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Mobilising Actions Towards Low-Carbon Economy: the Role of European Union Cohesion Policy in Poland

Abstract

The Polish transition from coal-based manufacturing to renewable oriented society is particularly challenging. However, climate change poses not only a threat but also an opportunity to conduct ecological modernisation and develop a more low-carbon economy. The aim of the paper is to analyse and assess the role of EU cohesion policy in mobilising actions towards low-carbon economy in Poland. The paper is based on a literature review and data analysis. Poland has allocated around EUR 4 billion in 2007–2013 and EUR 11.5 billion between 2014–2020 to cohesion policy for the support of a shift towards low-carbon economy in all sectors. Such significant resources have caused the mobilization of regional authorities towards activities for a low-carbon economy. The municipalities' low-carbon economy plans are the best example. Although there is no statutory obligation to create such plans, most of the Polish municipalities have done it. Even if the quality of these plans varies, they still are an important precondition for building low-carbon economy and improving the air quality in Poland.

Key words: cohesion policy, low-carbon economy, Europe 2020 Strategy.

JEL Classification: O13, O20, O44, Q28.

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Introduction

There is a broad consensus that a coordinated international response to the threat of climate change is needed. Under the Kyoto Protocol to the United Nations Framework Convention on Climate Change, richer countries, including Poland, committed to reduce greenhouse gas emissions by about 5.2 percent during 2008–2012 compared to 1990. The European Union went even further by setting a target of a 20 percent reduction in emissions by 2020. Moreover, the EU committed to increasing the use of renewable energy by 20%, and cutting energy consumption through improved energy efficiency by 20% in the same timeframe. Therefore, EU members, such as Poland, also face specific obligations for climate action.

Poland faces a particular challenge in CO₂ mitigation because of its reliance on abundant domestic coal. Despite progress over the last two decades, Polish economy remains twice as energy intensive as the EU average. The Polish transition from coal-based manufacturing to a renewable-oriented society is particularly challenging. However, climate change poses not only a threat but also creates an opportunity to facilitate some ecological modernisation and develop a more low-carbon economy. Cohesion policy, as the EU's main investment policy, is one of the most important tools in achieving the Europe 2020 goals (including the targets on climate and energy), with Poland being by far its largest beneficiary among all member states.

The aim of the paper is to analyze and assess the role of EU cohesion policy in mobilising actions towards low-carbon economy in Poland. The research involves the analysis of primary sources, such as policy documents and legislation. In the empirical section it is based on statistical data mainly from the reports of the institutions engaged in the implementation of EU cohesion policy.

The paper is structured as follows. The next section will concentrate on the place of the low-carbon economy and sustainable growth in the European Union development strategy. Then it focuses on EU cohesion policy and the low-carbon economy within its framework. The empirical section will present the development of low-carbon economy in Polish municipalities. This is then followed by concluding remarks on the impact of EU cohesion policy on low-carbon economy development in Poland.

1. Low-carbon economy and sustainable growth as the priorities of the European Union development strategy

Sustainable development is the overarching objective of the European Union, leading to economic growth, prosperity for the citizens of the Union and a higher quality of life for current and future generations. The Treaty on European Union states that the EU “shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment” (TEU, art 3). The Brundtland Commission’s report (WCED 1987) defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainable growth is one of the priorities of the present long-term program of socio-economic development strategy in the European Union – “Europe 2020”. It is understood as growth promoting a more efficient economy in terms of resource utilization which is more ecological and more competitive (COM (2010) 2020). Establishing a resource-efficient economy is central to achieving sustainable growth.

The concept of a low carbon economy has not been clearly defined. It shares similarities with “green economy” and “circular economy”, but it is different from them. In a relatively narrow sense a low carbon economy can be defined as an economy “which is characterised by activities which emit low levels of carbon dioxide into the atmosphere” (Levy 2010, 13). Low-carbon economy is based on two key elements: reducing greenhouse gas emissions, especially carbon dioxide, and increasing energy efficiency. While et al. (2010, 81) associate the idea of a transition to a low-carbon economy with a distinctive “carbon-control” phase of eco-state development; a phase in which states regulate to control emissions via non-negotiable targets, often harnessing market forces to stimulate the replacement of high emission fuels with renewable energy sources. Eco-efficiency can be interpreted as “the ratio, or a causal relationship, between economic cost or value creation and environmental impact added” (Hupples, Ishikawa 2005). This term is connected with clean (or “green”) production through minimising the consumption of resources, reducing environmental burdens and limiting concomitant risks and liabilities (WBCSD, UNEP 1998).

The European Union is looking at cost-efficient ways to make the European economy more climate-friendly and less energy-consuming. In the EU, the foundations for creating a low-carbon economy have been included in such key documents as: “Energy 2020 – A strategy for competitive, sustainable and secure energy” (COM (2010) 639), “A Roadmap for moving to a competitive low carbon economy in 2050” (COM (2011) 112), “An EU Strategy on adaptation to climate change” (COM (2013) 216), “European Energy Security Strategy” (COM (2014) 330). Following the European Council’s decision for emissions reductions of 20 percent by 2020 at its March 2007 summit, the package of measures referred to as the “20–20–20 targets” was approved by the European Parliament in December 2008 and became law in June 2009 (The World Bank 2011, 26). The European Union member states have committed to the 20/20/20 goals, cutting greenhouse gas emissions by 20% below 1990 levels, increasing the use of renewable energy by 20%, and cutting energy consumption through improved energy efficiency by 20%. Security of supply, affordable energy for competitive economies, and environmental sustainability are the three pillars of the integrated approach to climate and energy policy which the EU pursues. EU energy and climate goals have been also incorporated into the “Europe 2020 strategy for smart, sustainable and inclusive growth” (COM (2010) 2020), adopted by the European Council in June 2010, and into its flagship initiative “Resource efficient Europe” (COM (2011) 21). Within this framework the EU is now putting forward a series of long-term policy plans in areas such as energy, climate change and transport.

The Europe 2020 strategy includes five headline targets that set out where the EU should be in 2020. In regards to climate and energy policy, member states have committed themselves to reducing greenhouse gas emissions by 20%, increasing the share of renewables in the EU’s energy mix to 20%, and achieving the 20% energy efficiency target by 2020. The EU headline targets have been translated into national targets, as defined in the National Reform Programmes. These reflect each member state’s situation and the level of ambition they are able to reach as part of the EU-wide effort for implementing the Europe 2020 strategy. The European Commission is monitoring and implementing the strategy through a process known as the European Semester. Its main purpose is to strengthen economic policy co-ordination and ensure the coherence of the budgetary and economic policies of member states with the Europe 2020 strategy. The headline indicators of sustainable growth in the EU member states and progress towards the EU 2020 targets are presented on table 1.

Table 1: Headline indicators of Europa 2020 Strategy related to sustainable growth in EU

Member state	Greenhouse gas emissions in ESD sectors (million tonnes CO ₂ equivalent)			Primary energy consumption (million tonnes of oil equivalent, TOE)			Final energy consumption (million tonnes of oil equivalent, TOE)			Share of renewable energy in gross final energy consumption (%)		
	2008	2016	Target	2008	2016	Target	2008	2016	Target	2008	2016	Target
EU-28	2787	2540	2618	1693	1543	1483	1180	1108	1086	11.1	17.0	20.0
BE	79.0	74.5	68.3	50.9	49.0	43.7	36.9	36.3	32.5	3.6	8.7	13.0
BG	25.5	25.0	26.5	18.9	17.6	16.9	10.0	9.7	8.6	10.5	18.8	16.0
CZ	62.5	58.1	67.2	42.6	39.9	39.6	26.1	24.8	25.3	8.6	14.9	13.0
DK	39.1	32.3	32.1	19.5	17.2	17.4	15.5	14.4	14.4	18.6	32.2	30.0
DE	466	450	411	314	296	277	218	216	194	8.6	14.8	18.0
EE	6.5	5.8	6.0	5.7	6.1	6.5	3.1	2.8	2.8	18.9	28.8	25.0
IE	47.1	44.5	37.7	15.5	14.6	13.9	13.4	11.6	11.7	4.1	9.5	16.0
GR	59.1	46.5	60.1	30.9	23.5	24.7	21.4	16.7	18.4	8.0	15.2	18.0
ES	230	198	212	134	117	120	94.6	82.5	80.1	10.8	17.3	20.0
FR	380	357	342	255	235	220	156	147	131	11.3	16.0	23.0
HR	17.2	14.3	19.3	9.1	8.1	11.2	7.4	6.6	7.0	22.0	28.3	20.0
IT	316	277	291	177	148	158	134	116	124	11.5	17.4	17.0
CY	4.5	4.2	4.0	2.8	2.4	2.2	2.0	1.8	1.8	5.1	9.3	13.0
LV	9.1	8.9	10.0	4.6	4.3	5.4	4.2	3.8	4.5	29.8	37.2	40.0
LT	13.1	13.0	15.2	8.2	6.0	6.5	5.1	5.1	4.3	17.8	25.6	23.0
LU	9.7	8.5	8.1	4.6	4.2	4.5	4.4	4.0	4.2	2.8	5.4	11.0
HU	43.8	42.1	52.8	25.0	23.9	24.1	17.4	17.9	14.4	8.6	14.2	13.0
MT	1.1	1.3	1.2	1.0	0.7	0.7	0.5	0.6	0.5	0.2	6.0	10.0
NL	123	103	107	69.1	65.8	60.7	53.8	49.5	52.2	3.6	6.0	14.0
AT	52.4	50.2	47.8	32.1	31.8	31.5	27.4	28.1	25.1	27.8	33.5	34.0
PL	190	193	205	92.8	94.3	96.4	62.4	66.7	71.6	7.7	11.3	15.0
PT	45.3	40.4	49.1	23.4	22.1	22.5	18.4	16.1	17.4	23.0	28.5	31.0
RO	74.4	72.7	89.8	37.9	31.3	43.0	24.8	22.3	30.3	20.5	25.0	24.0
SI	12.7	11.0	12.3	7.5	6.7	7.3	5.3	4.9	5.1	15.0	21.3	25.0
SK	22.8	19.7	20.6	17.0	15.5	16.4	11.5	10.4	9.0	7.7	12.0	14.0
FI	32.7	31.3	28.5	34.7	33.1	35.9	25.7	25.2	26.7	31.3	38.7	38.0
SE	40.1	33.7	36.1	47.0	47.1	43.4	32.4	32.6	30.3	45.3	53.8	49.0
UK	383	324	351	211	182	178	148	134	129	2.7	9.3	15.0

Source: own elaboration based on Eurostat data.

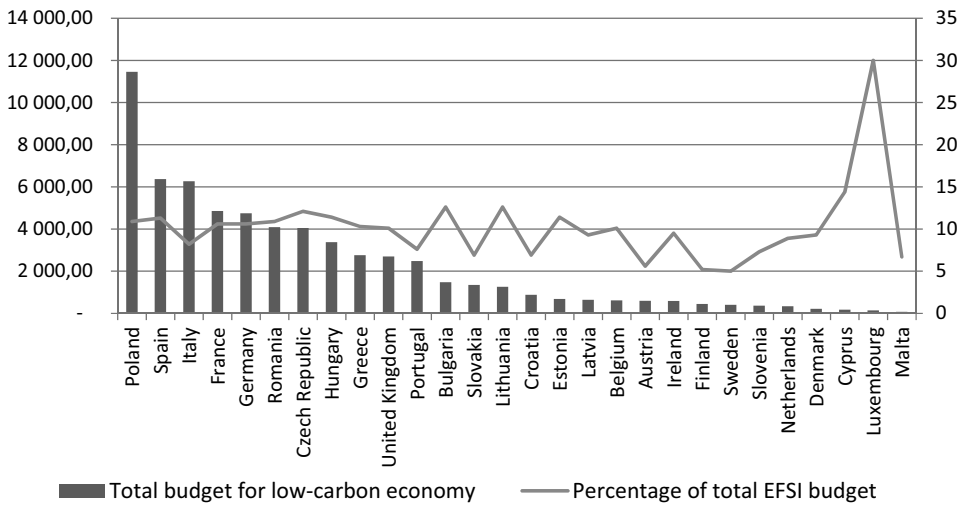
The 20% target concerning the reduction of greenhouse gas emissions should be reached by the EU as a whole, but the situation varies across countries. Most of member states are expected to meet their national 2020 targets in the non-ETS sectors with existing measures. So far, the EU has made substantial progress towards its energy efficiency objective. The 2020 target for final energy consumption has already been achieved in 2015, but then again the level of this indicator grew. With respect to final and primary energy consumption, the EU must make a further reduction to achieve the target of improving energy efficiency by 20%. In its final energy consumption, the EU as a whole achieved a 17% share of renewable energy in 2016. Member states' renewable energy shares ranged from 53.8% in Sweden to 5.4% in Luxemburg. The vast majority of EU countries are well on track to reach their 2020 binding targets for renewable energy, but all countries will have to continue their efforts to meet them. Poland has already achieved its national targets for cutting greenhouse gas emissions and improving energy efficiency, but the goal on renewable energy remains challenging.

2. Cohesion policy for low-carbon economy

Cohesion policy is a very important policy in terms of funding (one third of the EU budget) and its objectives as it is seen as the EU's main investment policy. Therefore, it is also one of the most important tools in attaining the Europe 2020 goals. The policy has set 11 thematic objectives for the 2014–2020 period (Regulation 1303/2013, art 9), one of which is supporting the shift towards a low-carbon economy. Importantly, under the EU's 2014–2020 budget, the investments within the framework of the European Regional Development Fund should concentrate (“thematic concentration”) on four key priorities: research and innovation, the digital agenda, support for small and medium-sized enterprises and the low-carbon economy, depending on the category of a given region (less developed: 50%, transition: 60%, and more developed: 80%) (Regulation 1301/2013, art 4). Furthermore, a minimum percentage of funding should be directed to the shift towards a low-carbon economy in all sectors (thematic objective 4), including energy efficiency, renewable energies, smart distribution systems and sustainable urban mobility: 20% in the case of more developed regions, 15% for transition regions and 12% for less developed regions, which receive more funding overall.

Funding dedicated to cohesion policy in the 2014–2020 period amounts to EUR 351.8 billion. Around EUR 39.7 billion (twice the amount spent in this area during the previous financial perspective) is dedicated to the low carbon economy thematic objective¹. This amount comprises of two funds: European Regional Development Fund and Cohesion Fund. Another EUR 5.0 billion come from other European Structural and Investment (ESI) Funds provided for this purpose: European Agricultural Fund for Rural Development and European Maritime and Fisheries Fund. Total budget of those funds allocated for low-carbon economy in member states is presented on Figure 1.

Figure 1: Total budget of ESI funds for low-carbon economy in 2014–2020 (billion euro) and percentage of total ESI budget by member states (% , on the right)



Source: own elaboration based on CohesionData, 2018.

ESI Funds represent the largest allocation of the EU budget to be channelled into low-carbon investments. This should help member states, regions, local governments and cities to implement much needed investments in energy efficiency in buildings, renewable energy, smart distribution electricity grids or sustainable urban transport and also in research and innovation in these areas.

¹ Own calculations based on European Commission data, Breakdown Of The Available Funds By Thematic Objective By MS For 2014–2020, <https://cohesiondata.ec.europa.eu> [accessed on: 10.07.2018].

According to the respective fund-specific regulations, the European Regional Development Fund (ERDF) and the Cohesion Fund (CF) can support the shift towards a low-carbon economy in all sectors through:

- promoting the production and distribution of energy derived from renewable sources;
- promoting energy efficiency and renewable energy use in enterprises;
- supporting energy efficiency, smart energy management and renewable energy use in public infrastructures (including in public buildings), and in the housing sector;
- developing and implementing smart distribution systems at low and medium voltage levels;
- promoting low-carbon strategies for all types of territories (in particular for urban areas), including the promotion of sustainable multi-modal urban mobility and mitigation-relevant adaptation measures;
- promoting research in, innovation in and adoption of low-carbon technologies (only ERDF, not CF);
- promoting the use of high-efficiency co-generation of heat and power based on useful heat demand.

Tackling energy consumption in European buildings is particularly important. Nearly 40% of final energy consumption is attributable to housing and other buildings across the public and private sector. Therefore, a significant and sustained increase in public and private investment in buildings is needed for the EU to achieve its 2020 climate change and energy goals and to continue the implementation of its 2050 decarbonisation plan. In the 2014–2020 programming period, the European Structural and Investment Funds, and specifically cohesion policy funds, are expected to play a major role in relation to the refurbishment and construction of buildings, allocating at least EUR 23.0 billion to sustainable energy in this period (European Commission 2014, 13).

Cohesion policy funds are also a crucial tool for helping member states achieve their headline targets on renewable energy. Renewable energy sources can help to diversify energy supply, which increases security of supply and improves overall competitiveness, creating new industries and firms, jobs, economic growth and export opportunities, whilst also reducing the greenhouse gas emissions. Smart grids are a crucial enabler for integration of renewable energy, active participation of consumers in the retail market and improved energy efficiency. The development of sustainable energy action plans (SEAPs) is also encouraged and supported as part of broader low-carbon and local development strategies in order to facilitate optimisation and coordination of investments.

Cohesion policy provides a strategic, integrated and comprehensive framework for these energy investments. It also provides a link to policy makers in regions, cities and rural areas. This framework bridges the gap between the ambitious framework set by EU leaders and the changes needed on the ground to effectively make the shift towards a low-carbon economy.

3. Development of low-carbon economy in Polish municipalities

For years, the Polish authorities have remained sceptical towards the ambitious climate policy of the European Union. The main arguments raised against the low-carbon transformation of Polish economy were: the high costs of emission reductions and the low income of citizens compared to Western Europe countries, and more from the political point of view – decarbonisation not being interlinked with the local development priorities, consequently diminishing the competitiveness of domestic coal mining (which is considered to be the foundation of Poland’s energy security). Experts also stressed that the Europeanization processes related to climate policy are disadvantageous for the Polish economy (Grosse 2011). The narrative that focused on the costs and risks of emission reduction prevailed in the Polish public debate, lacking, however, the assessment of the potential benefits of climate policy. The project “Low-emission Poland 2050” was intended to fill that gap. The experts from two independent think tanks – the Institute for Sustainable Development and the Warsaw Institute for Economic Studies (WiseEuropa) – undertook the preparation of an in-depth assessment of the current state of the Polish economy, proposed the scenarios for reducing the emission in the long term, as well as assessed the socio-economic implications of the proposed actions for Poland. They argue that “the pathway to reducing greenhouse gases emissions is, at the same time, a pathway for transforming Poland into a more competitive, highly developed and affluent country” (Bukowski 2013).

It seems that also politicians and decision-makers are beginning to see this, and cohesion policy helps considerably by giving opportunity to support investments in this area. The low carbon economy plans can be a good example. The plan for a low carbon economy is a strategic document, which specifies strategic objectives and detailed plans for reaching the low carbon economy targets on a local level. In order to transform the economy, appropriate actions should be planned at the local level. The

concept of preparation of local low-carbon economy plans referring to the National Program for the Development of Low-Carbon Economy (Ministerstwo Gospodarki 2015) was established in the Ministry of Economy in 2013. Their idea was based on the European “Covenant of Mayors” functioning since 2008. It is a voluntary association of municipalities declaring the implementation of EU energy and climate policy objectives at the local level.

Local low-carbon economy plans focus on low carbon and resource-efficient activities, which are to improve energy efficiency and use of renewable energy sources in all sectors of the economy with the participation of entities which are producers and consumers, local authorities and institutions. They should indicate the key investment needs, activities to be taken as well as sources of funding and ways of monitoring the planned activities. They should also be consistent with local planning and strategic documents in the area of energy planning, programming of environmental protection and spatial planning and development. There is no statutory obligation to create a low-carbon economy plan. This is the decision of municipal councils and local communities, who see the benefits of making such a document. However, the local plans are not only important strategic documents, aiming to determine the vision of municipal development towards a low carbon economy, but also they increase the chances of local authorities when applying for EU funds in the financial perspective 2014–2020. This is because for actions implemented within the investment priorities pursuing thematic objectives of low-carbon economy and climate protection, the basis for support are strategic documents that meet the requirements of low-emission strategies. This means that the municipality may obtain co-financing for activities in the field of thermomodernization of buildings, public transport or renewable energy implementation, if it has a low-carbon economy plan. Such a solution turned out to be a good incentive for municipalities to prepare such plans. What is more, there was the possibility to obtain financial support for their preparation in 2013–2015, and advisory assistance in 2014–2020. Both of them were available under the projects co-financed by the EU cohesion policy funds.

A very important role in the dissemination of low-carbon economy plans was played by the National Fund for Environmental Protection and Water Management (in Polish: NFOŚiGW), which in the summer of 2013 announced a competition under the Operational Program Infrastructure and Environment 2007–2013 (co-financed by ERDF and Cohesion Fund) for co-financing for the preparation of the low-carbon economy plans. The level of co-financing of projects was 85% of eligible expenditure. According to NFOŚiGW data, 873 municipalities applied for co-financing, representing approx. 35% of municipalities in Poland, 682 projects (12 of them were

group projects) have received funding, meaning that 827 municipalities (33% of municipalities in Poland) will have strategic documents for a low carbon economy (NFOŚiGW 2015, 9). In the following years, this number increased – 1.416 low-carbon economy plans were successfully verified by NFOŚiGW in 2016, and additional 306 plans in 2017 (NFOŚiGW 2017, 41). This means that 70% of all municipalities in Poland already have low-carbon economy plans. Of course, the question arises as to what extent the plans created in this way are actual strategic documents to solve the problem of high emission, and to what extent they were created only to use EU funds. For example, the analysis made by Wiśniewski and Kistowski (2016) of twenty plans for a low carbon economy, adopted for implementation by the rural municipalities of typical agricultural character, shows that they currently are of little importance in the shaping of low carbon development of rural areas. The success in the transition to a low carbon economy depends largely on local residents' level of involvement in the whole process (Rackiewicz 2017, 17), however they are rarely engaged in it (Karaczun 2016). Nevertheless, these low-carbon economy plans are undoubtedly an expression of mobilization and interest in local activities for a low carbon economy.

The preparation of strategic documents is just one of many activities that support the transformation towards a low-carbon economy, and that can be co-financed from cohesion policy funds. Under the cohesion policy, the main instruments of support for the energy policy (including low carbon economy) have been the Operational Programme Infrastructure and Environment and the sixteen regional operational programmes. They were designed mainly to address infrastructure objectives, concerning improvement of energy efficiency, energy security and renewable energy.

In 2007–2013, more than 3.6 thousands projects that contributed to the objectives of energy policy in the areas of energy efficiency improvement, renewable energy and reducing the impact of power generation on the environment were subsidised under cohesion policy. A total of almost PLN 24.1 billion – about 8.4% of the total cohesion policy – was provided for their implementation (Fundeko 2016). Two groups of projects have been supported: projects that had a direct and projects that had an indirect impact on the implementation of energy policy objectives (Table 2).

Table 2: Projects co-financed under cohesion policy 2007–2013 in Poland in the field of energy, including low-carbon economy (PLN, billion)

Projects that had a direct impact on the implementation of energy policy objectives	
Projects dedicated to energy efficiency improvement	3.1
Production of electricity and heat from renewable energy sources	3.0
Limiting emissions from the energy sector	0.5
Total	6.6
Projects that had an indirect impact on the implementation of energy policy objectives	
Clean urban transport projects	15.6
R&d projects related to the improvement of energy efficiency, development of renewable energy and the protection of air	1.0
Education and development of competence in the area of energy efficiency and renewable energy	0.3
Development of bicycle transportation in urban areas	0.2
Capital support for the development of renewable energy	0.1
Projects for the development of air monitoring systems and development of plans for low-carbon economy	0.09
Total	17.29

Source: own elaboration based on: Fundeko 2016.

Those projects bring results, for example the share of energy from RES in gross final energy consumption increased considerably after 2006. The technology mix also changed. While hydropower dominated in 2006, wind energy was definitely leading in 2015 (66% of energy from RES). The cohesion policy contribution to the additional RES capacity was ca. 21%. It should be noted, however, that the contribution of EU funds was the biggest in the case of less popular technologies, such as biogas and solar power (69% and 41%, respectively), and relatively small for the fastest-growing wind energy (18%). Projects improving energy efficiency generated savings of 2,861,501 MWh/year. Nearly 40% of energy savings came from the thermomodernisation of public buildings, another 23% from the modernisation of heating systems, and 16% from cogeneration (Imapp 2017, 54). The contribution of the NSRF to improved energy efficiency was less pronounced than for renewable energy. Co-financed investments account for 2.3% of savings of final energy consumption in 2014 and 5.4% of the energy savings target for 2016 (Ibidem).

In the financial perspective 2007–2013, energy efficiency and renewable energy have been an important element of both regional and national policies, as evidenced

by the structures of both national and regional operational programmes, as well as the allocations planned and finally granted to activities in these areas. In 2014–2020 these investments are continued and they received nearly three times more allocations. Poland plans to spend EUR 11.5 billion (approx. PLN 49 billion, 11% of total cohesion policy) to support the shift towards a low-carbon economy in all sectors (thematic objective 4).

Cohesion policy funds are just one of multiple financial resources at regional and national levels offering loans, grants and both for low-carbon economy. Other important instruments are: loans with Thermomodernization and Renovation Bonus offered by Bank Gospodarstwa Krajowego, preferential loans of the National Fund for Environmental Protection and Water Management granted under the Green Investment Scheme, preferential loans granted for projects concerning protection of the atmospheric air by local Funds for Environmental Protection and Water Management. Moreover, there are also grants from European Economic Area financial mechanism and the Norwegian financial mechanism (commonly known as the Norwegian funds). In the years 2007–2011 in the financing of investments, by far greater was the role of the repayable instruments with elements of aid, which were used in 86% of projects, the value of which reaches 67% of the total investment value (Panek, Rajkiewicz, Wiszniewski 2014). However, the importance of cohesion policy funding is growing, which is reflected not only by the larger allocation in 2014–2020 financial perspective, but also by the efforts of municipalities to prepare the strategic documents necessary to obtain the funds.

Conclusions

Cohesion policy represents substantial budget to be channelled into low-carbon investments. Around EUR 39.7 billion of cohesion policy funds is dedicated to low carbon economy. Poland is the biggest beneficiary of that policy, and almost 30% (EUR 11.5 billion) of this amount will be spend in Poland to support the shift towards a low-carbon economy in all sectors. This should help to transform Polish coal-based manufacturing to renewable oriented society. These significant resources have caused the mobilization of regional authorities towards activities for a low-carbon economy. The municipalities' low-carbon economy plans are the best example. Although there

is no statutory obligation to create such plans, most of the Polish municipalities have done it. Even if the quality of that plans varies, they are an important precondition for building low-carbon economy and improving the air quality in Poland.

Transition to low-carbon economy is an ambition and challenge for Poland and its regions. The ambition comes from the desire to act on climate change and take advantage of the positive external environmental and economic factors that can come from these activities. The challenge lies in managing policy action on climate change in a time of competing policy areas. It will not be easy to convince the Polish elites and society about the benefits coming from regulations which are perceived as restrictions. However, Böhringer and Rutherford (2013) conclude that more comprehensive flexibility provisions at the EU level and a diligent policy implementation at the national level could achieve the transition towards a low carbon economy at little cost thereby broadening societal support.

References

- Böhringer C., Rutherford T.F. 2013. "Transition towards a low carbon economy: A computable general equilibrium analysis for Poland", *Energy Policy*, Vol. 55, 16–26.
- Bukowski M. (ed). 2013. *2050.pl. The journey to the low-emission future*. Warsaw: WISE and InE.
- CohesionData. 2018. <https://cohesiondata.ec.europa.eu/themes/4#> [accessed on: 10.07.2018].
- COM (2010) 2020. *Europe 2020. A strategy for smart, sustainable and inclusive growth*, Communication from the Commission, Brussels 3.3.2010.
- COM (2010) 639. *Energy 2020. A strategy for competitive, sustainable and secure energy*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 10.11.2010.
- COM (2011) 112. *A Roadmap for moving to a competitive low carbon economy in 2050*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 8.3.2011.
- COM (2011) 21. *A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 26.01.2011.

- COM (2013) 216. *An EU Strategy on adaptation to climate change*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 16.4.2013.
- COM (2014) 330. *European Energy Security Strategy*, Communication from the Commission to the European Parliament and the Council, Brussels, 28.5.2014.
- European Commission. 2014. *Financing the energy renovation of buildings with Cohesion Policy funding*, Final Report, Brussels: European Union.
- Fundeko. 2016. *Efekty inwestycji w obszarze energetyki finansowanych w ramach polityki spójności 2007–2013*, Warszawa.
- Grosse T.G. 2011. "Low carbon economy policy in Poland: an example of the impact of Europeanisation", *Equilibrium* 6(1), 9–39.
- Huppés G., Ishikawa M. 2005. "Eco-efficiency and Its Terminology", *Journal of Industrial Ecology*, Vol. 9, No. 4, 43–46.
- Imapp. 2017. *The impact of Cohesion Policy in Poland, Visegrad Group countries and partner states in the period 2007–2013*, Evaluation carried out by Imapp for the Ministry of Development.
- Karaczun Z.M. (ed.). 2016. *Rola społeczności lokalnej w rozwoju gospodarki niskoemisyjnej*, Warszawa: Polski Klub Ekologiczny Okręg Mazowiecki.
- Levy C. 2010. *A 2020 Low Carbon Economy. A Knowledge Economy Programme Report*. London: The Work Foundation.
- Ministerstwo Gospodarki. 2015. *Narodowy Program Rozwoju Gospodarki Niskoemisyjnej*. Warszawa.
- NFOŚiGW. 2015. *Sprawozdanie z działalności w 2014 roku*, Załącznik do Uchwały nr 33/15 Rady Nadzorczej NFOŚiGW z dn. 27 kwietnia 2015 r. Warszawa.
- NFOŚiGW. 2017. *Sprawozdanie z działalności Narodowego Funduszu Ochrony Środowiska i Gospodarki Wodnej w 2016 roku*, Załącznik do Uchwały nr 36/17 Rady Nadzorczej NFOŚiGW z dn. 28 kwietnia 2017 r. Warszawa.
- Panek A., Rajkiewicz A., Wiszniewski A. 2014. *Spatial Analysis (in Polish Voivodeships) of the Activity of Local Authorities for a Low-carbon Economy in the years 2007–2011*, Warsaw.
- Rackiewicz I. (ed.). 2017. *Niskoemisyjność i efektywność energetyczna. Raport o stanie polskich miast*. Kraków: Instytut Rozwoju Miast.
- Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17.12.2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal, OJ EU L 347, 20.12.2013, 289–302.
- Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17.12.2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural

- Development and the European Maritime and Fisheries Fund, OJ EU L 347, 20.12.2013, 320–469.
- The World Bank. 2011. Transition to a low-emissions economy in Poland, Washington DC: The World Bank Poverty Reduction and Economic Management Unit. http://siteresources.worldbank.org/ECAEXT/Resources/258598-1256842123621/6525333-1298409457335/report_2011.pdf [accessed on: 8.10.2018].
- Treaty on the European Union (consolidated versions). OJ C 202, 7.6.2016, 13–46.
- WBCSD, UNEP. 1998. Cleaner Production and Eco-efficiency: complementary approaches to sustainable development, Geneva: World Business Council for Sustainable Development, United Nations Environmental Program.
- WCED (World Commission on Environment and Development). 1987. *Our Common Future (Brundtland-Report)*. Oxford University Press.
- While A., Jonas A.E.G., Gibbs D. 2010. “From sustainable development to carbon control: eco-state restructuring and the politics of urban and regional development”, *Transactions of the Institute of British Geographers*, 35, 76–93.
- Wiśniewski P., Kistowski M. 2016. “Local low carbon economy plans in the context of low carbon rural development”, *Journal of Ecological Engineering*, 17 (4), 112–119.