iWATERMAP
Regional Assessment: Latvia

Interreg Europe project iWATERMAP

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What is RIS3 in Latvia?

The smart specialisation strategy (RIS3) for Latvia was developed in 2014 to concentrate public R&D investment in programs that create future domestic capability and interregional comparative advantage. This conceptually new and complex strategy provides a balanced and complementary support tool kit to strengthen the innovation capacity of the Latvian economy. By measures of the Innovation Union Scoreboard, currently, Latvia is a modest innovator. Therefore, its RIS3 is a strategy of economic transformation towards higher added value and more efficient use of resources. The strategy aims at the restructuring of export by inducing change and growth in:

1) Production and export structure in traditional sectors of the economy;
2) Future growth of sectors in which exist or may be developed products and services with high added value;
3) Sectors with significant horizontal impact and contribution in the transformation of the national economy.

To induce change and growth in these sectors, the strategy has outlined seven investment priorities and defined five specialisation areas. The investment priorities are: 1) High added-value products; 2) Productive Innovation System; 3) Energy Efficiency; 4) Modern ICT; 5) Modern education; 6) The knowledge base; 7) Polycentric development. The knowledge specialisation areas are 1) Knowledge-intensive bio-economics; 2) Biomedicine, medical technologies, 3) Bio-pharmacy and biotechnologies; 4) Smart materials, technologies and engineering systems; smart energetics; 4) Information and communication technologies (ICT).

To concentrate public R&D investment in programs that create future domestic capability, the strategy has defined three core criteria for the allocation of public resources:
- Growth of S&T human capital (knowledge and networks), expressed as increased competence of individuals engaged in projects;
- Scientific excellence, characterised by the level of usefulness of new knowledge for future or present economic and societal challenges;
- Net economic value or today's financial and social benefits that projects will create.

In 2015 descriptions of ecosystems of each specialisation area were developed to introduce policymakers, the R&D sector, entrepreneurs and the general public with main actors who create and use the knowledge and by doing so generate the added value. Descriptions of ecosystems provide a context in which knowledge is created, including the scale of each knowledge area, core challenges, public funds and regulations.
In 2016, a three-level monitoring system was launched to ensure the monitoring of the public investment impact in R&D in the context of RIS3. By 2020, about one billion EUR has been invested in programs related to RIS3 goals to strengthen the competitiveness of the R&D sector, enhance entrepreneurship and increase the innovation capacity of the Latvian economy.

Players involved

The involved triple helix partners in the Water technology sector in Latvia

University and vocational school

Riga Technical University (Water research laboratory)
The University of Latvia,
Latvia University of Life Sciences and Technologies
RTU agency Olaine Technology colleague
Riga Building College
Daugavpils Construction Technical school
Ventspils Technical school

Non-profit research organisation

Institute for Environmental Solutions.
Latvian Institute of Aquatic Ecology.
Latvian State Forest Research Institute Silava.
U-Vitamins

Specific institutes established by the Government

Bior - Institute of Food Safety, Animal Health and Environment - national research centre.
LVĢMC - Latvian Environment, Geology and Meteorology Centre – collects critical data.

Cluster organisation and associations

Cleantech Latvia Cluster: 45 companies, 5 research & educational institutions,
Latvian water and wastewater works association: 29 municipal water services utilities and 12 private companies
Latvian Association of Heat, Gas and Water Technology Engineers

Companies not involved in clusters and associations of the water sector

Rigas water
Industrial sectors having the impact of wastewaters treated by municipal water service utilities:, (1) Diary producers, (2) Meat producers, (3) Beverages, (4) Chemical producers

Governmental bodies

Ministry of Education and Science – education & research funding.
Ministry of Economics, Investment and Development Agency (LIAA) – innovation funding.
Ministry of Environmental Protection and Regional Development – legislation related to infrastructure.
Ministry of Agriculture –drinking water legislation.
Health Inspectorate, Ministry of Health – supervising water quality.

Insights from the current interactions among the triple-helix stakeholder groups

During the first semesters of the project iWatermap, stakeholder meetings and interviews were conducted to establish the understanding about the existing interactions among the triple helix stakeholder groups and the challenges each see as the most critical for the development of the sector. Conclusions were drawn in the framework presented below.

Insights: Academia-Industry[1] interactions

Academia

- A limited number of successful collaboration projects with Industry.
- Research projects (Bachelor, Master and PhD) has little, or no establishment in real Industry need and problem-solving.
- *Research results are not, regularly presented to the Industry, lack of dialogue.*
- Weak/ limited relationships with industry stakeholders.

Industry

- The Industry is not actively involved in research projects, lacks essential information.
- Has no clear idea, how to access and collaborate with Academia.
- *Has limited knowledge and capacity to run research projects with Academia.*
- Clusters do not prioritise research and development projects with Academia.
- Lack of perspective and knowledge on how to transfer innovation into successful business models.

Insights: Academia - Government interactions

Academia

- New developments, promoting entrepreneurship at universities.
- There is no single strategy, many non-synchronized initiatives.
- Integration and synchronisation among different educational programs are needed.
- Passive in policymaking.

Government

- Lack of policy and stewardship to facilitate Academia and Industry discussion;
- Needs an accountable and traceable process to follow Academia supported research and development projects;
- No targeted, evidence-based information provided to Government to back-up specific policy action or funding needed for the sector;
- Not sufficient immersion in the real needs of the university.

[1] Stakeholders representing manufacturing enterprises and service provides in Water technology sector

Insights: Government – Industry interactions

Government

- Project-based Industry supporting initiatives lack long term strategy.
- Needs an accountable and traceable process to follow Industry supported projects.
- "Closer to industry": initiatives grounded in real industry needs are required – improved dialogue with stakeholders.
- Lack of perspective and strategy from the Government and Municipal companies regarding the needs and applicability of R&D.

Industry

- Is not informed about initiatives and opportunities offered by the Government;
- Too much focus on the infrastructure projects, instead of research and development;
- Local market focused; the needs and wants are mainly defined by Latvia industry;
- There is insufficient evidence-based information or/and specific requests from the water sector to the Government to formulate a particular action or funding reallocation;
- No dedicated contact point for Industry to search for information and support.

Activities of Academia

The main areas where Academia is active**: Groundwater, Wastewater, Water quality, Drinking water, Surface-water**. [2]

Publications relating to a specific topic:

Groundwater, Surface water, Drinking water, Water quality, Wastewater - 60 to 100 publications
The topics Flow cytometry (with 50 publications), in situ hybridisation (34), Coagulation (32), Activated carbon (22), Activated sludge (22), Ozonation (12), Floccalutation (7) are those who show more applied research.

Hypothesis – only a few topics are showing deep competence in technologies. «Top 10» research areas are showing more fundamental research, less orientation towards TRL 5-6 level.

[2] Elsevier's Scopus database, 53 therms used including 24 topics from https://www.wetsus.nl/research and additional defined by experts, period: 2010-2020, Vosviewer software.

Conclusion

The critical mass for a sustainable water technology ecosystem can be built if a symbiosis across multiple factors is ensured. The exposure to the impact and importance of water management in a sustainable future for our planet is crucial starting from the pre-school level where values are being established up to PhD level where technical knowledge is applied to solve the most significant challenges the sector is facing. International collaboration intertwined through all levels of education is a prerequisite for establishing a collaborative and open-minded approach in building the critical mass. Furthermore, the ability of the sector to grow and emerge as internationally competitive lies in the ability to discover and act upon the unique value proposition that the sector can provide. Moreover, it is a backbone element for organic growth of connection to international research networks.

It is essential to understand the niche competences of the sector to find the right fit of the Latvian Water technology sector in the scope of the European and global market. Furthermore, although Latvia is a country rich in water resources, water technology plays an essential role in the social challenges which Latvia -as well as many other countries- faces, e.g. in Agriculture, Water & Food, Key Technologies, Energy Transition and Sustainability.

A real success can be achieved if all the critical elements are aligned - both overarching and targeted policy instruments, critical funding synergies, education pipeline for talent development, enabling environment with research infrastructure and an application centre and demonstration site for fast-paced innovation development.

The leadership in creating the critical mass in the triple / quadruple helix model is fluid. In each growth cycle of the ecosystem, the leadership position among stakeholders is expected to change. It should be mentioned that the universities and research organisations are playing an increasingly more vital role in the quadruple helix model as they more often than not house the needed innovation potential and capacities to be the critical partner and facilitator in the innovation creation and overall sector development.

Furthermore, the spectrum of influence and control of the quadruple helix model is steered by the end-users (representing the market demand) on one side of the spectrum and the Government (policy framework and regulations) on the other.

Hence, the critical mass can be best built by having a cross-sectoral and cross-thematic collaboration among different national and international stakeholders in the pursuit of solving the significant challenges of society. The Government's role is to help bridge the gaps in the critical dimensions of any innovation ecosystem, including the water technology sector that is the subject of the subsequent roadmap for critical mass development in water technology sector.

Considering the information gathered from the interactions with the stakeholders, the main aims for:

Human Capital Development:

- Development of Vocational education and training program, supporting the needs of regional SMEs and municipal companies towards specialists in the water sector and change in professional qualification (in line with the idea of lifelong learning).
- Development of RTU Engineering Bachelor Studies 20+20 hour (full time) program in English language (ISCED 6-7, EQF 6-7) and international double degree Engineering Master Studies program in English language (ISCED 7, EQF 7) to support the growing need of water technology educated engineers.
- Teacher mobility and education abroad to raise qualification
- Awareness-raising about challenges in the water sector for youngsters

International Collaboration:

- Involvement of regional cluster organisations, to develop interregional water industry partnerships with cluster networks or industry-related consortiums as Smart Water Territories, with a focus to solve specific regional problems (prioritising wastewater sludge and biogas digestate treatment) and challenges for the water industry.
- Increasing the interaction among the strongest triple-helix stakeholders to create an island of excellence within the water technology sector that could be positioned from a unified branding concept perspective.

Critical Mass Development:

- Creation of a robust stakeholder group to purposely work with the policy developers to ensure the recognition and funding allocation for Water as one of the most critical resources and overarching thematic directions.
- Critical Mass Development is recommended to be led by the industry cluster organisation involvement to facilitate successful collaboration among triple-helix stakeholders. The main task of such organisation is to accelerate knowledge exchange that leads to new opportunity identification and innovative project development.
- Circular economy principles is an essential aspect to be emphasised in all seven RIS3 investment priorities and defined specialisation areas. Such an approach would facilitate cross-sectoral collaboration and identification of opportunities for international collaboration.