

## **BIOECONOMY AS A DIRECTION OF THE DEVELOPMENT OF NATURAL VALUABLE AREAS IN LUBLIN VOIVODESHIP (POLAND)**

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**Abstract.** The aim of the study is to indicate the main factors and barriers to the development of the enterprises which represent the bioeconomy sector and operate in valuable natural areas. Taking into consideration that the bioeconomy is a key and a potential sector, which should be developed in the environmentally valuable areas, the study identifies the most important factors for the development of the studied sector and desirable forms of supporting that activity. The paper presents the results of the research on a sample of 48 enterprises representing the bioeconomy sector located in 30 municipalities with the highest environmental valuables in Lublin voivodeship (Poland). The study shows that entrepreneurs who represent the bioeconomy sector perceived local ecological conditions as a key and a positive factor of company's development. The results are presented in a form of selected elements of descriptive statistics. The paper was prepared within the research project No 2011/01/D/HS4/03927 entitled "Environmental Conditions and Factors of Development of the Economic Functions of Valuable Natural Areas of Lublin Voivodeship" funded by the National Science Centre.

**Keywords:** bioeconomy, natural resources, regional policy

**JEL code:** Q01, Q56, R11

### Introduction

Lublin Voivodeship is a peripheral region. It results, among others, from such reasons as geographical location or economic and socio-demographic criteria (Miszczuk A., 2013). Due to its peripherality, this region demonstrates the existence of many development barriers, including economic, social, demographic and infrastructural ones. Generally, unfavourable situation in terms of development conditions makes local and regional authorities look for innovative directions of the regional development. These directions should stimulate development processes of the region on the basis of more comprehensive use of internal resources of the region as well as external factors of the development. Such approach to regional development policy is compatible with the concept of neo-endogenous development.

An important element of the concept of neo-endogenous development is the assertion that the socio-economic welfare can be achieved by restructuring public intervention. It is important to move away from policies focused on sectors and to develop policies oriented territorially (Ray Ch., 2006). The essence of neo-endogenous approach is the simultaneous involvement of various local entities that fulfil key functions to

stimulate and coordinate local development processes. There is also a necessity of involvement of external institutions supporting bottom-up development processes (Michalewska-Pawlak M., 2013).

The studied region is located in the Central-Eastern part of Poland, bordering with Ukraine and Belarus. In the region, there are important communication routes linking Western Europe with those countries. Lublin Voivodeship is one of the least developed, peripheral regions of Poland and the European Union. This condition is affected by a set of many interrelated negative development conditions. It is an agricultural region. It is evidenced by a significant share of the primary sector of economy in the structure of regional gross value added (6.16 % in 2013) and its important role in creating jobs (38.5 % of employees in 2013). Disadvantageous situation of the regional economy in comparison with the country is determined structurally, primarily because of the two phenomena. First of them is a significant share of agriculture in the regional economy, and the second one is low labour productivity in this sector. At the same time, the region is one of the least populated and urbanized regions in Poland. The demographic

situation is unfavourable and is steadily declining as a result of a low number of births and migration outflow (Strategia rozwoju..., 2014, Rocznik Statystyczny..., 2015). The region is attractive in terms of natural and landscape values. In Lublin Voivodeship, resources and values of natural environment could play an important role in the development processes of the region. In Lublin Voivodeship, like in other peripheral regions, natural resources are an important but not fully exploited source of socio-economic development.

The concept of smart specialization gives new insights into the development processes, which can be used in the case of regions with a lower level and dynamics of development processes. Smart specialisation is an industrial and innovation framework for regional economies that aims to illustrate how public policies, framework conditions but especially R&D and innovation investment policies can influence economic, scientific and technological specialisation of a region and consequently its productivity, competitiveness and economic growth path (Innovation-driven growth..., 2013). The instruments of the concept of smart specialization are Regional Research and Innovation Strategies for Smart Specialisation (RIS3 strategies). RIS3 strategies focus policy support and investments on key regional priorities, challenges and needs for knowledge-based development and are built on each region's strengths, competitive advantages and potential for excellence. Their priority is to get the stakeholders fully involved and to encourage innovation and experimentation. RIS3 are the elements of the EU Cohesion Policy investment for 2014-2020 and a tool of Europe 2020 growth strategy (National/regional innovation strategies..., 2014).

The basic assumption of the concept of smart specialization is to increase innovativeness and competitiveness of the regions on the basis of their endogenous potential and sectors already operating in them. Specific resources of the

region determine the uniqueness of the regional space and should be seen as the basis for endogenous development. Smart specialization also fits in with the concept of economic development associated with the promotion of natural products or nature handicrafts (Slodowa-Helma M., 2013).

The bioeconomy sector creates large capacity to implement smart specialization in the peripheral regions. These regions usually have a significant natural potential, not deeply transformed by the anthropogenic pressure. This potential can be used for the development of both traditional and highly innovative industries utilizing natural resources.

The bioeconomy sector is an essential part of natural valuable areas economies. Its development can become an important factor for sustainable development of these areas. However, it is imperative to provide sustainable management of natural valuable areas' resources. It should also be indicated that the process of creating economic value based on the use of environmental resources must incorporate knowledge and innovation (Pessoa A., Rui Silva M., 2009). It must be stressed also that valuable natural areas can create favourable conditions for the development of this sector offering the availability of valuable natural resources. Their use depends on the activity and innovativeness of enterprises and support provided by local authorities. Local natural heritage may constitute the basis for the formation of the cooperation of local entities in the planning and implementation of local strategies for sustainable development. Proposals of innovative directions for using local natural resources and values in the processes of local development should constitute the core of these strategies.

The bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed,

bio-based products and bioenergy. The bioeconomy includes the sectors of agriculture, forestry, fishery, food and pulp and paper production as well as parts of chemical, biotechnological and energy industries. Its sectors and industries have strong innovation potential due to their use of a wide range of sciences (Communication from the Commission..., 2012). In a broader sense, the concept of the bio-economy includes practically all sectors and related services that produce, process or use biological resources in any form. Their rational use can be a significant source of value creation in activities of enterprises, especially micro and small ones (Chylek E., Rzepecka M., 2011).

It should be noticed that the bioeconomy in "Lubelskie Regional Innovation Strategy till 2020" was chosen as the key, smart specialization of the region (Janczarek P., 2013). Due to that it is justified to conduct studies on the developmental determinants of the bioeconomy sector in Lublin Voivodeship. It is particularly important to recognize conditions for the development of the bioeconomy sector offered by valuable natural areas.

The aim of the study is thus to indicate the main factors and barriers to the development of the enterprises which represent the bioeconomy sector operating in valuable natural areas. Taking into consideration that the bioeconomy is a key and a potential sector, which should be developed in the environmentally valuable areas, the study identifies the most important factors for the development of the studied sector and desirable forms of supporting that activity.

The study verifies the hypothesis that in the case of enterprises located in natural valuable areas and representing the bioeconomy sector local environmental determinants create a key and a positive factor of their development. The surveyed enterprises, which are located in a peripheral region, recognise many external barriers created by the environment of their activity but the ecological sphere is perceived

positively – as a factor in enterprises' development. Barriers perceived by the entrepreneurs generate the need to support the enterprises. The need to support this sector by local authorities as well as the need for wider inclusion of these entities into local processes of sustainable development can be observed in the surveyed areas.

The study area consisted of 30 municipalities with the highest environmental valuables in Lublin voivodeship, designated under the synthetic index developed by D. Guzal-Dec (2013) in the study of ecologically valuable rural and semi-urban areas of Lublin voivodeship. In each of the communes, on the basis of the REGON number, 5 enterprises located in rural areas were selected for testing, and the sample reflected the sectoral structure of business entities in the commune and the highest level of employment. Diagnostic survey was applied using a questionnaire interview. Interviews with owners (or managers) of enterprises were carried out in the period of November-December, 2013. The research material consisted of 150 questionnaire interviews. From the group of 150 enterprises, 48 were selected to represent entities of the bioeconomy sector on the basis of the resource criterion which included all entities of production area that use biological resources. The results are presented in a form of selected elements of descriptive statistics and graphic form using tables and graphs. The report was prepared as part of the research project No 2011/01/D/HS4/03927 entitled: "Environmental Conditions and Factors of Development of the Economic Functions of Valuable Natural Areas of Lublin Voivodeship" funded by the National Science Centre.

## **Research results and discussion**

### **1. Characteristics of the enterprises in the bioeconomy sector**

Enterprises in the bioeconomy sector are characterized by a relatively long market

presence and most of them were established in the first years of transition. More than half of the entities - 56.3% were established in the period from 1990 to 2000, 31.3 % of them between 2001 and 2012, and 10.3 % after the year 2012. With respect to the staff headcount criterion of the analysed entities, the sample consisted mostly of microenterprises (64.6%). The share of small enterprises amounted to 20.8 % and medium ones to 14.6 %.

All of the analysed enterprises represented the private sector. More than half (52.1 %) of the enterprises had the status of a family business. The most frequently represented bioeconomy sector was manufacturing, including food and wood industry (they accounted for 27.1 % and 25.0 % of the sample respectively). A slightly smaller share of the sample (41.7 %) was recorded in the first sector of the economy, which included such industries as agriculture, forestry, hunting and fishing. Other entities represented the energy production sector (2.1 %) and others (4.1 %).

Most of the enterprises in the bioeconomy sector gained and maintained its supra-local market shares. Regional markets were served by 16.7% of enterprises, whereas domestic and foreign markets by 54.2% of entities. The economic and financial situation of the organization was assessed as good and very good by the vast majority of entrepreneurs (64.6%). That group also declared that the company had developed its business activities for the last three years.

## **2. Factors and barriers affecting the development of enterprises**

In the light of the study, it can be concluded that entrepreneurs recognize the complexity of conditions for the development of economic activities. A large group of them (39.6 %) perceived numerous factors as well as barriers that affect business development. A fairly large group (25.0 %) could not see either factors or barriers. Development factors were perceived by a much larger group than development barriers (22.9 % and 12.5 %, respectively) (Table 1).

Table 1

**Number and percentage of entrepreneurs perceiving the existence of situations identified by specific combination of factors and barriers of development**

<b>Situation</b>	<b>Factors</b>	<b>Barriers</b>	<b>Number of indications</b>	
			<b>number</b>	<b>percentage</b>
<b>1.</b>	+	+	19	39.6
<b>2.</b>	-	-	12	25.0
<b>3.</b>	+	-	11	22.9
<b>4.</b>	-	+	6	12.5
<b>5.</b>	<b>Total</b>		<b>48</b>	<b>100.0</b>

**Source: author's calculations based on empirical research**

In open-ended questionnaires about factors stimulating the development of the enterprises, entrepreneurs primarily pointed out those embedded in the external environment of the organization. The most important were: availability of local resources, dynamic development of the market and advantageous geographic location specified by the availability of

transport routes and proximity to urban centres. The most frequently indicated internal conditions favouring the development of the organizations were: lasting relationships with customers, company reputation, high quality of products, experience in the business. Therefore, it could be concluded that ecological considerations are

Table 2

**Factors affecting the development of economic activities perceived by the surveyed entrepreneurs**

No	Factors	Number of indications	
		number	percentage
1.	Location - the availability of local resources	11	25.0
2.	Dynamic development of the market	8	18.2
3.	Lasting relationships with customers	4	9.1
4.	Location - transport accessibility, proximity to urban centres	3	6.8
5.	Company reputation	3	6.8
6.	High quality of products	3	6.8
7.	Experience in the business	3	6.8
8.	Low intensity of competition	3	6.8
9.	Availability of EU funds	2	4.5
10.	Others	4	9.1
11.	Total	44	100.0

**Source: author's calculations based on empirical research**

A strong market competition was indicated by the entrepreneurs as one of the main barriers to economic activities. This barrier should be associated with a high dynamics of the market development, as perceived by the entrepreneurs. Other, less frequently perceived barriers were: high costs of economic activities, difficulties arising from legal provisions on economic activities and insufficient level of the development of technical infrastructure.

The respondents indicated fewer barriers than drivers of economic activities. It can be stated that most of these barriers did not concern a regional business environment. Such barriers as unsatisfactory state of the development of technical infrastructure and a low demand were mainly pointed out among regional barriers while a peripheral character of the region and the requirements of environmental protection were less frequently pointed out among the listed barriers (Table 3).

**Barriers affecting development of economic activities perceived  
 by the surveyed entrepreneurs**

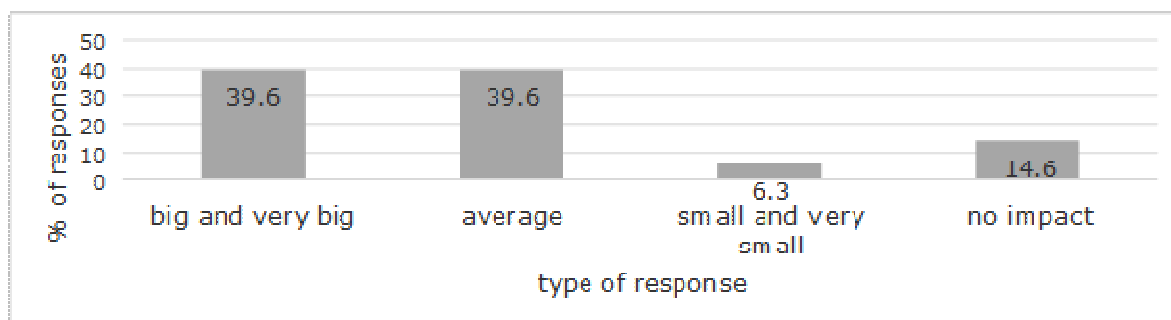
No.	Barriers	Number of indications	
		number	percentage
1.	Intense competition	9	24.3
2.	High cost of economic activity, high investment costs	5	13.5
3.	Complicated and frequently changing legal provisions on economic activity	4	10.8
4.	Poor provision of infrastructure	4	10.8
5.	A high level of fiscal burdens	3	8.1
6.	Insufficient demand	3	8.1
7.	Unfavourable agricultural policy, the situation in the agricultural markets	2	5.4
8.	Peripheral location of the region	2	5.4
9.	Standards and requirements of environmental protection	2	5.4
10.	Others	3	8.1
11.	<b>Total</b>	<b>37</b>	<b>100.0</b>

*Source: author's calculations based on empirical research*

Taking into account the issues of local conditions of entrepreneurship in natural valuable areas, it should be noted that a large group of entrepreneurs estimated (60.4 %) that the commune offers favourable conditions for the functioning and development of enterprises. Quite a large group (33.3 %) of the respondents could not assess local conditions, while only a few (6.3 %) considered them as negative. Such assessments may arise inter alia from the fact that almost half of the respondents (48.9 %) declared using variety of opportunities to run and

develop economic activity arising from the location in the commune with the high environmental valuables.

Resources and values of the natural environment turned out to be an important element of the business environment affecting on-going activity of the enterprises. The majority (79.2 %) of the representatives of these entities assessed the impact of the natural environment on the company as ranging from very large to medium (Figure 1).



*Source: author's calculations based on empirical research*

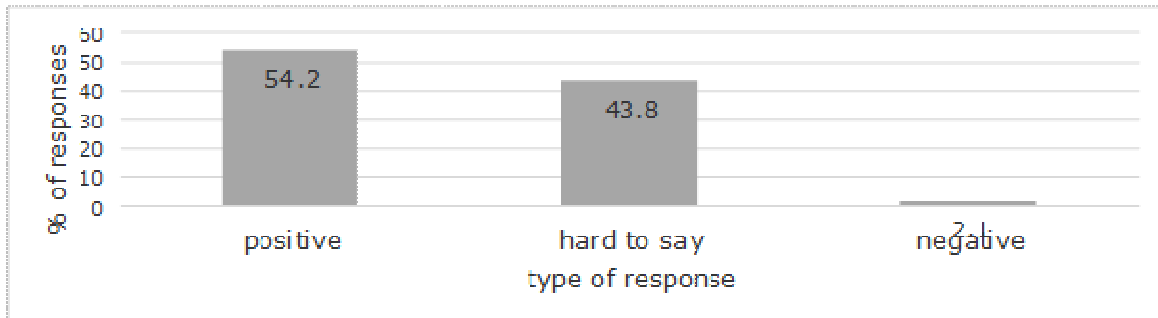
**Fig. 1. Assessment of the impact of environmental forces of the commune on the on-going activities of the enterprise by the surveyed entrepreneurs (% of responses)**

Not only did the surveyed entrepreneurs perceive a rather strong impact of resources and

values of natural environment of the commune on the on-going activity of the enterprise but

they also assessed it as positive. More than half (54.2 %) of the surveyed entrepreneurs stated that the natural environment of the commune

has a positive impact on the current activity of the enterprise (Figure 2).



Source: author's calculations based on empirical research

Fig. 2. **Assessment of the environmental impact of municipalities on the on-going activities of the enterprise according to the surveyed enterprises (% of responses)**

### **Factors of the development of enterprises and desirable forms of support**

Entrepreneurs saw the biggest opportunities for strengthening their competitive position in the characteristics of enterprise's products and services. In the respondents' opinion, particularly important elements of product characteristics with the competing potential were: innovativeness, meeting customers' requirements, high quality and competitive price. The possibility of strengthening the competitive position in the field of good knowledge of the market, specialized knowledge and skills, and lasting relationships with customers were

assessed by the respondents as above average. Opportunities to strengthen the competitive position of enterprises in the dimension of ecological conditions were assessed by the surveyed entrepreneurs at an average level (but at a lower level than the above-mentioned factors). These factors included enterprises' location in natural valuable areas and pro-ecological activities. Slightly more important, in the opinion of entrepreneurs, was their knowledge of how to seize opportunities and adapt to the limitations resulting from the operation in environmentally valuable areas (Table 4).

**Assessment of the selected factors in terms of offering possibilities to strengthen enterprise's competitive position, assessment made on a scale of 1-5, where 1 is a non-significant and 5 - very important**

No.	Factors	$\bar{x}$	S
1.	Quality of products / services	4.2	0.61
2.	Good knowledge of the market	4.1	0.55
3.	Ability to adjust production / services to customer requirements	4.0	0.52
4.	Lasting relationships with customers	4.0	0.59
5.	Price of products / services	4.0	0.62
6.	Innovative products / services	3.9	0.85
7.	Specialized knowledge and skills	3.7	0.73
8.	Knowledge of how to seize opportunities and adapt to the limitations resulting from the operation on environmentally valuable areas	3.5	0.89
9.	Company's location on natural valuable areas	3.1	1.06
10.	Pro-ecological activity	3.0	1.33

**Source: author's calculations based on empirical research**

It should also be noted that such factors as functioning in a group of enterprises with similar objectives to ensure co-operation and transfer of knowledge ( $\bar{x}=3.3$ ,  $s=0.93$ ) and institutional support ( $\bar{x}=3.3$ ,  $s=0.78$ ) were not assessed as significant factors affecting the success of enterprises basing their activities on the use of natural resources.

Generally, it can be stated that the surveyed entrepreneurs rated their needs for selected forms of business support at an average level. Entrepreneurs reported the need to provide better access to external financing sources and information, including raising funds for the development of the enterprise and market information. The importance of support in terms of the promotion of valuable natural areas of the region, adapting the profile of the enterprise to the requirements of protected areas or conducting business activity including marketing activities was also rated at an average level. Taking the specificity of the studied area into account, it is of concern that entrepreneurs manifested little interest in being supported in environment-friendly investments. These results may indicate the need for developing pro-

ecological attitudes in the studied group of entities (Table 5).

Local government authorities could play an important role in the development of the bioeconomy aimed at the implementation of local sustainable development. The possibility to implement activities in this area may include both actions taken in general in order to support entrepreneurship as well as those taking into account local pro-ecological conditions. According to the entrepreneurs' opinion, local government authorities present rather average activity in the areas which have been mentioned above. Entrepreneurs assessed<sup>1</sup> the activity in the studied area slightly above average in the case of the implementation of local policy of supporting entrepreneurship ( $\bar{x}=3.2$ ,  $s=0.72$ ), information concerning business ( $\bar{x}=3.2$ ,  $s=0.82$ ), providing information on preferred directions of development of entrepreneurship in the commune ( $\bar{x}=3.2$ ,  $s=0.82$ ). Government activities were also evaluated at an average level in the field of activities important from the point of view of sustainable development, including:

<sup>1</sup> assessment made on a scale of 0-5, where 0 is a lack of activity and 5 - very high level of activity



undertaking environmental initiatives with entrepreneurs ( $\bar{x}=3.0$ ,  $s=0.85$ ), supporting environmental projects of entrepreneurs ( $\bar{x}=3.1$ ,  $s=0.84$ ), indicating directions of economic activity contributing to conservation and the use of local economic resources ( $\bar{x}=3.0$ ,  $s=0.85$ ) and environmental education addressed to entrepreneurs ( $\bar{x}=3.0$ ,  $s=0.91$ ).

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Table 5

**Assessment of the degree of demand for selected forms of support for entrepreneurs operating in environmentally valuable areas, assessment made on a scale of 0-5, where 0 is a non-significant and 5 - very important**

No.	Forms of support	$\bar{x}$	S
1.	Better access to external sources of financing, of preferential credits and loans	2.9	1.44
2.	Access to information about markets, customers and partners to co-operate	2.7	1.23
3.	Advice on how to raise funds for the development of enterprises located in rural areas	2.7	1.34
4.	Greater promotion of valuable natural areas of the region	2.6	1.22
5.	Access to information about conducting business activity and investing	2.6	1.26
6.	Advice on product development and marketing plan	2.6	1.29
7.	Information on how to adapt the profile of the enterprise to the requirements of protected areas	2.5	1.31
8.	Support in preparing environment-friendly investments	2.2	1.32

Source: author's calculations based on empirical research

**Conclusions**

In terms of a better access to resources of knowledge and external sources of financing the economic activity, the study revealed a need for a greater support for entrepreneurs.

The findings reveal that the activity of local governments within the framework of actions which lead to the implementation of sustainable

development policies is noticeable. To strengthen a sustainable use of natural potential of natural valuable areas, local authorities should aim at intensifying the co-operation inside the local communities in this area and develop relationships with local entrepreneurs, farmers, NGOs. It should result in generating eco-innovation at a local level. Within a local

environmental policy actions aimed at a wider engagement of local enterprises in environmental initiatives should get a particular consideration. That direction of local development is in line with the concept of neo-endogenous development and the RIS3 strategies.

The opportunities to strengthen the competitive position of enterprises in using such factors as enterprise's location in natural valuable areas and pro-ecological activities were not seen as significant by the entrepreneurs. These

findings prompt to look for opportunities to pursue eco-innovation that will contribute to strengthening the competitive position of the enterprises as well as the local economy.

The results of the study entitle to state that the bioeconomy sector is a direction of economic development which corresponds to the specifics of the study area. However, its development requires taking a number of efforts at a local level seeking for an innovative and sustainable use of local environmental resources.

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