

2. Evaluation Design and Methodology

2.1. Objectives of the Evaluation

26. The *general objective* of this evaluation is twofold. First, it aims to support the Ministry of Investments and European Projects (MIEP) in assessing the program’s effectiveness, cost-efficiency, and impact (2014 to 2020) in its use of European Structural and Investment Funds (ESIF) in the energy sector. Second, it seeks to draw key lessons from this period so they may be considered for the 2021–2027 programming period.
27. In line with its general objective, the evaluation has the following *specific objectives*:
- a. to support the MIEP in assessing energy sector programs and projects financed under ESIF in 2014–2020 according to the agreed evaluation framework;
 - b. to identify the factors contributing to the success or failure of designed program intervention, as well as to the long-term sustainability of funded actions; and
 - c. to produce knowledge that could be transferred to relevant managing authorities to inform the remaining projects for the current or next LIOP programming period and also be used when evaluating the Partnership Agreement.
28. The *evaluation scope* is to cover the LIOP energy-related programs and projects as follows:
- a. energy efficiency through smart metering of energy consumption and co-generation systems (SOs 6.2–6.4);
 - b. lower emissions through less exploited renewable sources (SO 6.1);
 - c. energy efficiency in the district heating (DH) systems of selected cities (SOs 7.1 and 7.2); and
 - d. smart and sustainable transmission grids for electricity and natural gas (SOs 8.1 and 8.2).
29. The report also aims to support MIEP for the 2014–2020 programming period by providing evidence and lessons to inform the preparation and implementation of the next cycle. The evaluation covers the projects approved and committed by December 2020 and expected to be executed by December 2023.
30. The *evaluation use* was planned for the following three groups of stakeholders:
- a. *Evaluation users*: Policymakers (MIEP, MoE Ministry of Environment, Water and Forests (MEWF), and other relevant national agencies), entities implementing ESIF-funded energy sector activities (national companies such as Transelectrica and Transgaz, selected municipalities, etc.) and other sector stakeholders and partners using the evaluation to inform policy making, including EU officials;
 - b. *Stakeholders in charge of managing and carrying out evaluations*—namely, evaluation managers, steering and scientific committees, data providers, and evaluators; and
 - c. *General public and civil society*.

2.2. Overall Evaluation Framework

31. The original terms of reference included eight evaluation questions focused mostly on impact and sustainability. Based on the information reviewed and given the status of the implementation of the LIOP in the energy sector, in the inception phase some revisions to the original set of evaluation questions were proposed and agreed. These revisions aimed to capture the dimensions of effectiveness, coherence, and efficiency as well as impact and sustainability; and the number of evaluation questions was increased to 12 as presented below.

Effectiveness

1. To what extent are the LIOP energy interventions carried out in accordance with the expectations, and do they produce the desired change (Specific Objectives)?
2. What factors influence the results of the LIOP energy interventions?

Coherence

3. To what extent are the LIOP energy interventions coherent with national strategies, plans, and programs?
4. To what extent are the LIOP energy interventions coherent with EU strategies and programs (EU Clean Energy Package and other energy and climate strategies, as applicable)?

Efficiency

5. To what extent is the implementation system of the LIOP energy interventions functional and operating efficiently against performance indicators?
6. To what extent are the LIOP energy interventions cost-efficient?

Impact

7. In meeting the program/project stated objectives in targeted sectors, territories, and groups, what progress is discernible (namely, what are the gross effects) since the interventions were adopted?
8. To what extent may the observed progress be attributable to the funded interventions (that is, what is the net effect)?
9. What is the existing estimated network effect of the funded interventions?
10. To what extent could the effects occur beyond the targeted territory, sectors, or groups (estimated spillover effects)?

Sustainability

11. To what extent are the interventions' effects expected to be sustainable over a longer period of time (that is, can interventions be integrated into national sustainable development plans)?
12. To what extent should the LIOP energy interventions be further funded—for example, to maintain their relevance for the next programming period?

32. The detailed Evaluation Matrix is presented in Annex B.

33. Due to the slow pace of the projects' contracting and implementation, in the current evaluation report (Output 2) only 9 out of the 12 evaluation questions (EQs) could be addressed as initially planned: 1–7 and 11–12. The EQs planned to address LIOP projects' net effect, network effect, and spillover effects (EQs 8–10) will be covered in the next evaluation report (Output 3), as they assess current expectations in terms of potential impact that can be achieved by the end of the program.

2.3. Methodology

2.3.1. Methodological approach

34. The evaluation methodological approach was based on a non-experimental design. Data collection was accomplished according to a methodology focused mostly on qualitative methods, which were applied so the evaluation could validate, invalidate, or further explain the hypothesis and preliminary findings resulting from desk review. The selection of projects, data collection and guidelines for interviews and focus groups are presented in Annex C.

35. Most of the data were collected in a first phase of the evaluation; however, the evaluation team came up with new iterations/requests for additional data from relevant key informants to deepen the analysis and further develop the preliminary evaluation results.

36. A variety of data sources (see Annex C) were used to gain access to already existing data regarding the monitoring of the LIOP energy-related interventions, as well as to collect new data and information needed throughout the evaluation process.

37. The collected data covered the entire cycle of implementation of the LIOP energy interventions, including their sustainability phases. Therefore, the entire period, January 2014–December 2020, was taken into account.

38. This evaluation used several methods of analysis, such as: SWOT (strengths, weaknesses, opportunities, and threats), primary and secondary data analysis, indicators' analysis, and theory-based analysis.

39. The **SWOT analysis** assessed the strengths, weaknesses, opportunities, and threats of the energy-related LIOP interventions to identify:

- Positive internal factors (strengths) present in the implementation of interventions supported by LIOP energy interventions;
- Negative internal factors (weaknesses) present in implementation of the interventions supported by LIOP energy interventions;
- Opportunities (external factors that could or did influence the quality of energy services: socioeconomic, demographic, legislative, environmental factors, etc.) regarding the implementation of the interventions supported by LIOP energy interventions;
- Threats (external factors that could or did negatively influenced the implementation and/or had unintended consequences) regarding the implementation of the interventions supported by LIOP energy interventions.

40. The highlighted strengths and opportunities led to the identification and evaluation of alternatives for intervention, and weaknesses and threats form the basis of risk-strategy planning (by using the strengths). The SWOT analysis helped identify the internal and external factors facilitating or hindering the production of intended effects in the wake of intervention implementation.

41. The **primary and secondary data analysis** covered the following aspects: the number of approved/contracted/completed projects, the financial results, the use of funds at the project/operation/SO, etc. Both data from the responsible authorities for project management and implementation (managing authority, beneficiaries) and data collected from other public institutions and relevant organizations were analyzed, as presented in the desk review.

42. The **analysis of indicators** assessed the degree to which the indicators were met at the project level according to intervention type. The results were assessed in accordance with the targets of the projects and with results achieved during a similar intervention (according to the results found in the comparative analysis of similar projects in Poland's and Lithuania's OPs described in Chapter 4). Data were correlated with the results of qualitative analyses with a view to identifying the factors that facilitated or hindered the achievement of results. The results of the analyses were correlated with the financial information at the SO level of the project or operation to highlight aspects connected to the efficiency of the intervention and the identification of unitary costs in areas where this was possible (for comparative analyses and good practices or lessons learned).

43. **Theory of change:** The causal chain of results was considered, followed by an analysis of relevant aspects for each intervention. The hypothesis considered the way the proposed strategy led to obtaining the results especially in the socio-economic context and coherent with the complementary actions (e.g. actions for the marketplace, in the social sphere. etc.).

2.3.2. Data Collection

44. **1. A Desk review** (including secondary data sources) was used to obtain a clear and detailed picture of the program-intervention logic of the results and impacts of PA 6, 7, and 8. The desk review informed the analysis and complemented the primary data collection.

The main documents covered during the desk review (see Annex E) were the following:

- Romanian energy strategic documents (draft versions of the energy strategy, which, though not formally approved, indicate policy priorities since 2014; the NECP for 2020–2030)
- Main legislation and regulations (energy law, heating law, ANRE orders), which entail the rules of the energy market, but also complementary support schemes for technologies and projects similar to those in the LIOP (Green Certificates scheme, co-generation bonus, EU programs supporting other gas infrastructure, etc.)
- Program documents for LIOP (preliminary and final versions; implementation framework documents; annual implementation reports; ex-ante LIOP evaluation; other relevant documents and presentations from the Monitoring Committee of the LIOP)
- Project-related documents (for projects included in case studies—project applications, ex ante cost-benefit analysis (CBA), progress or final implementation reports monitoring results); 10-year network development plans for Transelectrica and Transgaz (for SOs 8.1 and 8.2)

- Relevant statistics from INS and ANRE (e.g., annual reports on energy efficiency and renewables, market reports)
- Other EU programs relevant to the topic (final implementation report of SOP Competitiveness 2007–2013 for previous projects on energy efficiency and renewables; SOP Environment 2007–2013 for prioritization of DH projects in LIOP – latest implementation report of 2014; current Regional Operational Program (ROP) 2014–2020 for complementary measures on energy efficiency in buildings).

45. **2. Semi-structured interviews** were used to gain a better understanding of the program design, history of program implementation, bottlenecks, lessons learned from the preparation of guidelines, calls for project proposals, evaluations, contracting, procurement under the funded projects, institutional challenges, and so forth. Interviews were based on guidelines prepared in the Inception Report. ***Eight interviews*** carried out for this evaluation output, of which four were individual interviews and four were group interviews (with an average of three participants per group interview). The interviews included Managing Authority representatives and stakeholders from both the Monitoring Committee (key beneficiaries and public institutions) and the Technical Committee. Interviews will be the main instrument for gathering information directly from stakeholders in SOs 7.2, 8.1, and 8.2, which each consist of one large and specific project. Interviews were also used to inform the case studies.

46. **3. Focus groups** were used to collect information from a pool of projects, particularly under PA 6 and PA 7, that have competitive selection processes and multiple beneficiaries. ***Two focus groups*** were organized (with an average of six participants in each group) so data could be collected from a broader range of stakeholders where organizing individual interviews would have been less efficient, for SOs 6.2 and 7.1. The focus groups included beneficiaries and implementing actors (service providers and consultants). Focus groups were established based on guidelines prepared in the Inception Report.

47. **4. Case studies** were used to provide more in-depth analysis of projects implemented under LIOP. The criteria for case studies selection were the following:

- The most representative (final or close to finalization) for SOs 6.1–6.4 and SO 7.1 (to be updated in the second evaluation)
- The two projects in SOs 7.2 and 8.1
- Interconnection project – Transgaz SO 8.2
- Sample of gas distribution projects from SO 8.2 (in second evaluation)

48. The nine projects selected to be the subject of case studies are presented in Table 2.1.

49. The ***nine case studies*** are detailed in Annex F.

Table 2.1. List of Case Studies

	<i>Project title</i>	<i>Beneficiary</i>	<i>MySmis Code</i>
	SO 6.1 – Increasing production of energy from renewable and less-exploited sources (biomass, biogas, geothermal)		

1.	Upgrading of transformer stations of E.ON Distribuție România S.A. – Strengthening works of the electrical network upstream of the connection point of the additional production capacities in order to take over the electricity produced from renewable resources in safe conditions of S.E.N. – Unit 110 / 20kV Hirlau, Unit 110 / 20kV Pascani, Unit 110 / 20kV Gorban	Delgaz Grid	105731
2.	Utilization of geothermal energy combined with heating pumps, to produce thermal agent for heating and hot water for Nufarul I Area, Oradea	Oradea Municipality	115839
SO 6.2 – Reducing energy consumption at industrial consumers			
3.	Intelligent energy consumption monitoring system within Antibiotice SA	Antibiotice S.A.	109717
SO 6.3 – Reducing average power consumption of households			
4.	Implementation of intelligent measurement system in Craiova, central area (partially) and Sărari (approx. 10,000 consumers from Craiova)	Distribuție Oltenia	114790
SO 6.4 – Increasing savings of the consumption of primary energy produced by high-efficiency co-generation systems			
5.	Increasing the operational energy efficiency at SC AMBRO S.A. Suceava by implementing a high efficiency cogeneration installation	AMBRO S.A.	115900
SO 7.1 – Increasing energy efficiency for DH systems in selected cities			
6.	Rehabilitation of the district heating system in Oradea for the period 2009-2028, to comply with environmental legislation and increase energy efficiency – Stage II	Oradea Municipality	108460
SO 7.2 – Increasing energy efficiency of district heating system in Bucharest			
7.	Rehabilitation of the heating system of Bucharest Municipality	Bucharest Municipality	138142
SO 8.1 – Increasing the capacity of the national energy system to use energy produced from renewable resources			
8.	LEA 400 KV d.c. Gutinas-Smardan	Transelectrica	129245
SO 8.2 – Increasing interconnection capacity of National Transmission System of natural gas with other neighboring countries			
9.	Developments of NTS in the North-East area of Romania to improve the natural gas supply of the area as well as to ensure the transmission capacities to the Republic of Moldova	Transgaz	122972

2.3.3. Limitations

50. The evaluation identified a few key risks and methodological limitations for which mitigation measures were found, as shown in Table 2.2.

Table 2.2. Methodological Limitations

Limitation	Comments
Inaccurate monitoring reports and data	The desk review revealed certain limitations of monitoring data – in particular, indicators showing final output and outcome data for projects still under implementation, but not finalized, and indicators which were sub-optimally designed. To address this constraint, the evaluation team included monitoring topics in as many interviews as possible to reconstruct additional data of a monitoring nature.
Delays in implementation	Most of the interventions started recently or are delayed in implementation. Capturing effects of interventions in early phases of implementation is challenging, especially at the level of outcomes and impact. The evaluation team tried to provide projections of the likely effects of interventions.
Limited engagement of a few key actors	The evaluators had limited opportunities to access and engage with a few key actors from the LIOP managing authority. Close cooperation with the Evaluation Central Unit facilitated access of the evaluation team to most of the key informants.
Limitation of data collection due to COVID-19 pandemic	The evaluation was conducted without traveling and face-to-face meetings, which involved certain challenges in the primary data collection process. The group meetings were carried out online and, in spite of the initial tendency of being less interactive, in the end they proved to be informative to a satisfactory level.