

Transition to a Green Economy: Programming for a Low-Carbon Economy at the Voivodeship Level



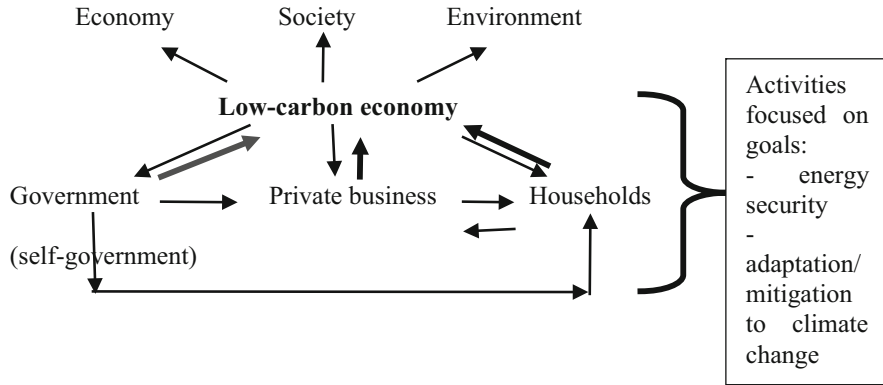
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1 Introduction

The issue of a low-carbon economy gained strongly in importance during and after the real economy crisis of 2008–2010. The term is strongly related to two main elements: energy efficiency and renewable energy sources (compare to [1, p. 1709]). Activities which should be undertaken on various levels (public, of companies and of households) have to give directions to cut down the emission of greenhouse gases (carbon dioxide in particular). Moreover, introduction of practices of energy efficiency and investments in renewable energy sources should allow to provide energy security and help to adapt to or mitigate climate changes. The mentioned actions are strongly connected with economy, society and environment. In all these areas there is a need to introduce significant changes. For example, traditional sectors of economy should be modernized, and new ones should be launched. As for society, changes in habits are needed. Furthermore, there should be mental changes in thinking about the role of the environment for humanity: not as an inexhaustible reservoir of resources, but a reservoir of services which should be looked after due to its importance both for the possibility of creating competitive advantages in the economy and for future generations. In the European Union, we have just started our march towards a low-carbon economy, which is the reason of strong commitment of governments (by appropriate central policy, programming of sectoral policies, legal regulation, financial instruments, education), private business (by new sectors or branches of economy, eco-innovative products and services, activities related to energy efficiency in operational processes, consumption energy from renewable energy sources), and households (changes in energy consumption habits, sustainable consumption in general), which is presented in Picture 1 by arrows in bold (Picture 1).

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Picture 1 Elements of low-carbon economy, subjects and goals (Source: Author’s own)

All mentioned action require a comprehensive approach that takes into account a number of conditions, changes and/or adaptations in many areas, ranges. That is why we are talking about transformation for a low-carbon economy [2]. This, in turn, contributes to the shaping of the new development framework, which were at the heart of the low-carbon economy idea. International organizations, such as the Organization for Economic Co-operation and Development (“Declaration on Green Growth”) [3] or the United Nations Environment Programme (“Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication”) [4], called governments to introduce structural changes to make the natural environment the main area of interest. At the beginning, the idea of changes was strongly related to the concept of sustainable development. This opinion confirmed “A European Union Strategy for Sustainable Development”, adopted in 2001. In this document it was pointed out on key areas of operations, of which the first was: *limit climate change and increase the use of clean energy* [5]. The term of low-carbon economy, step by step, gained into importance as operationalization the concept defined in report “Our Common Future” [6]. Nowadays, the idea of a low-carbon economy is implemented in the form of plans or programs and also as element of strategies of development at the levels of the European Union (“Europe 2020”) [7], individual member states (Poland: “Strategy for Responsible Development”) [8, 9] and local authorities and then implemented in practice, taking into account the conditions at both local and national level. However we can’t forget about a certain factor of an external nature for Poland—the goals of climate and energy policy of the European Union, which include cutting down emission of greenhouse gases (by 40% in 2030 compared to 1990), increase of energy efficiency (by at least 27% by 2030) and share of energy from renewable energy sources (to at least 27% in 2030) [10, 11].

The main subject of this paper is an analysis of the issue of the low-carbon transition in Poland on the level of self-governments, on the basis of its status in the development strategy records.

The following questions are to be answered:

- Is the issue of a low-carbon economy included in documents?
- If so, what role does it play?

- Whether the low-carbon economy or its components are included in the area of development objectives of the region?
- Whether there are identified possible opportunities of the transition to a low-carbon economy (for example: establishment of new branches or sectors,—improvement of air quality)?
- Is there a need for a systematic approach to the issue and to undertaking the necessary structural changes?
- Whether and within which areas of change a low-carbon economy is identified?

2 Methods and Procedures

In Poland, there are three levels of administrative division, and the research is focused on the voivodeship level. Arguments for this selection are related with their number, area, spheres of activities, and specificity of development programming. Taking into account the first one, it should be pointed out that, in reference to the 16 voivodeships, it is definitely more possible to analyze strategic documents for the needs of preliminary research in the field of transformation for a low-emission economy on a local level. However, we must be aware that the most practical activities related to implementation of a low-carbon economy in Poland take place in municipalities, due to their direct dependence on and communication with their residents. As for the second one, the area, it is larger than that of other levels of local government. As for the third one: detailed scope of activities, listed in the Act of 5 June 1998 on Voivodeship Self-government. Fourth one refers to i.e. innovation, health, energy, and spatial development [12, p. 248].

The method of research is based on analysis of the development strategies of the 16 voivodeships in Poland, with the issue of a low-carbon economy taken into account. It has been checked in detail whether the term of a low-emission economy appears, what its relation to the objectives of the social and economic development of a voivodeship is, and which areas of activity and/or areas it is related to: goals of economy (e.g. energy sector), society (counteracting social exclusion), or maybe environment (elements of improvement of environment quality).

3 Literature Review

The research method in this paper is mainly based on analysis of source materials—development strategies of the 16 voivodeships. Its groundwork includes an overview of literature in terms of the issue of a low-carbon economy transition, its elements, and its role in development strategies documents.

As for the first one, the word “transition” is explained as *a change from one form or type to another, or the process by which this happens* [13]. The word “process”,

derived from the above definition, is the key element in development of a low-carbon economy. In literature, the issue is an object of study including:

- institutional and non-institutional actors involved,
- areas of activities,
- sectors of economy involved,
- system's approach,
- role of the market,
- results of transition for economy, human, and environment.

The shift to a low-carbon economy needs structural changes in economy (on operational level in all sectors and branches), new regulations, new programs, plans and politics, financial instruments, and education to create environmental awareness. There is a need for a systematic transition. According to Tracy Wolstencroft: *Transitioning to a low-carbon economy presents both a significant opportunity and an enormous challenge. An opportunity in that the commercialization of low-carbon solutions, including clean energy technologies, can further catalyze an important emerging market and support the transformation of the global energy sector. Simultaneously, this transition presents an enormous challenge given the significant capital required to transform economies that have been reliant on an energy system that has been largely fossil-fuel based* [2].

In turn, Bożena Ryszawska highlights that a sustainable transition *is a transition (targeting, transition) from the current economy to the environmentally and socially responsible activity: a low-carbon, resource-efficient, “green” economy, based on “clean” technologies; to responsible consumption of greater equity and social equity within and between generations* [14, p. 188].

Government, business and society are the main actors of the transition to a low-carbon economy. The literature contains examples of the contribution of each of them to the transformation. For example, as for the government, involvement of the state itself is crucial [15], and then so are the policies implemented, such as the financial or the monetary [16]. Moreover, transition to a low-carbon economy requires changes in economic policy [17], legal regulations [18], programming [19], education, investment [20] etc., and therefore a comprehensive approach with a significant role of the government is necessary [21].

Private business should introduce some changes in operational processes, and offer environmental friendly products and/or services. There are some papers which discuss the impact of the transition on creation of cooperation between enterprises [22] or the role of innovation for sustainability of the transition [23].

In turn, in households there is a need to change previous consumption habits to be more “eco”.

A transition of economy requires undertaking activities in many areas, i.e. in financial sphere; particularly, public and private financial instruments are crucial for the transformation process [24]. Next field is related to sectors such as: industry [25]; manufacturing [26]; energy [27]; services; and financial sector [28]. What is more, the role of the market needs to be analyzed, e.g. in cleantech transition [29].

In literature we can point to publications which are based on empirical research related to the energy or the emission of greenhouse gases from different sectors, as well as methods and ways to reduce their impact on humans and environment [30].

The transition to low-carbon economy can bring a lot of benefits, but simultaneously the process of implementing the necessary changes is associated with some restrictions [19].

According to this paper, the last (but not the least important) element is the role of a development strategy, which can be a substructure for transition to a low-carbon economy. The issue is undertaken by researchers through some theoretical backgrounds: explanation of the term of development policy [31] and the role of the government in development programming [32]. Then literature includes both theoretical aspects of creating strategies as documents [12] as practical ones. In the first issue authors are also describing the problem of construction and implementation of development strategies, including subjective range, for example:

- countries [33],
- cities, highlighted the environmental and social aspects [34],
- local authorities [35],
- business [36],

or different sectors:

- of economy [37], especially by analysis some sectors on local level according to its emission and possibilities to implement low-carbon economy plans [38],

and problematical issues:

- poverty reduction,
- environmental and natural resource dimension [33].

Taking into account some practical aspects, it is also worth to point out on *policy guidance on good practice in developing and implementing strategies for sustainable development* [39].

It need to be emphasized that above mentioned aspects are presented in literature by the concept of sustainable development.

In turn, taking into account practical aspects of development strategies, there is emphasized their role to introduce some solutions, for example: planning and implementing large—scale infrastructure projects according to overcome climate change [40].

In relation *strictly* to the issue of development strategy and low-carbon economy, more and more common are papers, which present self-government, in reference to the challenges that it face in the context of climate change. A lot of articles on this topic are written by authors from Asia, which describe situation of cities, for example Hong Kong [41]. According to the European Union, we can find documents and studies, both of a regional nature—“A Roadmap for moving to a competitive low carbon economy in 2050” [42]; “The EU Long Term Climate Strategy” [43], as individual countries (“Climate Action Plan 2050. Principles and goals of the German government’s climate policy”) [44]; cities (Stockholm action plan for climate and

energy 2012–2015 with an outlook to 2030) [45] or local communities. But this documents and papers in the EU are mostly separate from the development strategies. They present mainly the issue of sustainable development or low-carbon economy or climate policy goals, with emphasis of it for development in general meaning. We can accept, that thanks to this solution, especially in documents at EU and national level, the importance of this issue is underlined. However, there is a question: is there a connection between development strategies—documents and transition to a low-carbon economy as element or goal of development, pointed out on mentioned strategies in general? This problem is area of interest in this paper with reference to the regional development strategies of voivodeships in Poland.

4 Development Strategy at Voivodeship Level and a Low-Carbon Economy

Strategy is a very important tool in programming socio-economic development. This method, taken from management sciences, is very helpful in defining the developmental framework due to the necessity to set goals, key areas of activity, and methods of implementing these activities, as well as required tangible and intangible assets [35]. In addition, it is necessary to take into account the dynamics of the ambiance and certain constraints and barriers, as well as opportunities and challenges. Strategies are adopted at both national and local levels by relevant authorities. Strategies adopted at the central level often give direction to those at the local government level. Development strategy is related to planning. As Andrzej Sztando highlights, *Planning activities of territorial self-governments take place wherever such local governments exist. It results from the necessity of proper implementation of a series of activities for which they were established* [12, p. 247]. In Poland this applies to communes (gminy), counties (powiaty) and voivodeships. Article 11.1 of the Act of 5 June 1998 on Voivodeship Self-government specifies goals that should be included in a voivodeship's development strategy (The Act of 5 June 1998 on Voivodeship Self-government) [46]:

1. *nurturing Polishness, and developing and shaping residents' national, civic and cultural consciousness, as well as nurturing and developing local identity;*
2. *stimulation of economic activity;*
3. *raising the level of competitiveness and innovativeness of the voivodeship's economy;*
4. *preservation of the value of the cultural and natural environment with the needs of future generations taken into account;*
5. *shaping and maintaining spatial order.*

What is more, article 11.2 defines areas of the voivodeship's development policy:

1. *creating conditions for economic development, including creation of the labor market;*
2. *maintenance and development of social and technical infrastructure of voivodeship's importance;*

3. *acquiring and combining public and private financial resources in order to carry out tasks in the field of public utility;*
4. *supporting and conducting activities for raising the level of citizens' education;*
5. *rational use of natural resources and shaping the natural environment, in accordance with the principle of sustainable development;*
6. *supporting development of science and cooperation between the spheres of science and economy, and supporting technological progress and innovation;*
7. *supporting development of culture, taking care of cultural heritage, and its rational use;*
8. *promotion of advantages and development opportunities of voivodeship;*
9. *supporting and conducting activities for social integration and counteracting social exclusion.*¹

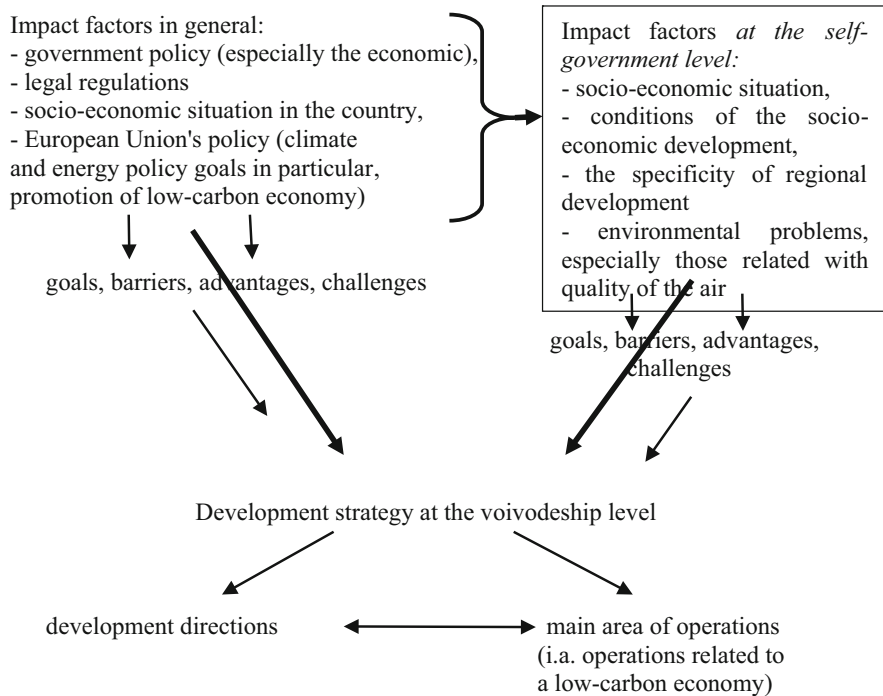
The presented act do not emphasise directly the issue of a low-carbon economy as an element of development programming. However, the act may point it out indirectly in the areas related to appropriate conditions for economy, rational use of environment, and also opportunities. The reference to this legal regulation results from the necessity to indicate functional grounds for the voivodeships' operation. The quoted law is one of the elements which influence the substantive content of the voivodeship's strategies (Picture 2). We have to remember that self-government level is determined by central government's policy or the European Union. A particularly important thing is the promotion of a low-carbon economy on the European Union's level ("A Roadmap for Moving to a Competitive Low Carbon Economy in 2050") [42] and that of the state (some elements of this issue in "Strategy for Responsible Development") [8, 9].

The subject of analysis in this publication are the latest strategies adopted in the 16 voivodeships of Poland, together with many important issues, also those related to a low-carbon economy. The key issue is the role of this last one in creating future development frameworks.

The strategies of development at the voivodeship level have been recently adopted for the period of 2011/2013/2014 to 2020/2030. These documents contain the term of a low-carbon economy, not directly though, but by describing activities that are part of the issue discussed in this paper:

- highlighting the issues of air quality improvement by increasing energy efficiency, increasing production of energy from renewable energy sources, and modernization of energy infrastructure;
- pointing out on: some changes in traditional sectors of economy; development of clean technologies; development of "green industries". In literature we can find papers on these elements: [27, 29, 30]; however, they are one of the key elements of modern transformation processes in economies.

¹Author's self translation.



Picture 2 Factors affecting the substantive content of the strategy (Source: Author’s own)

The low-carbon economy issues are very often related to ecological or environmental purpose only, for example in “The Development Strategy of the Świętokrzyskie Voivodeship until 2020”, goal 6: Concentration on ecological aspects of the region’s development, and similarly in “The Updated Development Strategy of the Wielkopolska Region until 2020”, strategic goal 2: Improvement of the environment and rational management of its resources. Nevertheless, it cannot be limited to this dimension [21].

Furthermore, there are sentences which refer to a low-carbon economy in a confusing way. This is evidenced by the provisions of two strategies. In “The Development Strategy of Łódź Voivodeship 2020” we can find strategic direction of actions: development of modern energy economy. This term raises serious doubts as to the understanding of the term of a low-carbon economy. The “modern energy economy” refers only to one sector, i.e. the energy sector, and a low-carbon economy does to the entire systemic economy including a system of sectors, industries and branches on one hand (as literature selection emphasizes: industry—[25]; manufacturing—[26]; services and financial sector—[28]), and on the other connections and interdependencies between various subjects (governments, enterprises etc.). In turn, “The Development Strategy for Lower Silesian Voivodeship 2020” emphasizes only the need to adapt to the climate change. It is

indeed a very important field of action but not the only reason for transition to a low-carbon economy [2].

The discussed documents indicate a number of terms related to a low-carbon economy:

- low-emission technologies,
- low-emission transport,
- “green industry”,
- “green” construction,
- ecological industry.

They are presented in literature, however, the reader may get the impression that the terms are used without understanding the importance of the issues. It is a result of backwardness in the analysis of the issue and lack of clear definitions of a low-carbon economy.

Only in two cases the way to a low-carbon economy is pointed out directly. In “The Strategy for the Development of Opole Voivodeship until 2020” an operational objective was pointed out: to support a low-carbon economy. In turn, in “The Development Strategy of Podlaskie Voivodeship until 2020” one of the areas of activity in relation to the operational objective was emphasized: protection of the environment and rational management of its resources.

At the same time, it is worth to look at the titles of individual priority axes in the voivodeships’ operational programmes. In case of eight of them, we are dealing with a priority axis simply called a low-carbon economy: so it is in Lower Silesian, Lubusz, Łódź, Opole, Podlaskie, Kuyavian-Pomeranian, Lublin, and Silesian voivodeship (Table 1). What is more, in one of the voivodeships most threatened by smog—Lesser Poland voivodeship—there are no indications for a low-carbon economy or its elements.

5 Conclusions

Currently, the role of a development strategy is indisputable, both in business and in public programming. Therefore, it is important to prepare documents which include a whole spectrum of socio-economic and environment problems, methods, instruments and sources to obtain targets in terms of development strategies. It is also very important to take into account changes in the surrounding, both domestic and international. The same is related to self-government.

Analysis of source materials and literature allows to indicate a few comments. There is a wide selection of areas of interest with reference to sustainable development strategy and separately the issue of transition to low-carbon economy (subjects, goals, elements, instruments and other of the process). There are documents, which emphasize the issue of sustainable development strategy, low-carbon economy strategy or climate strategy. However, there is lack of articles, which describe connection between development strategy (in meaning of document: development

Table 1 The term of a low-carbon economy in development strategies of 16 voivodeships and their regional operational programmes

Voivodeship	Document	Regional operational programs—priority axis related to a low-carbon economy
Lesser Poland	The Strategy of Lesser Poland Voivodeship 2011–2020	–
Silesian	The Strategy of Silesian Voivodeship “Silesian 2020”	4. Energy efficiency, renewable energy sources and low carbon economy
Lublin	The development strategy for Lublin Voivodeship for 2014–2020 (with a perspective until 2030)	5. Energy efficiency and low-emission economy
Lower Silesian	The Development Strategy for Lower Silesian Voivodeship 2020	3. Low-carbon economy
Opole	The strategy for the development of Opole Voivodeship until 2020	3. Low-carbon economy
Subcarpathian	Voivodeship Development Strategy—Subcarpathian 2020	3. Clean energy
Świętokrzyskie	The development strategy of Świętokrzyskie Voivodeship until 2020	3. Effective and green energy
Łódź	The Development Strategy of Łódź Voivodeship 2020	3. Low-carbon economy
Greater Poland	The updated development strategy of the greater Poland region until 2020	3. Energy
Lubusz	The Development Strategy of Lubusz Voivodeship 2020	3. Low-carbon economy
Masovian	The development strategy of Masovian Voivodeship until 2030. Innovative Masovia (synthesis)	4. Environment, risk prevention and energy
Kuyavian-Pomeranian	Kuyavian-Pomeranian Voivodeship’s development strategy until 2020 Modernization plan 2020+	3. Energy efficiency and low-carbon economy in the region
West Pomeranian	The development strategy for west Pomeranian Voivodeship	2. Low-carbon economy
Pomeranian	Pomeranian Voivodeship’s Development Strategy 2020	10. Energy
Warmian-Masurian	The strategy for socio-economic development of Warmian-Masurian voivodship until 2025	4. Energy efficiency
Podlaskie	The development strategy of Podlaskie Voivodeship until 2020	5. Low-carbon economy

Source: Author’s own

strategy) and low-carbon economy as element of creating the framework of social and economic development.

The subject of this paper was an analysis of the 16 Polish voivodeships development strategies, taking into account the issue of transition to a low-carbon economy.

The arguments confirm the thesis: the voivodeships' development strategies emphasize the role of the transition to a low-carbon economy, but do not treat it as the main platform of future development. The results are the following:

- lack of a direct highlighted goal: the transformation to a low-carbon economy's
- lack of understanding of the assumptions of a low-carbon economy,
- using terms without knowing the importance of the issues,
- inclusion of the low-carbon economy issues in areas related more to the environment than to the economy.

'Introduction' section presents the scope of the necessary changes and the systemic approach to creating a low-carbon economy. None of the analysed documents refers to this, i.e. due to the reasons mentioned above.

Perhaps this state of affairs results from developmental conditions at the national level, where the role of coal in the energy system is emphasized. Meanwhile, a low-carbon economy assumes a reduction of emissions resulting from the combustion of this fuel. However, the national Strategy for Responsible Development, from 2017, brings some changes, for example the issue of development of electromobility, ecobuildings, the role of ecoinnovation. That is way, voivodships should adopt new development strategies.

Further research should be focused on practical aspects related to financing the transition to a low-carbon economy, and its implementation on a local level—in municipalities—in Poland.

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