LATENERGI

First results of National Research Programme

«Energy efficient and low-carbon solutions for a secure, sustainable and climate variability reducing energy supply»

«Energoefektīvi un oglekļa mazietilpīgi risinājumi drošai, ilgtspējīgai un klimata mainību mazinošai energoapgādei»

Leading researcher **Oskars Krievs**

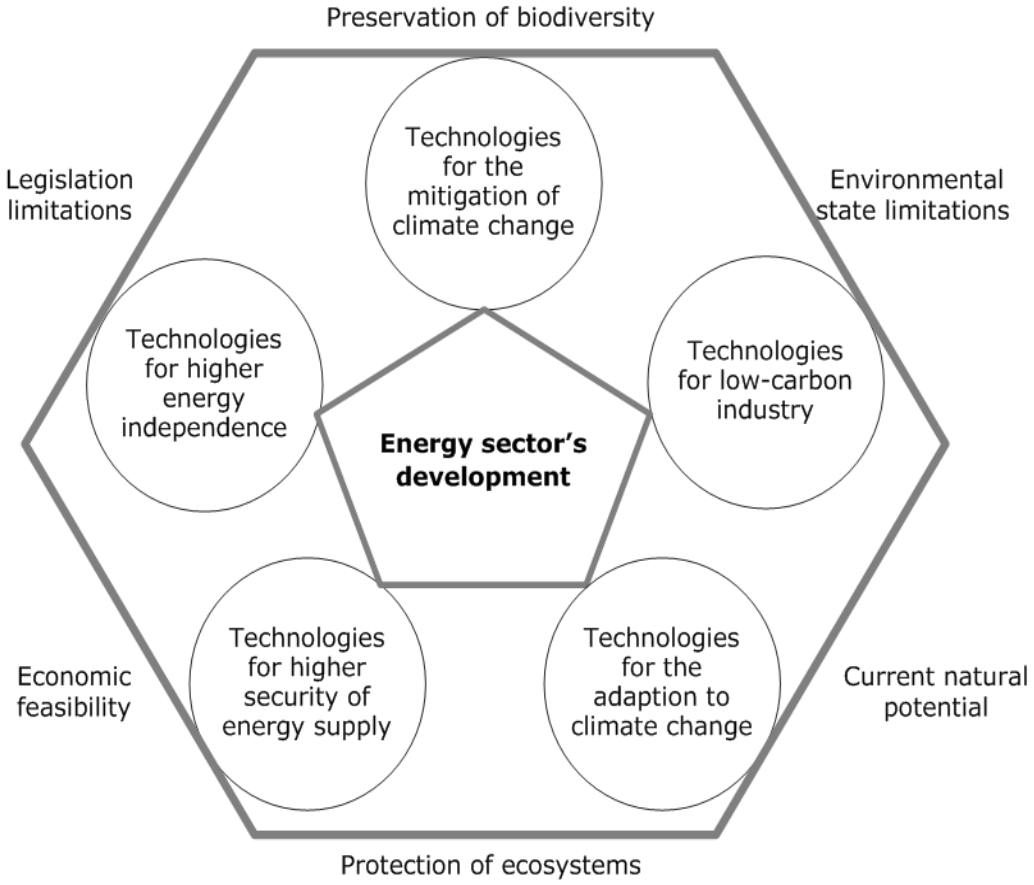
Riga, October 16, 2015

Izglītības un zinātnes ministrija

Studiju un zinātnes administrācija

http://latenergi.rtu.lv

Summary of the programme



- The areas of scientific research of LATENERGI offer a complex and **integrated approach on the research** of the **interactions between the energy** sector and its **limiting environmental factors in Latvia**
- The elaboration of well-timed and high-quality scientific justifications will allow provision of practical and smart solutions for the development of the energy sector in Latvia, thus **aiming towards the European Union's priority target 20/20/20**
- The research program is designed under an **interdisciplinary approach for both** – the **directions of** defined **research** and the **implementation of the program** – leading research institutions in the fields of energy systems and environmental protection in Latvia, industrial partners (companies, professional associations) and the policy makers are involved.

LATENERGI

Projects of the programme

Project No.1.

«Innovative power electronic technologies for increasing energy efficiency of industrial and household sectors in Latvia, future power supply grids and harvesting of renewable resources»

Leader: Institute of Industrial Electronics and Electrical Engineering, Riga Technical University

Institute of Industrial Electronics and Electrical Engineering (RTU IIEEE) employs researchers with extensive academic experience in the **field of electrical engineering and power electronics**. RTU IIEEE is a member of the state significance research centre in the field of energy

Project No.2.

«Optimization of power system development planning, energy production, selling and distribution»

Leader: Institute of Power Engineering, Riga Technical University

Institute of Power engineering (RTU EI) is a leader in the Latvian and Baltic countries, concerning the **large power system security, stability, efficiency and management** studies. RTU EI is a member of the state significance research centers research centre in the field of energy

LATENERGI

Projects of the programme

Project No.3.
«Sustainable climate policy and innovative, energy efficient technological solutions»

Leader: Institute of Energy Systems and Environment, Riga Technical University

Institute of Energy Systems and Environment (RTU IESE) is the leading scientific institution in Latvia, dealing with **environmental engineering** studies of the impact from anthropogenic technologies on the environment, with focus on the **impact on the environment from the energy sector**. The RTU IESE is the member of the National Research Centre

Subproject by: University of Latvia, Faculty of Geography and Earth Sciences (LU FGES) the department environmental science has many years of the experience on the research of the **nature of climate change, adaptation strategies and** on **the development of action programs**, as well on the **analysis of climate policy**

LATENERGI

Projects of the programme

Project No.4.

Innovative technologies for hydrogen and bio-fuel production, storage, quality control, quality sustainment and use in Latvia

Leader: Institute of Applied Chemistry, Riga Technical University

Institute of Applied Chemistry (RTU IAC) is the only one research institution in Latvia working in the area of **synthesis of liquid biofuels via chemical** (biodiesel) **and thermochemical** (bio-oil) **conversion of biomass** and also in the field of **investigation, quality control and quality assurance of mixed fuels for transport**

Subproject 1 by: Department of Water Engineering and Technology (RTU DWET) for more than 10 years has been working on issues related to the **role of micro-organisms in various engineering systems**

Subproject 2 by: University of Latvia, Institute of Solid State Physics (LU ISSP) has a Hydrogen Energy Materials Laboratory. Researches are examining **hydrogen energy materials and technologies** in all areas of hydrogen energy sectors - for **hydrogen production**, **storage**, **usage in fuel cells** and **applications in vehicles and stationary power generation**. The Hydrogen Laboratory is interdisciplinary and combines researchers from various science directions

LATENERGI

Projects of the programme

Project No.5.
«Development of tools and assessment of energy and climate policy impact»

Leader: Institute of Physical Energetics

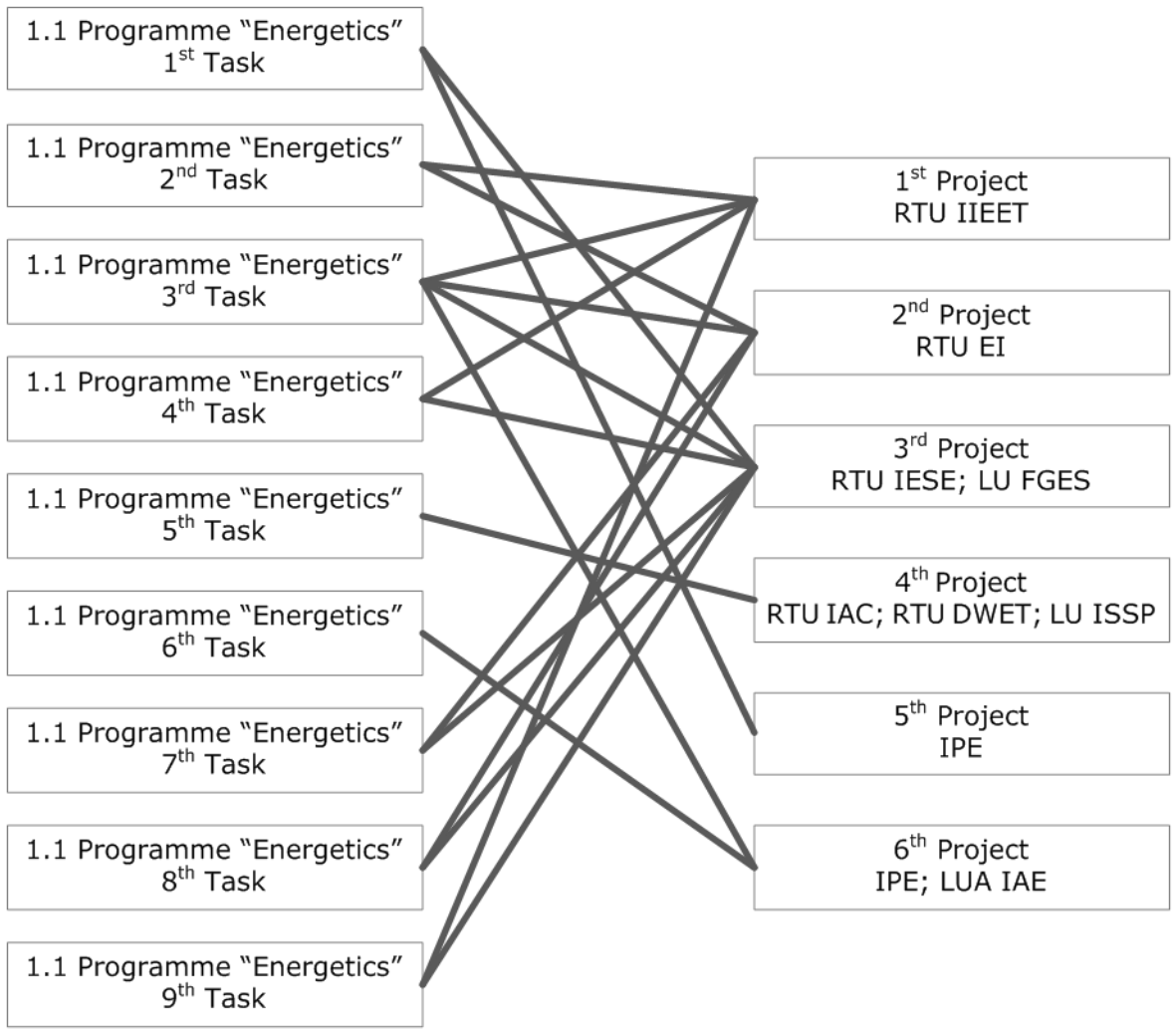
Project No.6.
«Complex research on renewable energy production and utilization for innovative technologies and investigation of biogas production potential in the waste recycling sector»

Leader: Institute of Physical Energetics

Institute of Physical Energetics (IPE) is a leading research institute in energetics in Latvia. The scientific research of IPE is active and diverse in the **field of energetics** and **energy-related engineering fields**. The IPE investigates **technologies and methods for the use of renewable energy**, designs, develops and improves energy efficient methods and technologies

Subproject by: Latvia University of Agriculture, Institute of Agricultural Energetics (LUA IAE). The institute carries out research at **use of alternative energy sources** such as wind energy, solar energy; **development of electro-diesel generators**; production and utilization of biological fuels, protection of electromotors

Tasks of the programme



The tasks defined in the competition for 1.1 Programme: "Energetics" (shortened)

1. Latvian **climate and energy policy tool** for the long-term
2. Solutions for the **development of the Latvian electricity supply system**, providing power and electricity safety, quality and forecasting of future scenarios
3. Complex study of the various innovative **renewable energy resource extraction and usage technologies**
4. **Zero-energy, near-zero-energy buildings**, **movement towards a low carbon economy** and an improvement of the state of the environment
5. Innovative **technologies for acquisition, storage, quality assurance and control of Zero-emission** (hydrogen) and **low emissions** (biofuels, bioenergy) **fuels**
6. Potential for **biogas production in the recycling sector**
7. Research of **climate change mitigation** and **adaptation to climate change** in the context of the development of Latvian energy
8. Exploration of **Latvian municipal energy planning trends**, including best practices, necessary networking and future development scenarios
9. Exploration **Latvian industrial energy intensity** and the factors affecting it making proposals and **competitive technological solutions** for Latvian industry **to increase energy efficiency**

Main collaboration partners

Companies

- **Latvenergo**, Joint-stock company
- **Rīgas Siltums**, Joint-stock company
- **Latvijas elektriskie tīkli**, Joint-stock company
- **Sadales tīkls**, Joint-stock company
- **Siltumelektroprojekts**, Joint-stock company
- **Komforts**, Joint-stock company
- **Daimler**, Joint-stock company (Aktiengesellschaft)
- **Grandeg**, Limited liability company
- **ZAAO**, Limited liability company
- **BAO**, Limited liability company
- **Bio-Venta**, Limited liability company
- **Graanul Invest**, Limited liability company
- **Ludzas Bio-Enerģija**, Limited liability company
- **Fortum Latvija**, Limited liability company
- **RenEsco**, Limited liability company
- **ArkiLED**, Limited liability company
- **Vizulo**, Limited liability company
- **Rīgas ūdens**, Limited liability company

Ministries

- **The Ministry of Environmental Protection and Regional Development** of the Republic of Latvia
- **The Ministry of Economics** of the Republic of Latvia
- **The Ministry of Agriculture** of the Republic of Latvia

Other

- **Latvian Environment, Geology and Meteorology Centre**, State limited Liability Company
- **Riga City Council, the Department of Housing and Environment**
- **Riga Energy Agency**, Riga's municipal agency
- **Rīgas satiksme**, limited liability company of Riga municipality
- **The association of hydrogen in Latvia**
- **The association of solar energy in Latvia**
- **The association of small hydro-energetics in Latvia**
- **The association of bioenergy in Latvia**
- **Housing and Energy Conservation Bureau**
- **The Association of Commercial Banks of Latvia**

Funding of the Programme Implementation

YEAR	As approved in programme application, EUR		As in fact granted, EUR	
	2014. (1st phase)	2015. (2nd phase)	2014. (1st phase)	2015. (2nd phase)
EXPENSES – BY YEAR FOR 2 PHASES	**321’429**	**642’857**	**333’502**	**543’730**
EXPENSES – TOTAL FOR 2 PHASES	**964’286**		**877’232**	
DIFFERENCE	**- 87’054**			

LATENERGI

Preliminary Performance Indicators

Performance indicator	Planned results	Achieved results
	2014-2015	2014-2015
Scientific performance indicators		
1. Scientific publications:	80	103
number of original scientific articles (SCOPUS)(SNIP>1)	20	16 (3.1.)+2(4.1.)+1(4.2.)+2(4.3.)=**21**
number of original scientific articles (SCOPUS)(SNIP≤1)	25	1(1.)+ 2(2.)+24(3.1.)+8(4.1.)+1(4.2.)+ +3(4.3.) +3(5)+ +2(6.1.)=43
number of original scientific articles in conference proceedings SCOPUS and other conference proceedings included in international databases	35	10(1.)+11(2.)+8(3.1.)+2(5)+4(5)+2(6.2.)=37
number of peer-reviewed scientific monographs	1	1(2.)+1(3.1.)=1
2. In the framework of the programme:		
number of defended doctoral thesis	8	2(1.)+2(2)+1(3.1.)=5
number of defended master's thesis	46	7(1.)+12(2)+15(3.1.)+4(4.1.)+3(4.3.)+1(6.1.) =42
number of defended bachelor's thesis	13	10(3.1.)=10
3. Number of submitted and registered patents	3	0
4. Number of project applications for Horizon 2020	2	1(3.1.)=1
5. Number of submitted recommendations for policy makers	14	24(3.1.)+2(3.2.)=26

LATENERGI

Preliminary Performance Indicators

Performance indicator	Planned results 2014-2015	Achieved results 2014-2015
Performance indicators of the promotion of the programme		
1. Interactive events to promote the process and results of the programmee, Number of:		
conferences	20	2(1.)+ 21(2)+9(3.1.)+12(4.1.)+2(4.2.)+6(4.3.) +4(5.)+2(6.1.)=**58**
seminars	16	2(1.)+5(3.1.)=**7**
organized seminars	19	1(1.)+15(3.1.)+2(6.1.)=**18**
popular-science publications	4	1(1.)+13(3.1.)+2(4.1.)+1(6.1.)=**17**
public lectures	2	3(3.1.)=**3**
events at schools	15	1(4.3.)=**1**
exhibitions	6	1(1.)+2(3.1.)+2(4.1.)+3(4.2.)+1(4.3.)=**9**
2. Number of events held, which are related to the objectives of the project and involve awareness in creation of industry, state and local government agencies	19	3(3.1.)=**3**
3. Events for awareness of the general public. The number of involved target audiences through mass media	38	22(3.1.)+1(4.2)=**23**
4. Publicly available information on the project in the home pages of this project's executors	Reflected in the program home page	Regularly updated information in the homepage

LATENERGI

Preliminary Performance Indicators

Performance indicator	Planned results	Achieved results
	2014-2015	2014-2015
Economic performance indicators		
1. Amount of private funding attracted to the scientific institution in the framework of the programme, including:		
1.1. co-funding from the private sector to implement the projects of the programme		
1.2. income from commercializing the intellectual property created in the framework of the programme		
1.3. income from contractual jobs that are based on results and experience acquired in the framework of the programme	53 500 EUR and 1 unit	10 units and 10 240 EUR (1.)+2 units and 690 000 EUR (2.)+2 units and 85 090 EUR (3.1.)+1 unit and 16 000 EUR (5.)= **14** units and **801 330** EUR
2. Number of applied for, registered, and valid patents or plant varieties in the framework of the programme:		
in the territory of Latvia	3	3(3.1.)+1(4.1.)+1(6.1.)=**5**
abroad		2(4.1.)=**2**
3. Number of new technologies, methods, prototypes or services that have been elaborated in the framework of the programme and approbated in enterprises	9	14(3.1.)+3(4.1.)=**17**
4. Number of new technologies, methods, prototypes, products or services that have been submitted for implementation (signed contracts on transfer of intellectual property)	2	**0**
5. Number of recommendations submitted for industry	16	4(1.)+13(3.1.)=**17**

LATENERGI

Thank You!

http://latenergi.rtu.lv

Izglītības un zinātnes ministrija

Studiju un zinātnes administrācija