the private sector in research activities;
- 3) will have a positive impact on the intensity of research and innovation;
- 4) will pave the way for excellence of the university of the Baltic Sea region in science and technologies.

Indicators to be achieved:

Indicators	2017	2020
Number of full-time equivalent researchers	80	100
Research projects and science base financing for science and research, thousands EUR, per year	2,828	3,147
Number of scientific publications, per year	869	885
Number of projects supported by the EU programme Horizon 2020	37	53
Patents, property licences, design samples	24	29
Number of new doctors working in the university, including:		
new doctors who have obtained their degree not more than 5 years ago	105	120
new doctors who have obtained their degree not more than 10 years ago	50	50

EDUCATION SPECIALISATION

The LLU provides higher education and lifelong education in the fields of science and the national economy, where the university has accumulated educational and research competences. The fields of study offered by the LLU are determined by the demand of the national economy, the discoveries of our scientists and the accumulated knowledge in the bioeconomic sectors. They cover the entire production cycle from the cultivation and acquisition of raw materials up to processing technologies and consumer behaviour. Thus, the university's scientific innovations are transferred to prospective specialists from Latvia and other countries helping to develop our national economy and promote its international growth.

By 2020, the university will continue to provide higher education services in the current fields of study, while continuously assessing the relevance of each field and programme to the demand of the sectors of the national economy and the labour market in Latvia.

LLU has identified and assessed the demand, interests and needs of foreign students in the context of internationalization of education. The university focuses on the promotional activities in the international environment. The analysis of the demand and finding solutions to supply for this demand are going on throughout the period of implementation of the strategy.

The particular attention is paid to the improvement of the study programmes and diversification of their range keeping in mind the necessity to educate specialists for the bioeconomic sectors included in the Latvian Smart Specialization Strategy:

- agriculture,
- forestry,
- veterinary medicine,
- wood processing,
- construction with advanced biomaterials,
- power engineering with renewable resources,
- water purification and distribution,
- management of water and land resources,
- nature tourism,
- food production and biochemistry,
- information and communication technologies.

LLU long-term education goals is to provide high-quality studies and educate internationally competitive specialists.

Medium-term goals of the education programme of the university are based on the vision, mission and the long-term goal: they are the following:

- integration of studies and research;
- internationalization of studies and lifelong learning;
- high-quality, competitive, demand-compliant studies;
- diverse and demand-compliant lifelong learning programmes.

The achievement of the goals will be ensured through the implementation of the Action Plans of the Education Programme, which includes a diverse range of activities, and these are:

- Development plan of education programmes.
- Development plan of human resources.
- Cooperation improvement plan.

RESULTS AND INDICATORS TO BE ACHIEVED IN EDUCATION

Indicators	2017	2020
Number of students in lifelong learning programmes, per year	1,850	1,950
Number of international guest lecturers teaching courses at the university, per year	23	33
Income for studies and lifelong learning programmes, thousand EUR, per year	9,729	10,261
Funding of the EU programmes: Erasmus+ and other European structural funds for education initiatives, thousand EUR, per year	990	1,071
Number of master and doctoral programmes	7	27

that are implemented by using the module system		
Number of students as of October 1 of the respective year	4,163	4,481
Number of programmes using innovative distance learning methods	10	32
Doctoral theses that are supervised by representatives of LLU consolidating institutions and external cooperation partners (also as the 2nd supervisor)	14	45

EFFECTIVE MANAGEMENT SYSTEM

Long-term goal of the management improvement programme is effective management of the university providing purposeful and useful use of resources to implement high-quality studies and research directed towards excellence.

Medium-term goal is effective management at all levels.

The management system improvement (institutional development) plan was worked out with the aim to favour essential positive changes in the LLU management system in order to provide effective cooperation and correlation among all the LLU departments, to favour attraction of all type of resources (human, knowledge, finance, infrastructure, information) for the development of the university, to use financial and material-technical resources more efficiently, to foster effective work of general staff, particularly administrative staff, to reduce administrative procedures. The management system refers to the current departments and staff at all levels and stages carrying out any type of functions for planning, implementation, establishment and supervision of activities and processes.

Institutional development plan for improving performance and management effectiveness

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The main challenges related to management:

- Slow implementation of necessary changes for the development of the university operation.
- Fragmentation of some functions increase the volume of total resources used for the management decreasing usefulness of expenses.
- Inaccurate distribution of functions promotes overlapping of duties.
- The current management system does not motivate and encourage the management staff of the university sufficiently to initiate and implement activities promoting management effectiveness and cooperate.

- More purposeful use of studies and research funding as well as the reduction of subsidisation of certain study programmes are necessary.
- There are limited possibilities for the current staff to improve the level of knowledge and skills.
- There is a lack of uniform understanding at all levels and all the departments about common intentions of the university and plans for their implementation.

Plan for development and use of infrastructure

Activities for the development and use of the infrastructure plan were developed in order to use current LLU infrastructure more effectively, supplement the material-technical base with facilities, equipment and information technology systems, replace outdated equipment with new ones, improve energy-efficiency and functionality of buildings and premises, use the buildings and premises, being the university property and possession, more effectively.

The main challenges related to the development of infrastructure:

- Low actual capacity of premises envisaged for studies.
- Shortage and obsolescence of material-technical devices (facilities, equipment) and equipment for information technology.
- Depreciation of premises used for education, research and management, poor-quality work and study environment in some buildings.
- Several buildings have not been renovated for a long time; they have low energy-efficiency and high exploitation costs.
- Maintenance of certain properties without financial gains, their subsidisation from funding envisaged for basic functions.
- With some exceptions, there are insufficiently qualitative living conditions in dormitories.
- There is insufficient actual capacity for certain amount of equipment.
- There is a lack of a motivation system to plan and implement measures for reducing exploitation costs of buildings.
- There is no united vision at all levels and all departments about the university as a complex effectively functioning institution.
- LLU financial and accounting policies have not been updated.
- In certain cases there fragmentation of resources necessary for the research does not permit their effective use.

The main principles of infrastructure development plan: necessity, complementarities, direction towards high-quality and competitive education, excellence in the research and effective management system.

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