
TOWARDS A ROMANIA WITH LOW CARBON EMISSIONS

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Abstract

Since we find ourselves near the end of the deadline set for the fulfilment of the targets established for all Member States of the European Union (EU), in the context of the Europe 2020 Strategy, we intend to analyse the current degree of achievement of targets set by Romania in the field of climate change and energy. Of the 11 thematic objectives of the cohesion policy, destined for growth in the 2014-2020 programming period, the thematic objective no. 4 (OT 4) is intended to support the transition to a low-carbon economy, an objective aimed at achieving the "20/20/20" objective in the field of climate change and energy, of the Europe 2020 Strategy. Thus, in this article we will try to analyse the state of Romania, regarding the implementation of European funded projects with the main objective of contributing to the reduction of carbon emissions, starting from the operational programs that contribute, through their established investment priorities, to the achievement of this objective.

Keywords

operational programs, cohesion policy, thematic objective, projects

JEL Classification

F36, O19, O22, O52, Q39

Introduction

Like Cristea et al., 2016, said in their conclusions, that any economic and social policy must be adapted to the specificities of each country, in order to achieve the common objectives set by the European Commission through the Europe 2020 Strategy, each Member State had to adapt its final set of national targets in line with the European ones. Choosing objectives and measures, designing programmes and policies, implementing and sustaining a dynamic development, all require analysis, anticipation, establishing feedback systems and mobilising different institutions, agencies and population groups. (Dobrotă and Vasilca, 2015). Thus, for Romania, the National Reform Program (NRP) represents the framework platform for defining the structural reforms and development priorities that guide Romania's evolution

until 2020, in accordance with the trajectory towards achieving the Europe 2020 Strategy objectives. Basically, NRP is the obligation of each EU Member State to translate the Europe 2020 objectives at national level.

In July 2010, the Romanian Government approved through memorandum the set of final values of the national targets reflected in the NRP, in accordance with the European targets established with the adoption of the Europe 2020 Strategy, taking into account the financial commitments already made and the national specific. Thus, in order to implement the Europe 2020 Strategy at EU level, Romania has assumed, at national level, the following targets for 2020:

- the employment rate of the population between the ages of 20 and 64 - 70%;
- the level of investments in research and development - 2% of GDP (1% public sources and 1% private sources);
- achieving the "20/20/20" objective in the field of climate change and energy - national target "20/24/19";
- the rate of early school leaving – 11,3% and the share of the population with higher education and the age between 30 and 34 – 26,7%;
- reducing by 580 thousand the number of people at risk of poverty or social exclusion.

The available information regarding the effect of the Cohesion Policy on the objectives of the programmes it co-finances reflects the extent to which the Cohesion Policy contributes to the achievement of general policy objectives, namely strengthening the capacity of national and regional economies, and promoting sustainable development, economic, social and territorial cohesion (Marcu and Dobrotă, 2016). Of the 11 thematic objectives destined to growth for the period 2014-2020 of the cohesion policy, the thematic objective no. 4 (TO 4) is intended to support the transition to a low carbon economy. Thus, among the main monitoring indicators of the Europe 2020 Strategy, through the TO 4, the support of the European Structural and Investment Funds (ESI funds) is aimed at achieving the "20/20/20" objective in the field of climate change and energy (national target "20/24/19"), being closely related to the thematic objective regarding the promotion of sustainable and quality employment and supporting labour mobility, it indirectly contributing to the increase of the performance in the labour market, a subject studied by Marcu et al., 2018, but from a different angle.

The main purpose of this study is to analyse the state of Romania in terms of the implementation of European funded projects, with the main objective of reducing carbon emissions. Thus, it will start from the target set for Romania by the TO 4 of the cohesion policy and will analyse the operational programs that contribute, through their established investment priorities, to reaching this objective, in terms of financial allocation, contracting, execution of projects (payments reported to contracting) and last but not least, from the point of view of the absorption recorded on 31.12.2019 on each priority axis contributing to TO 4.

The achieving of TO 4 intended to support the transition to a low carbon economy

This thematic objective no. 4 of the cohesion policy, intended to support the transition to a low carbon economy, was planned to be achieved through the use of ESI funds, as follows:

- cutting down the greenhouse gas (GHG) emissions, compared to 1990 - target 20%, estimated at the level of 2014-2020 Partnership Agreement for Romania (2014RO16M8PA001)

According to NRP 2019, the historical and forecast values associated with the greenhouse gas emissions show that Romania will respect its emission limit assumed, according to Decision no. 406/2009 / EC on Member States' effort to reduce greenhouse gas emissions, so as to comply with EU commitments to reduce greenhouse gas emissions by 2020.

- In the process of developing the programs, the synergy between National strategy for climate change and economic growth based on low carbon emissions (CRESC) and ESI

funding was ensured, so that 27,53% of the national allocation from the Partnership Agreement level targets the supporting of the actions aimed at reducing greenhouse gas emissions.

- In terms of allocation, the support given to the objectives related to climate change at the program level is as follows: Large Infrastructure Operational Program (LIOP) 26,62%, Regional Operational Program (ROP) 25,25%, Competitiveness Operational Program (COP) 1,13%, Human Capital Operational Program (HCOP) 1,22%, Administrative Capacity Operational Program (ACOP) 0,22%, National Rural Development Program (NRDP) 45,78%, Fisheries and Maritime Affairs Operational Program (FMAOP) 18,018%.

- In terms of implementation, LIOP contributes to measures of reducing the GHG emissions in the energy sector and to stimulate energy production from non-polluting sources, through 3 integrated projects of district heating (11,89 million Euros). For the transport sector, is supported the development of an efficient, sustainable, safe and low environmental impact transport system, by financing projects aimed at increasing the degree of safety and improving the environmental conditions for all types of transport, as well as those for increasing the degree for sustainable use of airports. It is also financed the consolidation and extension of integrated waste management systems through projects that develop integrated waste management systems or which have the objective of realizing energy efficiency installations with high efficiency cogeneration (18 phased development projects of integrated systems of waste management, totalling 203,67 million Euros, through which implementation will reach an additional waste recycling capacity of 966,732 t / year).

- ROP supports the development of sustainable urban mobility by financing projects aimed at reducing the dependence on the use of automobiles, by developing an efficient public passenger transport system and stimulating mobility. 1,74 billion Euros are allocated for projects intended to purchase public transport means (rolling stock - trams, trolleybuses and electric buses) that can be equipped with software and equipment related to integrated passenger ticket systems (e-tickets or e-ticketing), traffic management systems and others. Likewise, are aimed investments targeting the reconversion and/or reuse of unused and abandoned lands and their transformation into pleasure and recreation areas for the population (ERDF – 197,60 million Euros).

- NRDP sustains the efficient use of resources and supports the transition to an economy with low carbon emissions and resistant to climate changes in the agricultural, food and forestry sectors (290,2 million Euros from European Agricultural Fund for Rural Development - EAFRD).

➤ the share of energy from renewable sources in the gross final consumption – 24%
In 2017, the share of energy from renewable sources in gross final energy consumption was 24,5%. The indicator values for 2014-2017 exceed both the European target (20%) and the assumed national target (24%), as they were set for 2020.

- through LIOP project calls were launched (22,3 million Euros, of which 18,95 million Euros from ERDF) for the development of the energy distribution infrastructure from alternative sources - distribution sector.

In this respect, in December 2018, according to the Progress Report on the implementation of the Partnership Agreement (issued in August 2019), the achievement of Thematic Objective no. 4 through the use of ESI funds was achieved as follows:

1. Regarding the ROP, during the calls launched until December 2018 related to Priority Axis (PA) no. 3, 467 projects (511,19 million Euros) were submitted for Residential buildings, 686 projects (917,43 million Euros) for Public buildings and 124 projects (295,27 million Euros) for Public lighting. Likewise, 107 projects were submitted for urban mobility with a non-reimbursable value of 765,88 million Euros, and at the end of 2018 were contracted 22 projects (162,43 million Euros) and were certified expenses of 96,26 million Euros. As

far as AP no. 4 is concerned, through this is financed within the TO 4 measures aimed at reducing CO₂ emissions by stimulating sustainable urban mobility in the county's resident municipalities, through investment priority (IP) no. 4.1 - 116 projects (1,24 billion Euros) have been submitted, and at the end of 2018 were contracted 19 projects (206,31 million Euros).

2. LIOP - on December 31, 2018, calls representing 94% of the allocation of each PA contributing to OT 4 (AP no. 6 and 7) were launched. The financing contracts signed represented 8,3% in the case of AP no. 6 and 22% in the case of AP no. 7. Performance indicators were not reached for the PA no. 6, the value reached for the installed capacity for renewable energy production from contracted projects being 0 compared to the target of 48 MW, for the installed capacity for high efficiency cogeneration energy production from projects contracted being 17,14 against the target of 40MW and the total amount of eligible expenditure from the accounting system of the certification authority, being 628.036,99 Euros compared to the target of 27.269.778 Euros. Thus, for the PA no. 6 the values reached for the indicators related to the performance framework do not allow the fulfilment of the conditions for the definitive allocation of the performance reserve in the amount of 11,83 million Euros from non-reimbursable funds. The insufficient progress in implementing the priority was due to the complexity of the applicable state aid rules and the small amount of support that can be granted under them.
3. NRDP - up to December 31, 2018, were committed total public expenses of 231,5 million Euros (employment rate 66,9%) representing the total public amount contracted, out of which were conducted total public expenses for the operations started/completed amounting 58,9 million Euros (degree of payment of 17,0%).
4. FMAOP supports aquaculture farms for the use of renewable energy sources, allocating approximative 2,7 million Euros from European Fund for Fisheries and Maritime Affairs (EFFMA). The total number of contracts is 3, with an EFFMA value of 0,124 million Euros and payments made from EFFMA of 0,056 million Euros.

The analysis of Regional and Large Infrastructure Operational Programs regarding their contribution to TO 4

We chose to analyse these 2 operational programs because we noticed that the EU funds allocated to them contribute the most to the thematic objective 4 aimed at supporting the transition to a low carbon economy.

1. The Regional Operational Program

The ROP 2014-2020 aims to increase economic competitiveness and improve the living conditions of local and regional communities, by supporting the development of the business environment, infrastructure and services, for the sustainable development of the regions, so that they can manage effectively their resources and to harness their potential for innovation and assimilation of technological progress.

These objectives are translated into 11 priority axes (plus a technical assistance axis), which have a total estimated allocation of 8,25 billion Euros, of which 6,7 billion Euros represent EU support, through the ERDF, and 1,5 billion Euros - the national contribution.

In order to meet the challenges related to the Europe 2020 Strategy, as well as to sum up the investments in urban public transport (TO 4), the investments made through the ROP will contribute to the achievement of sustainable urban transport systems by achieving the following results:

- reducing air pollution and noise pollution, as well as energy consumption;
- ensuring accessibility to the public and private transport system for all citizens;
- development of the infrastructure for non-motorized means of transport;

• increasing of the attractiveness and improving the quality of the environment and the arrangement of urban spaces.

Thus, of the 11 priority axes, the priority axis no. 3 (Supporting the transition to a low carbon economy) and investment priority no. 4.1 (Promoting strategies to reduce carbon dioxide emissions for all types of territory, in particular urban areas, including promoting sustainable urban mobility plans and relevant measures to mitigate adaptations) within the priority axis no. 4 (Supporting sustainable urban development) contributes to achieving the TO 4, through the following types of funded activities:

- Priority axis no. 3 (Supporting the transition to a low carbon economy):
 - energy efficiency of public buildings, including measures to strengthen them
 - energy efficiency of residential buildings, including measures to strengthen them
 - investments in public lighting
 - measures for urban transport (paths of rolling/ bicycle lanes/ purchase of ecological/ electric means of transport, etc.)
- Investment priority no. 4.1 (Promoting strategies to reduce carbon dioxide emissions for all types of territory, in particular urban areas, including promoting sustainable urban mobility plans and relevant measures to mitigate adaptations):
 - measures for urban transport (paths of rolling/ bicycle lanes/ purchase of ecological/ electric means of transport, etc.)
 - the revitalization of urban areas (reconversion and re-functionalization of abandoned lands, etc.)

Regarding the priority axis no. 3, from the data obtained from the site of the ROP managing authority regarding the projects contracted until 31.12.2019, we can say that out of the total allocation of this priority axis, worth 2.374,57 million Euros, EU Funds, were contracted projects, which contribute to supporting the transition to a low carbon economy, worth 57,72% of the allocation, and the execution of these projects (payments reported to contracting) is approaching 10%. Also, until 31.12.2019, payments were made to beneficiaries with an estimated value of 136,52 million Euros, EU Funds, this value representing an absorption of European funds related to this priority axis of 5,75%.

Regarding the investment priority no. 4.1, from the data obtained on the projects contracted until 31.12.2019, we can say that from the total allocation of this investment priority, worth about 900 million Euros, EU Funds, were contracted projects, which contribute to the promotion of strategies to reduce the carbon dioxide emissions for all types of territory, worth approximately 114,76% of the allocation, and the execution of these projects (payments reported to contracting) approaches 7,5%. Likewise, until 31.12.2019, payments were made to beneficiaries with an estimated value of 78,11 million Euros, EU Funds, this value representing an absorption of the European funds related to this investment priority of 8,68%.

2. The Large Infrastructure Operational Program

The LIOP strategy is oriented towards the objectives of the Europe 2020 Strategy, in conjunction with the National Reform Program and the Country Specific Recommendations, focusing on sustainable growth by promoting a low carbon economy through energy efficiency measures and green energy promotion, as well as by promoting environmentally friendly means of transport and a more efficient use of resources.

The LIOP addresses to the development needs of four sectors: transport infrastructure, environmental protection, risk management and adaptation to climate change, energy and energy efficiency, contributing to the Union Strategy for smart, sustainable and inclusive growth, by financing 4 of them 11 thematic objectives of the Regulation no. 1303/2013. Achieving the TO 4 with the help of LIOP is achieved by supporting the production of energy from renewable sources, energy efficiency measures and the introduction of smart technologies.

Thus, of the 8 priority axes, the priority axis no. 6 (Promoting clean energy and energy efficiency in order to support a low carbon economy) and priority axis no. 7 (Increasing the energy efficiency in the centralized district heating system in the selected cities) contributes to achieving the TO 4, through the following actions financed:

- Investment priority no. 6.1 – The increase of energy production from less exploited renewable resources (biomass, biogas, geothermal):
 - The realization and/or the modernization of the production capacities of the electrical and/or thermal energy from biomass and biogas;
 - The realization and modernization of thermal energy production capacities based on geothermal energy;
 - Supporting investments in the expansion and modernization of electricity distribution networks, in order to take over the energy produced from renewable resources in safe conditions of The National Energy System functioning.
- Investment priority no. 6.2 – The reduction of energy consumption at the level of industrial consumers
 - The implementation of energy monitoring systems for industrial consumers.
- Investment priority no. 6.3 - Reducing the average consumption of electricity at the level of homes
 - The implementation of intelligent distribution in a homogeneous area of household electricity consumers (demonstration projects in the regions covered by the concession distribution operators).
- Investment priority no. 6.4 – The increasing of savings in primary energy consumption produced by high efficiency cogeneration
 - The construction/ modernization of high efficiency cogeneration power plants (maximum 8 MWe) on natural gas and biomass at the enterprise level;
 - The development/ modernization of high-efficiency cogeneration power plants using waste gases from industrial processes at the enterprise level.
- Investment priority no. 7.1 – The increasing of the energy efficiency in the centralized systems of transport and distribution of the thermal energy in the selected cities
 - The modernization/ extension of primary and secondary thermal networks from thermal energy supply systems, including thermal points; the expansion of the transmission network and the distribution will be financed only in the context in which the existing network was rehabilitated, and the extension is justified in order to emphasize the sustainability of the system;
 - The purchase/ modernization of the equipment necessary for the proper functioning of the heat pumping systems;
 - The implementation of Management Systems (measurement, control and automatization of the Centralized Thermal Power Supply System).
- Investment priority no. 7.2 – The increasing of the energy efficiency in the centralized system of heat supply in Bucharest
 - The optimization/ rehabilitation/ extension of the transport and distribution networks of the thermal energy by resizing them, corresponding to the flow rates of the thermal agent conveyed, in close correlation with the programs of thermal rehabilitation of the buildings and the effects of reducing the thermal energy consumption;
 - The zoning and reconfiguration (routes and lengths) of the transport and distribution networks of the thermal agent;
 - The implementation of the solution for the realization of the network with pre-insulated (or similar) pipes, equipped with a system for detecting, signalling and locating losses, in order to reduce them;
 - The rehabilitation/ reconfiguration of valve platforms, fittings and construction elements;

○The completion of the Centralized Monitoring System (SCADA).

Regarding the priority axis no. 6, from the data obtained from the site of the LIOP managing authority regarding the payments made to the LIOP beneficiaries until 31.12.2019, we can say that out of the total allocation of this priority axis, amounting to 197,33 million Euros, EU Funds, have been contracted projects, which contribute to the promotion of clean energy and energy efficiency in order to support a low carbon economy, worth 13,46% of the allocation, and the execution of these projects (payments reported to contracting) is approaching 21,47%. Likewise, until 31.12.2019, payments were made to beneficiaries with an estimated value of 5,70 million Euros, EU Funds, this value representing an absorption of the European funds related to this priority axis of 2,89%.

Regarding the priority axis no. 7, from the data obtained regarding the payments made to the LIOP beneficiaries until 31.12.2019, we observe that from the total allocation of this priority axis, amounting to 249,48 million Euros, EU Funds, were contracted projects, which contribute to the increase of energy efficiency at the level of the centralized district heating system in the selected cities, worth 37,45% of the allocation, and the execution of these projects (payments reported to contracting) is approaching 7,16%. Likewise, until 31.12.2019, payments were made to beneficiaries with an estimated value of 30,46 million Euros, EU Funds, this value representing an absorption of the European funds related to this priority axis of 12,21%.

Conclusions

Regarding the allocation on the 3 priority axes and an investment priority within the Regional and Large Infrastructure Operational Programs, whose main objective is to reduce carbon emissions, on 31.12.2019, we can say that they do not record a significant value, namely approximately about 6,74% (calculated in the total payments, at 31.12.2019, reported to the total allocation for the 3 axes and an investment priority). Based on this analysis, we consider that the Romanian authorities within the system of management and control of the European funds, together with the beneficiaries of the projects, have to make many efforts in order to reach the assumed targets regarding the reduction of carbon emissions. Although it seems that we are at the end of the programming period, 2014-2020, it must be taken into account that the actual implementation of the projects started relatively late and the last day in which eligible payments considered during this programming period can be made is 31.12.2023. Thus, we consider that the targets, and especially those referring to the thematic objective 4 of the cohesion policy 2014-2020, aimed at supporting the transition to a low carbon economy, are likely to be achieved in the next 4 years and Romania it may even be considered a country where carbon emissions have been reduced.

Regarding the EU proposals on the 2021-2027 Multiannual Financial Framework, on a modern budget for a Union that protects, empowers and defends, for the cohesion policy the Commission has proposed a budget of 373 billion Euros ($\frac{1}{3}$ from the budget of the European Union), and Romania has proposed an allocation of 30,6 billion Euros, with 8% more than in 2014-2020. We note that the EU's efforts to reduce carbon emissions in the 2014-2020 programming period are ongoing, one of the investment priorities that EU interventions will focus on for the period 2021-2027 is represented by a greener Europe, without carbon emissions (putting in implementation of the Paris Agreement and investments in energy transition, energy from renewable sources and combating climate change). As Cristea and Dobrotă, 2017, studied and concluded, Romania needed and continues to need to adopt Green Energy Economy by: decreasing CO₂ emissions and the intensity of greenhouse gas emissions (GGE), raising the renewable energy consumption and increasing the biofuel consumption.

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