

Self-Assessment Critical Mass – North-East RDA

Romania has prepared in 2014-2015 a National Strategy for Smart Development Research and Innovation for 2014-2020. This document is the basis for the financial resources allocation from the National Plan for Research, Development and Innovation for 2015 – 2020 and the Operational Programs of Romania aiming at interventions corresponding to Thematic Objective 1 of the European Regional Development Fund “Research, Technological Development and Innovation” during the 2014-2020 period. Moreover, for programming the resources allocated to Regional Operational Program (ROP) 2014-2020, Axis 1 - Promotion of Technology Transfer, starting with 2015, a conditionality to all regions of Romania was to draw up a Regional Framework Document for Smart Specialization. The ROP allocates to North-East Region 44,4 mil EUR for the implementation of investments on the development of infrastructures and technological transfer services.

Approved in 2014 as part of the North-East Regional Development Plan 2014-2020, the North-East Regional Strategy for Research and Innovation through Smart Specialization (North-East RIS3) is designed as a necessary tool for delivering efficient (results / cost report) and effective (impact / objective report) investments on R&D and innovation.

According to the North-East RIS3, the region will try to improve the critical mass development through the well-developed industry-academia cooperation and looking out beyond the regional domain. NE region will concentrate funding sources on regionally important and emerging sectors (reflecting regional strengths and potential) or societal challenge to enhance critical mass. The region will use first ESIF funds allocated to RIS3 topic and experience of first start-ups developed in RIS3 sector.

The number of local units active in the energy sector at the North-East Region level was in 2014 by 103 firms, most of them operating in Iasi (33). In 2014, they achieved a turnover of RON 1,308 million, employing 3,800 employees. In the field of water distribution; sanitation, waste management, decontamination activities, the number of companies in the North-East Region in 2014, was 313, of which Bacau County had over one quarter of them (28.12%). The turnover in 2014 was RON 943 million and the number of employees was 16,100.

At the regional level, there are advanced educational and research programs classified in category A in the fields of Energy - Environment and Climate Change as a result of the ARACIS evaluation and the European Assessment of the EUA (www.uefiscdi.gov.ro) proven by the existence of a large number of publications in ISI quoted journals (only at TUIASI level, over the period 2010-2015, 200 papers were published in ISI-rated journals in the field of Environment). In the region there are full-time undergraduate, post-graduate (Master, Doctorate) and short-term (postgraduate) courses in the field of Science, Engineering and Environmental Management (Gheorghe Asachi Iasi Technical University, Al.I.Cuza Iasi , USAMV Iasi, V. Alecsandri Bacau). The region has a high international visibility regarding RDI activities carried out by universities and research institutes in the field of Environment - Energy - Climate Change (Technical

University Gheorghe Asachi Iasi, Al.I.Cuza Iasi, Petru Poni Iasi Macromolecular Chemistry Institute) with frequent collaborations with international research networks in the field.

The most important challenges that North-East Region faces as regards to Energy & Environment (water and waste management) domain are:

- Implementation of environmental protection legislation and the need to meet the environmental targets assumed by legislative packages at European level;
- Development of critical mass through well-developed cooperation between industry and university, with increased attention beyond the regional level. There are cases of collaboration between the university and SMEs in which cases of good practice have been identified. The region will concentrate funding sources on regionally important and emerging sectors (reflecting regional strengths and potential) or societal challenges to enhance critical mass;
- Regarding the development of human capital, it is quite difficult to set clear objectives, from the perspective of universities, because at present they are facing low legislative support, but they are a key player in the region for this objective;
- Developing cross-sectoral collaboration relationships (including within smart specialization areas) for better inclusion and representativeness of environmental and social equity issues (considering the social and economic performance of the region: employment rate, income / pers., productivity, etc.) and economic development;
- Appropriate and targeted use of EU funds would be desirable to facilitate compliance, not only about the construction/improvement of sewage treatment plants but also for the renewal/extension/ construction of collection systems;
- Increasing the capacity to access the funds available for economic, social and environmental development at the regional level for business development, business and product innovation;
- Insufficient development of environmental technologies and management tools;
- More than 60% of the NE region rural population is not connected to water-sewage services (wastewater treatment and purification, there are no alternatives implemented for recirculating wastewater treated in industry, agriculture and services) leading to health risks to the population, increasing pollution degree, etc. (the percentage of coverage of the regional water and sewerage infrastructure is below the national and European average); Thus the region wants to decrease the bureaucratic process for clients to connect to networks and encourage them to connect. The region wants to increase physical production (in terms of the necessary infrastructure) and implement automation in water-channel systems (existing water and sanitation systems are quite old, and modernization and use of new automation technologies are needed);
- The sludge from the wastewater treatment plants is treated as a waste and not processed, treated (to reduce or to eliminate potential decay and bad odours, as well to reduce the water content) and valorised (energetically or as a fertilizer);

In the context of the **iWATERMAP** project and following the steps that were presented in the methodology for the implementation (which shows five different stages, with varying levels of industry and academia cooperation, cross-border cooperation, cross-cluster fertilization and multidisciplinary research) , and analysing the regional situation, we identified the following 2 stages that the North-East region has taken:

- Initial steps in industry-academia cooperation. The development of the critical mass of innovation ecosystems has been achieved through cooperation between industry and education through the development of internships that students develop in industry private firms.
- Bottom-up Process - Identification of the organic needs through common reflection
- Entrepreneurial discovery process - EDP's were organized to discover innovative project ideas in 2016 & 2017.
- Regionally important sectors and emerging sectors reflecting regional strengths and potential - Niches partially identified.
- BSc and MSc students perform traineeship in RIS3 industries/companies - Specialized training in the region.
- The region participates as a partner in Interreg and H2020 projects.
- Establishing public-private partnerships - These partnership exist. Public and private companies are already developing projects together.
- The areas in innovation ecosystems refer to: infrastructure development for innovation and TT, human resources, capacity building (human resources and institutionalization) and horizontal priority 3: supporting clustering and internationalization initiatives.

The North-East RIS3 is the result of a bottom-up process, which involved extensive consultation with regional actors involved in priority areas of activity (where the region benefits from competitive and / or comparative advantages). This process of consultation was accompanied by an Entrepreneurial Discovery Process (EDP), materialized in a two-step project ideas portfolio:

- through entrepreneurial discovery workshops (9 EDP - 4 EDP in 2016 and 5 EDP in 2017);
- within the Project Development Laboratory (2 PDL, 1 in 2017 and 1 in 2018).

This process is an interactive one, aimed at:

- Identifying the directions of the regional development through smart specialization (niche sectors with significant competitive advantage and their major challenges)
- Identifying innovative development solutions (sectoral, cross-sectoral, local);

Between 1995 and 2019, several investment programs were carried out at national level:

- **MUDP* I&II (1995-1999)** Municipalities Utilities Development Programme
- **DANCEE Program (1993-2001)**
- **ISPA Programme (2001-2006)**
- **SAPARD Programme (2000-2006)**
- **SAMTID Program (2002-2004)**
- **National Rural Development Program (2007-2013)**
- **Sectoral Operational Program Environment (SOP ENV – 2007-2013)**
- **Regional Operational Program (2014-2020)**
- **National Program for Rural Development 2014 – 2020 (PNDR)**
- **POIM - Operational Program Large Infrastructure (2014-2020)**
- **National Plan of Research-Development and Innovation for the period 2015 – 2020**

The North-East Regional Development Agency projects:

- 2 international cooperation programs

- 18 external projects
- 2 national projects (de minimis help available: about € 1.75 mil)
- 37 people involved with different percentages (management & technical, communication, financial)
- Implementation period between 2016 and 2023 (duration between 2 and 5 years)
- Total budget for North-East RDA: approx. EUR 2,85 million (co-financing rate 0-50%)
- 4 new contracts to be signed (approximately 120,000 euros)

The participation in the Interreg and H2020 projects facilitates good cooperation with partner external regions and through the implementation of good practices that have been applied and can be used as a good model to follow.

Critical mass can be supported by ERDF by:

- Creation of Technology Transfer Centers
- Supporting spin-offs
- Infrastructure investments
- Investments in equipment for the preparation of the production of innovative products
- Modernization of production areas.

As concerning the technology transfer, in the North-East Region the main way it was achieved was by acquisition of local enterprises by foreign private companies that have upgraded the production processes, thus obtaining products with a higher quality, at advantageous prices and with increased productivity. However, this could only be done in the case of few enterprises, due to the lack of attractiveness of many of them. Technological development drawbacks are a major barrier for enterprises, especially for SMEs, which lack the financial resources needed for the innovation process.

In the next ten years scientific developments in Key Enabling Technologies will influence many different industrial branches e.g. agro-food, textiles & clothing, industrial automation, ICT, healthcare & well-being, **environment or energy**. In these industrial sectors many companies and especially SMEs are involved as traditional suppliers, start-ups or producers of high-tech products. In order to remain competitive on these markets, the companies have to integrate innovation in their commercial vision for future products.