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ECO-INNOVATIVENESS OF THE PODLASKIE VOIVODESHIP IN THE PERSPECTIVE OF EUROPEAN FUNDS 2021–2027

| Abstract

- *Goal* – The aim of the article is to emphasise the role that eco-innovations play in today's turbulent environment and the possibility of financing eco-innovative projects within the framework of EU support because financial barriers are one of the key limitations in creating the level of innovation in the region.
- *Research methodology* – The article contains a review of literature and news in the field of (eco)innovation and EU support in the 2021–2027 perspective and an analysis of the region's eco-innovation based on selected rankings and good practices.
- *Score/results* – The analysis shows the role that eco-innovations play in the case of sustainable development assumptions, they turn out to be an idea for a better tomorrow. However, it should be remembered that without adequate support in terms of financial support, many innovative ideas would not have a chance to be implemented, which emphasises the essence and importance of EU funds.
- *Originality/value* – The literature review and the analysis highlighted the potential of eco-innovation in the Podlaskie Voivodeship region. Unfortunately, the importance of EU support in terms of the possibilities of financing eco-innovative projects from this source was additionally emphasised.

| **Keywords:** innovation, eco-innovation, sustainable growth, European funds, Podlaskie Voivodeship.

1. Introduction

Eco-innovations can be considered one of the key elements of the modern sustainable development policy, and their importance is constantly growing, adequately to the growing challenges related to climate change, environmental degradation and the indisputable need for rational management of natural resources.

The source of financing is an extremely important determinant of eco-innovation capacity. The Podlaskie Voivodeship can boast of eco-innovative potential. Unfortunately, this ability is burdened with many factors. One of them is financing.

For this reason, this article aims to highlight the opportunity that has been included in the offer of structural funds from the 2021–2027 perspective, intended for financing the implementation of eco-innovative projects.

2. Innovation and eco-innovation

In the face of the current socio-economic changes in the world, innovations seem to be a kind of “idea for a better tomorrow”. Constantly advancing globalisation processes, increasing competition and inevitable degradation of the natural environment force countries, economies and societies to be constantly ready to take advantage of emerging opportunities, but also to protect themselves from a multitude of threats.

The essence of innovation seems to be omnipresent in probably every area of life. The number of approaches to understanding this issue leads to a wide range of attempts to explain it. In Table 1, the authors tried to compile the most accurate definitions of innovation in their opinion.

We can dare to say that innovations, owing to their ubiquity in virtually all areas of life, mean the introduction of something new, a certain breakthrough, a solution to emerging problems and limitations.

Innovations in response to environmental problems such as climate change, desertification, deforestation, soil erosion or water and air pollution are also emerging in this field, in the form of eco-innovations.

Eco-innovation concerns all forms of innovation and modernisation aimed at making significant and visible progress towards the goal of sustainable development, either by reducing environmental impact or by achieving greater efficiency and responsibility in the use of resources, including energy. Like the innovation

aspect in general, eco-innovation is an evolving concept and must therefore be able to respond to change [www 2].

Table 1. Review of the selected definitions of the concept of innovation

Innovation includes:
introducing a new product, modifying the existing ones, introducing a new production method, obtaining new sources and opportunities, using previously untouched areas and markets or new ways of organising business.
the introduction of something new, a newly introduced thing, but also a change consisting in the introduction of something new, as well as a novelty, innovation or reform.
bring new or significantly improved products or processes to market and organise production based on new ideas that serve the innovators' goals better than the old ones.
introduction of new products, processes and methods of conduct in the economic and social spheres for wide use.
a series of activities leading to the creation of new or improved products, technological processes or organisational systems.

Source: the authors' own elaboration on the basis: Schumpeter, 1932: 66; *Słownik...*, 1988, I: 792; Harman 1971: 151–169; Janasz, Koziół, 2007: 13; Allen, 1966: 7; www 1, entry: *Innowacja*.

Ecological innovation can be understood as an innovation that tries to prevent or reduce destructive and degrading human impacts. Moreover, such innovations restore environmental damage to some extent and monitor environmental problems. Environmental innovation spans many areas of expertise and many industrial sectors [*Drivers...*, 2001: 11].

This type of innovation also means all modifications in processes and products that reduce their negative impact on the environment [*ibidem*].

It is worth adding that ecological innovations are a change in consumption and production patterns and the development of technologies, products and services that reduce environmental impact. Business and innovation work together to create sustainable solutions that make better use of valuable resources and reduce the negative impact of the economy on the environment [*Eco-Innovation...*]

It can be openly stated that the definitions of the concept of eco-innovation are diverse and depend on the context and the research perspective undertaken. OECD representatives define eco-innovation as any innovation that reduces the negative impact on the environment or optimises the use of natural resources [*Eco-Innovation in Industry...*, 27].

Accordingly, this innovation consists of new or modified processes, techniques and technologies, systems and products that avoid harmful effects on the environment [Horbach, 2008: 163].

Yet another view adds that eco-innovation can include technological, organisational and social innovations that support sustainable development [Carrillo-Hermosilla, Rio, Totti, 2010: 1075].

The above explanations confirm the fact that innovation and increasingly eco-innovation are present in an increasing area of modern life. What is more, it can be said that they largely have a positive impact on the entire environment. Unfortunately, they are determined by many different factors, among which financing is one of the most important.

3. Innovation and eco-innovation in the EU support offer for 2021–2027

Financing the activities of business entities – generally speaking – means raising capital by companies, which is a reflection of the source of financing assets. Quite often, however, we come across a slightly more elaborate understanding of financing, through which we can understand not only raising capital, but also all the decisions of managers that they make in the process of establishing and living a company [Janasz, 2004: 93].

In addition to credit, leasing, venture capital, crowdfunding, funds offered under EU funds are an important source of financing. As we know, the European Union is a community of countries at different levels of development and facing many different challenges. Many of these challenges are common to all EU members. Thanks to the European Funds, socio-economic development, competitiveness of individual economies are strengthened, the fight against unemployment and inequalities in the development of individual regions is undertaken, or the implementation of the assumptions of sustainable development and care for the natural environment. Poland is currently a beneficiary of the fourth perspective of European Funds. So far, the Polish economy and society have benefited from the EU budgets for the years: 2000–2006 (joining the EU in 2004), 2007–2013 and 2014–2020. In the new distribution of EU funds prepared for the period 2021–2027 for the cohesion policy, Poland and its individual regions have over EUR 76 billion at their disposal. They come from the following EU funds: [*O Funduszach...*] the European Regional Development Fund:

- European Social Fund +,
- Cohesion Fund,
- the European Maritime, Fisheries and Aquaculture Fund,
- Just Transition Fund.

Poland is to benefit from the following programs, which will be implemented in the years 2021–2027 and – as can be seen – will be partly aimed at financing eco-innovative projects [*Fundusze...*]:

- European Funds for Infrastructure, Climate, Environment: investments in the Polish energy security, development of renewable energy sources, environmental protection, safe and ecological transport. The money is also to be allocated to the development of health care, as well as the development of culture and the protection of cultural heritage. The allocated budget amounts to EUR 487.62 billion;
- European Funds for Modern Economy: investments in research and development projects, innovative projects and projects increasing the competitiveness of our economy. The program is to be used mainly by entrepreneurs and the science sector. The allocated budget amounts to EUR 159.53 billion;
- European Funds for Social Development: owing to the money from the programme, the situation of people in the changing labour market is to be improved, and activities aimed at the development of education and health services are also planned. Parents in caring for children and people with special needs are to be supported. The allocated budget amounts to EUR 80.84 billion;
- European Funds for Digital Development: the programme accelerates the journey into the digital future. The aim of the program is to increase access to ultra-fast broadband Internet and the development of e-services. Cyber-security is to be strengthened and the digital competences of the society are to be raised. The allocated budget amounts to EUR 39.56 billion;
- European Funds for Eastern Poland: additional support is to be provided to Eastern Poland. The program is to benefit 5 voivodeships: Lubelskie, Podlaskie, Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie, and part of the Mazowieckie Voivodeship. The aim of the program is to facilitate the development of business and transport. In addition, investments in energy networks, environmental protection and tourism are also assumed. The allocated budget amounts to EUR 52.89 billion;

- European Funds for Food Aid: the money is to be used to support the poorest and most needy. The allocated budget amounts to EUR 10.32 billion;
- European Funds for Fisheries: the aim is to support the Common Fisheries Policy, the EU's maritime policy, sustainable fisheries and the conservation of marine biological resources. In addition, investments in food security and the development of a sustainable blue economy, activities for the safety and cleanliness of seas and oceans were assumed. The effectiveness of international ocean governance is to be improved. The allocated budget amounts to EUR 9.89 billion;
- European Funds for Migration, Borders and Security: it consists of 3 programmes: the Asylum, Migration and Integration Fund (AMIF), the Instrument for Financial Support for Border Management and Visa Policy under the Integrated Border Management Fund (BMVI) and the Internal Security Fund (ISF). In total, the allocated budget amounts to almost €10.75 billion;
- Technical Assistance for European Funds: activities strengthening the potential of beneficiaries of European Funds and coordination projects, e.g. in the area of European Funds, are to be implemented. The allocated budget amounts to EUR 10.75 billion;
- 16 regional programmes: according to which each voivodeship has its own programme to finance investments in its area. Thanks to them, regions will be able to support entrepreneurship, access to education, health care and culture. What is more, thanks to these programs, they are to take care of social infrastructure and the environment. In addition, the funds are also to support digital technologies, energy and transport. The allocated budget amounts to EUR 668.22 billion;
- Interreg (European Territorial Cooperation) programmes: the programmes are assumed to be international in nature and are intended to support cultural exchange, scientific, business and local government cooperation across national borders. The allocated budget amounts to €9.46 billion.

Bearing in mind the purpose of the article, information about regional programs, it is worth paying some attention to the financing offer of ecological innovations implemented in the Podlaskie Voivodeship.

As in previous years, entrepreneurs, local governments, non-governmental organisations, social economy entities, as well as residents of the voivodeship can apply for funding under the program.

The European Funds Programme for the Podlaskie Voivodeship has been divided into parts, to which specific amounts from EU funds have been assigned. Namely [*Poznaj...*]:

1. Research and Innovation, for which the amount of EUR 166.8 million has been allocated. The programme includes support for the development of entrepreneurship, research and development, e-services, cybersecurity, promotion of the Podlaskie economy, consulting services for companies and assistance for newly established enterprises;
2. An environmentally friendly region, with a budget of 359 million euros. It provides for support for energy efficiency, the development of renewable energy sources (RES), measures to adapt to climate change, the transformation of the regional economy towards a circular economy, support for water and sewage management or activities in the field of blue-green infrastructure;
3. A better-connected region with a budget of €147.1 million. The programme includes measures to increase regional mobility, in particular through the construction and reconstruction of provincial roads, the development of pedestrian and bicycle routes, as well as the development of public passenger transport;
4. A high-quality social space with a support amount of €127.3 million. This programme mainly includes investments in pre-school and educational, social, health and cultural heritage protection infrastructure. Investments aimed at the development of tourism based on natural values, cultural heritage and local tourist products are also to be supported;
5. Sustainable territorial development with a budget of EUR 50 million – where support will be implemented using territorial instruments such as: Integrated Territorial Investments (ITI), Community-Led Local Development (CLLD) and other territorial instruments (IIT), in particular revitalisation programmes and strategic partnerships. The programme provides, among other things, for the protection, development and promotion of public tourist values and services, cultural heritage and ecotourism outside Natura 2000 sites;
6. Sustainable urban mobility, for which €40 million has been allocated. In this case, the aid is to be directed, among others, to the purchase and modernisation of low- and zero-emission rolling stock for public transport, equipping roads or streets with infrastructure to support this transport (such as bays, ramps, exits, loops) or the implementation of intelligent transport systems;

7. Funds for employment and adult education, for which €130 million has been allocated. It was assumed that the support will be allocated to social inclusion through the activation of the unemployed, young people, as well as to training or activities in the field of medical rehabilitation to facilitate the return to work;
8. Funds for education and social inclusion with a budget of €186.9 million. As part of the programme, support should focus on supporting pre-school education, vocational training, activation of people at risk of poverty and social exclusion, assistance to people with disabilities, creation of nursing homes, implementation of health programmes;
9. Funds for local development, for which the amount of support in the amount of EUR 30 million was allocated. Here, assistance is to be directed to local communities in the form of CLLD, in particular by supporting pre-school education, small schools of general education, integration of the local community and increasing access to care services;
10. Supporting renewable energy for local communities with a budget of €10 million. The program is intended to include the production of energy and heat from renewable sources for local communities and for the residents' own needs. Projects involving the installation of renewable energy sources on residential buildings are to be implemented.

To sum up, the Podlaskie Voivodeship, as part of the support from European funds in the 2021–2027 perspective, may try to increase its eco-innovation capacity by supporting energy efficiency, development of renewable energy sources (RES), measures to adapt to climate change, transformation of the regional economy towards a circular economy, support for water and sewage management or activities in the field of blue-green infrastructure. Importantly, innovative projects, aimed at the development of tourism based on natural values, cultural heritage and local tourist products, but also on the protection, development and promotion of public tourist values and services, cultural heritage and ecotourism outside Natura 2000 areas, can also be financed. The area of possibilities of financing the purchase and modernization of low-emission and zero-emission rolling stock for public transport or in supporting renewable energy for the needs of local communities, through the production of energy and heat from renewable sources for local communities and for the own needs of residents is also noteworthy.

4. Eco-innovation of the Podlaskie Voivodeship

It can be bold to say that historical events and geographical location can have an impact on the level of socio-economic development of the Podlasie region. This fact also has an impact on the level of determinants of this development, which can be considered the innovation of the region.

Nevertheless, it should be emphasised that Podlasie is one of the ecologically cleanest provinces in Poland, known for its exceptional biodiversity. The region is characterised by a low degree of industrialisation and a high proportion of rural areas and protected areas. This creates ideal conditions for the implementation of eco-innovative solutions that can contribute to both the protection of natural resources and economic development.

Therefore, eco-innovation in this case can be defined as the creation and implementation of new technologies and organisational solutions that are aimed at minimising the negative impact on the natural environment.

Ecological innovations in Podlasie are activities and solutions that aim to implement the assumptions of sustainable development in the region by supporting the development of the local economy, while minimising the negative impact on the environment. The Podlaskie Voivodeship, with its unique natural values, such as the Białowieża Forest, the Biebrza National Park or numerous protected areas, is becoming a place particularly conducive to the development of ecological innovations.

As far as the level of eco-innovation compared to the rest of the country is concerned, the ranking of the Millennium Index – Regional Innovation Potential, prepared by Bank Millennium, seems to be noteworthy. The podium, invariably since 2016, when the ranking was created, has been occupied by the following voivodeships: Małopolskie and Dolnośląskie. On the positive side, the regional innovation ranking is closed by the Warmian-Masurian Voivodeship, the Świętokrzyskie Voivodeship and the Lubuskie Voivodeship. The survey includes five categories which, according to experts, have the greatest impact on the innovation potential of regions. These are: labour productivity, expenditure on research and development, post-secondary education, number of people working in the R + D sector, number of patents issued. In the most recent ranking, the Podlaskie Voivodeship was ranked 13th [*Ranking...*].

Among the leaders of innovation in the Podlaskie Voivodeship, which can boast a strong position against the competition in the country and abroad, there

are such companies as Mlekovita, British-American Tobacco Polska, Edpol food & Innovation, Pronar, Malow and many others.

As far as eco-innovation is concerned, according to the eco-innovation index, developed by Bank Millennium in cooperation with substantive partners: the Patent Office of the Republic of Poland, the AGH University of Science and Technology in Krakow and the Warsaw School of Economics, Pomerania, Małopolska and Mazovia – these are the three voivodeships where the involvement in green transformation is the greatest [*Jak wygląda...*].

Taking into account the scope of eco-innovative activities in the Podlaskie Voivodeship, it can be concluded that the key areas of ecological innovation in Podlaskie include:

- green building and the introduction of energy-efficient building technologies, such as passive houses, which minimise energy consumption and the use of local, natural building materials;
- eco-tourism, more specifically the development of responsible tourism, which takes into account the protection of natural ecosystems and the natural heritage of the region. Eco-educational programs and sustainable forms of recreation, such as hiking, cycling or canoeing, attract more and more environmentally conscious tourists;
- renewable energy sources, i.e. investments in solar, wind and biomass energy, which are crucial for the region, because the Podlaskie Voivodeship focuses on decentralisation and sustainable energy development, especially in rural areas;
- waste management, eco-innovation in recycling, circular economies and composting systems. It is worth noting here that Podlaskie places emphasis on minimising the amount of waste that ends up in (often illegal) landfills and transforming waste into resources, e.g. energy;
- green technologies in industry. Local economic operators are innovating to reduce CO₂ emissions, water consumption and environmental pollution. It is worth noting that at the same time it is introducing energy-efficient production processes;
- sustainable agriculture, and more specifically the introduction of modern agricultural technologies that are environmentally friendly, e.g. organic farming, reduction of chemicals, or the so-called regenerative agriculture, which protects biodiversity and improves soil quality.

These activities are supported by both EU and national programmes that promote sustainable development and innovation at the regional level. It is safe

to say that thanks to this, the Podlaskie Voivodeship can become a model for other regions in terms of combining economic development with environmental protection.

5. Conclusion

The eco-innovation of the Podlaskie Voivodeship is a complex process that requires the cooperation of many entities and the use of available financial and technological resources. The region has great potential for further development in the area of sustainable agriculture, renewable energy sources and eco-tourism. Support from regional and EU policy allows to overcome the barriers faced by this region. In the long run, Podlasie can become an exemplary example of sustainable development based on eco-innovations, contributing to the protection of the natural environment and increasing the quality of life of its residents.

Despite numerous advantages, the Podlaskie Voivodeship is facing a number of challenges that may inhibit the further development of eco-innovation. One of the key barriers is limited financial resources. Bearing in mind the offer of EU support, it seems comforting that entities that want to implement eco-innovative activities and initiatives have a chance to obtain financial support for this under European funds.

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