

smart-metering installation of the 18 pilots conducted in 2015-2016 in Romania were described in the Routledge Studies in Energy Policy.\*\* Study provides the unit investment costs for the implemented pilot projects based on the ANRE publicized reports. There are significant differences between the minimum investment unit costs of 350 Romanian lei (€72) per customer and the maximum, which is lei 1,233 (€252) per customer. This means that the maximum investment unit cost is 250 percent higher than the minimum. An AT Kearney 2012 study\*\*\* showed that the cost-benefit analysis was positive for an investment unit cost of €99 per customer, well below average unit cost at the national level of lei 587 (€120) per customer.

\* European Commission (EC) and Tractebel, *Benchmarking smart metering deployment in the EU-28*, EC, December 2019, [https://www.buildup.eu/sites/default/files/content/mj0220176enn.en\\_.pdf](https://www.buildup.eu/sites/default/files/content/mj0220176enn.en_.pdf).

\*\* Routledge Studies in Energy Policy, *Appraising of the economics of smart meters. Costs and Benefits*, Jacopo Torriti, 2020 <https://www.routledge.com/>

\*\*\*<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj4j8KmhpzWAhUS A2MBHahzApwQFjAAegQIBBAD&url=https%3A%2F%2Fwww.anre.ro%2Fdownload.php%3Ff%3DgKp%252Bhg%253D%253D%26t%3Dvdeyut7dlcecrLbbvY%253D&usg=AOvVaw2oXXPCbxoL-eeikXIPOFTO>.

## 5. Conclusions and recommendations

### 5.1 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)?

209. *Conclusion:* The level of implementation as of February 2021 is low, which limits the evaluability of the program. There is evidence that the projects will lead to the desired change, despite the delays incurred so far in contracting and implementation. Demonstrative projects in Axis 6 have the potential to produce the information required to scale up the interventions using other sources of funding (e.g. commercial or regulated tariff-supported).

210. However, some of the DH projects are at risk of not producing the desired change (in particular Bucharest, which will face difficulties in implementing the project in time while keeping the system operational and a going concern). DH projects may have also been sub-optimally designed in two successive cycles, as investments focused on generation and transport without proper consideration of demand forecasts. In general, LIOP interventions were more progressive and ambitious than other support schemes to further policy objectives such as energy efficiency, RES, modernization of grids (electricity, gas, DH) and interconnectivity and provided a better structure for such interventions in the absence of an energy strategy.

211. *Recommendation:* The financing of the current priorities can be continued in the next cycle, conditioned by higher technical standards to stimulate investments in state-of-the-art technology not yet feasible under market conditions and stronger institutional reforms, such as clear responsibility for DH policy.

## 2. What factors influence the results of the LIOP energy interventions?

212. *Conclusion:* The main factors include:

- Economic: general economic development of the country, leading to increased energy demand; energy price increases following market liberalization; changes in markets for supplies needed to finalize the projects.
- Geographic/demographic: shifting patterns of demand versus supply, which require substantial restructuring of the infrastructure (gas, electricity, DH).
- Legislative and regulatory: changes in interpretations of state aid; increased construction costs following the increase of salaries for construction workers in emergency decree 114/2018; temporary return to regulated electricity and gas prices; tariffs and local policies for DH, as well as uncertainties surrounding the approval of amendments to the DH law; no unitary practices concerning expropriations and construction permits.
- The availability of complementary resources will depend on market conditions (in particular for Axis 6, where beneficiaries are private companies operating in competitive markets) and political ownership to accelerate investments in infrastructure.

213. *Recommendation:* These factors – as well as the difficulties caused by the pandemic, which could have longer-term effects – must be taken into account in the next cycle. The regulatory and legislative framework needs to be stabilized, e.g. by organizing a structured discussion with other authorities, including local, which are involved in permitting to ensure a unitary practice and legal interpretation; or analyzing the impact of ad hoc legislative changes (such as emergency decree 114/2018, which caused increased construction costs and a return to regulated electricity and gas markets). Some of the interventions (such as SO 6.2 and 6.4) could have been cheaper if the market conditions and regulatory framework were conducive to private investments or commercial lending from banks, ESCOs, etc. The preparation for the next cycle should include a revision of existing legal framework, as the results of interventions depend critically on such factors (e.g. Axis 7 depends on legal clarity of responsibilities on DH).

## 5.2 Coherence

### 3. To what extent are the LIOP energy interventions coherent with national strategies, plans, and programs?

214. *Conclusion:* To a certain extent, the LIOP interventions substituted for the absence of an approved updated energy strategy. They did this by providing a list of priority measures not supported by other instruments, with critical targets for energy efficiency, RES, emissions, and interconnectivity. The LIOP remains broadly consistent with the current draft NECP and with the draft NRRP, though the standards (technical, institutional) need to be raised in the next cycle to ensure investments keep pace with the latest technology.

215. In general, lack of strategic vision, absence of a political commitment to a strategy, and lack of clear responsibilities for relevant institutions (ministries, regulators) lead to delays in

implementation in major infrastructure projects in the public sector and will continue to lead to further delays in the next cycle (virtually all projects on Axes 7 and 8).

216. *Recommendation:* For the next programming cycle, the development of a strategic direction will become even more important in ensuring coherence of the interventions. OPs should be instruments for implementing a strategic direction, well integrated into the national policy and budgetary processes – not a substitution for their absence. Most critically, if a DH strategy is not adopted to provide a strategic vision for the sector that integrates heat supply and demand (including energy efficiency in buildings), continuing funding with EU support will not have the expected impact. More precisely, EU funds may finance DH systems that will remain unviable or inefficient, while disconnections will continue. Financing post-2023, including to finalize unfinished projects in the current cycle by “phasing”, should be allocated only if the capacity of local authorities (Bucharest and the other cities) to design and implement a long-term viability strategy for the DH is secured – including tariff adjustments, infrastructure development and maintenance – regardless of the changes in political leadership.

#### **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)?**

217. *Conclusion:* LIOP is consistent with the NECP and NRRP drafts, which are largely designed to conform to the more ambitious targets of the Green Deal and post-pandemic accelerated modernization of the energy sector envisaged by the Resilience and Recovery plan.

218. *Recommendation:* Higher standards for interventions need to be enforced, such as ensuring infrastructure will be compatible with latest technology (smart metering, digitalization for the integration of RES) and ensuring the transition to greener energy (gas pipelines to be compatible with hydrogen, etc.).

### **5.3 Efficiency**

#### **5. To what extent is the implementation system of the LIOP energy interventions functional and operating efficiently against performance indicators?**

219. *Conclusion:* Beneficiaries with prior experience in the previous cycle note improvements in the relationship with the MA and RID. Major constraints for absorption consist of: delays in evaluation (caused also by the long process of contracting evaluators); interpretation of state aid (mostly concerning the capacity of the Competition Council); and, to a lesser extent, duplications of documents requested from beneficiaries and reporting caused by staff turnover in MA/RID and loss of institutional memory.

220. *Recommendation:* Knowledge sharing among beneficiaries and between current beneficiaries and prospective applicants, e.g. by organizing meetings, may have large benefits in promoting the program and ensuring applications from beneficiaries in more varied sectors.

## **6. To what extent are the LIOP energy interventions cost-efficient?**

221. *Conclusion:* Projects contracted under LIOP have ex ante CBAs; all projects would require EU funding, while benefits are correlated to impact indicators. Given the current level of implementation, with few projects completed, the cost efficiency cannot be assessed at this stage and will be addressed in the next evaluation.

222. *Recommendation:* Data from benchmarking after the finalization of projects, e.g. among types of projects on the same SO (particularly Axis 6), could be used to prioritize interventions in the next cycle, if the funding is extended for similar interventions.

## **5.4 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?**

223. *Conclusion:* After a slow start, LIOP energy is on a good track to have the expected impact by 2023 for most of the SOs (except SO 7.2 – Bucharest DH, which will not be finalized by 2023 and will likely be “phased” in the next programming cycle). SOs 7.1 and 8.1 are also at potential risk that project implementation could exceed 2023. For two SOs (6.3 and 7.1), the outcome indicators will not be achieved because of the selection of indicators that, while monitorable, do not capture the real impact – e.g. energy efficiency from smart metering will not lead to lower electricity consumption because the demand is driven by exogenous factors such as substitution of other fuels (electromobility, heating) and new household appliances. Also, losses in DH will increase overall, as the gains from the interventions under SOs 7.1 and 7.2 are well superseded by the deterioration of the sector in general.

224. Major improvements are needed in the preparation and monitoring capacity to establish indicators for outputs and outcomes that are both easy to measure and effective in capturing the impact. Some of the outcome indicators will not be realized because they were poorly designed during programming (e.g. electricity savings for households with smart metering, which will increase due to exogenous factors if compared to the 2014 baseline). Other indicators, such as reduction of losses in the DH networks, capture not only the (positive) results of the projects supported, but the (negative) general deterioration of the sector apart from LIOP interventions. Also, actual data on implementation should not be reported based on contractual commitments of the beneficiaries, but on physical progress and actual outcomes; otherwise, the indicators reported are overoptimistic and do not present an accurate image of the status.

225. *Recommendation:* Improve capacity to prepare output and outcome indicators. This would require building capacity not only at the MA level, but at the strategic level concerning energy policy (MoE) and is closely linked to strategic planning capacity.

## **8. To what extent may the observed progress be attributable to the funded interventions (that is, what is the net effect)?**

226. *Conclusion:* In all Axes 6-8, EU funding is used to support interventions not covered by other policies. The interventions in Axis 6 are more “demonstrative” in nature, mostly to provide information on costs and benefits in these areas to allow for future scale-up with other sources of funding (own revenues, commercial financing, recognized costs in regulated tariffs). The SO most at risk is SO 6.3, where demonstrative projects may not contribute to the roll-out of smart metering if the roll-out continues to be postponed and technology advances. Axis 7 supports the most important interventions in DH; similar investments financed under the national budget, such as the Termoficare program or under the local budgets for investments, are significantly smaller, limited by budgetary constraints (such as annual budgeting) and lower standards. SO 8.1 and 8.2 consist of “missing links” (or existing bottlenecks) without which the targets of RES integration and interconnectivity cannot be achieved.

227. *Recommendation:* Scaling up demonstrative projects and improving broader sector results in district heating, electricity and gas transport and distribution level requires enhanced strategic planning in the MoE (beyond MA).

## **9. What is the existing estimated network effect of the funded interventions? and**

## **10. To what extent could the effects occur beyond the targeted territory, sectors, or groups (estimated spillover effects)?**

228. *Conclusion:* Given the current level of implementation, with very few projects finalized and operational, questions 9 and 10 are treated together. There is no current network impact and it is too early to assess in detail the potential impact, including spillover effects after the finalization of the program. We expect the projects will indeed have spillover and network effects after the finalization of the program in 2023, consisting mostly of: increased knowledge from demonstrative projects; revitalization of certain local industries, such as pipeline production; knowledge of infrastructure issues and operation problems; raised awareness of industrial consumers on energy efficiency benefits; increased confidence of energy investors, in particular RES, that the business environment is improving.

229. *Recommendation:* If the interventions are continued post-2023, higher standards will be needed to ensure technological compatibility. Most importantly, some measures (DH support, infrastructure investments in Transelectrica and Transgaz) should be continued only if there is clear commitment for reforms in these sectors that would ensure viability and performance. DH in particular needs to be supported only after the adoption of the DH law, and beneficiaries should be required to present a clear, viable long-term strategy for DH in their cities with an implementation schedule that cannot be put at risk by political cycles.

## 5.5. 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)?**

230. *Conclusion:* At this stage, sustainability can be assessed mainly in terms of expectations of beneficiaries and provisions for the adequate maintenance of investments. The projects financed under LIOP will be monitored for a period of five years after finalization and start of operation, which will provide additional assurance on their sustainability.

231. Projects at risk in terms of sustainability are, however, the projects for which finalization could be extended after end-2023 (“phased” into the next budgetary cycle) – notably DH Bucharest. SO 8.1 might be at risk as well, if delays occur during the procurement of works and the actual construction. In particular in the public sector, the sustainability can be ensured if it translates into policy decisions and investments are accelerated (e.g. ANRE adopts a schedule for full roll-out of smart metering; DH law is approved and clarifies responsibilities; Transelectrica and Transgaz start accelerating the implementation of the 10-year network development plans).

232. *Recommendation:* The decision to further fund the interventions should be clearly linked with such policy decisions indicating ownership for state projects and willingness to use the experience of LIOP in designing support for energy efficiency, renewables investments or smart metering roll-out in the private sector.

233. Financial instruments can be designed for the next programming cycle to increase the amounts of the support for interventions. However, this is possible only to the extent OPs can be fully integrated into overarching national strategies (energy and climate) and budgeting processes (like in Poland or Lithuania). For example, based on Polish or Lithuanian models, funds can be set up for each intervention which can be supplemented by additional support from the Romanian budget and private loans to leverage EU funds; the latter will of course be repayable by beneficiaries. For example, such a fund can be set up to support DH integrating OP interventions and national programs such as Termoficare. Integrating OP interventions with similar measures envisaged in national strategies and budget processes would support the adoption of the same level of technical standards for projects regardless of the source of funding, while ensuring scale-up.

234. We also recommend the inclusion of energy efficiency in buildings in the next cycle in the same OP with energy. This would allow coordination of supply and demand; ensure prioritization of projects for heat provision in cities which have an integrated approach; and facilitate the application process for beneficiaries (municipalities), which would deal with only one implementation system and set of counterparts instead of two (LIOP and ROP).

### **12. To what extent should the LIOP energy interventions be further funded—for example, to maintain their relevance for the next programming period?**

235. *Conclusion:*

### **Current program challenges:**

- The evaluation capacity in the MA has led to delays in contracting financing projects
- Low capacity for state aid interpretation (including in the Competition Council)
- Low technological requirements for current projects – e.g. standards for district heating or gas networks are low, consisting of replacement of existing pipelines, with little investments in digitalization or technologies that would allow the transition from fossil to RES.
- Limited capacity to collect data and prepare output and outcome indicators that are both monitorable and relevant for the impact of the interventions
- Fragmented interpretation of permitting and expropriations across public institutions and local authorities
- Possible future risks related to the next stage of implementation. Given the low level of implementation (with few large public infrastructure projects started), there is no clear assessment of the risks concerning the next stage of the projects. For example, there is experience on permitting and expropriations, but one can expect difficulties in the procurement processes which are just starting. Delays in procurement may push some of the projects (SO 8.1, SO 7.1, SO 7.2) well beyond the 2023 deadline.

### **Broader programming challenges:**

- The OP compensates for the absence of broader energy sector strategies, instead of being an instrument to support a strategic vision (such as an energy and climate strategy, supported by multiple decision-makers and funded from different sources, of which the OP is just one). This reduces the potential impact of the OP, the possibility to leverage EU support and complement with other financial sources; also, the lack of political commitment to a broader strategy leads to lack of ownership and determination to solve the outstanding administrative bottlenecks to implementation of the projects in the LIOP.

236. *Recommendation:* Further support for LIOP energy interventions should take into account both current and broader program challenges, as follows:

### **Current program challenges:**

- The evaluation capacity in the MA needs to be increased, including the process of selecting evaluators. Significant delays in most SOs were caused by the lengthy evaluation process.
- Increased capacity on state aid (including in the Competition Council) may be critical to eliminate delays in approving guidelines for applications, in particular for large projects involving natural monopolies and state-owned companies. For industrial beneficiaries (such as SO 6.2), a different approach concerning state aid may be needed to provide large companies with the opportunity to apply – especially because the cap of the de minimis scheme (and hence of the support) is just €200,000, well below the costs of highly sophisticated smart metering systems for industry. Also, the intervention could benefit from more applications from SMEs if an information campaign is organized to raise awareness. In addition, the MA could organize round tables with beneficiaries and potential applicants; this could contribute to knowledge sharing and program visibility (such discussions can be organized without concerns of sharing

commercially sensitive information) while also providing information to industrial consumers in various sectors on the demonstrable economic potential of energy efficiency.

- Eligibility criteria for projects that beneficiaries consider risky must be reassessed. For example, beneficiaries of support for geothermal resources face the risk that project expenditure will not be eligible at the end of the project if the project proves not viable (a circumstance which is not known until the project is finalized).
- It is critical to step up on the technical ambitions of interventions to ensure investments are “future-proof” (e.g. higher standards for infrastructure; new technologies, digitalization, storage; compatibility of gas networks with hydrogen). These must take into account the types of projects that are supported by EU funds in other member states.
- Indicators for outcomes and outputs need to be adjusted to effectively measure the real impact of the interventions (direct impact or contribution to broader targets, but directly attributable to the intervention).
- Practices concerning permitting and expropriations must be unified. Currently, though the legislation on expropriations and on construction permits is clear, there are different interpretations by various institutions and local authorities. A meeting / round table with the responsible institutions may help reach unitary interpretations and facilitate the implementation of large infrastructure projects (e.g. electricity lines or gas pipelines) which need numerous similar approvals from many institutions (e.g. construction permits from dozens of local authorities on the site of the projects).
- Areas of procurement risk (preparation of TORs, contestations, etc.), supervision of works, guarantees for execution, etc. must be assessed to identify in time mitigation measures.

### **Broader programming challenges:**

- Before deciding on interventions that should be pursued in the next cycle, most importantly, significant reforms must be undertaken in the sectors for which funding is intended. Responding to the latest Council recommendations and priorities in the National Reform Plans entail inter alia the adoption of national strategies and action plans, aligned with clear responsibilities and budgets; these are currently the major missing link between OPs and EU strategic documents. They have proved to be a significant obstacle for the programming for the current cycle (e.g. the difficulty in formulating indicators is just a consequence of not knowing how to embed interventions in LIOP within broader policy measures; the lack of progress in large infrastructure projects such as DH, Transelectrica, and Transgaz is a sign of lack of ownership and political will to pursue ambitious investments in critical infrastructure important at the strategic level). The 2014–20 OPs were based on interventions and lessons learned from the previous cycle (focusing on areas identified as worth spending on, with no clear prioritization), but for 2021–27 the level of ambition expected is much higher, given the strategic directions of the new Green Deal and NextGenerationEU. If no such reforms are forthcoming, the scale-up of interventions so far, increasing of ambition of similar interventions, or amending of priorities will only lack ownership. The requirement to prepare the NECP and NRRP (and LTRS for energy efficiency in buildings) is a good opportunity to anchor national strategies to EU processes; the preparation of action plans is the next step. OPs



must be viewed as one of the financing sources for the implementation of these strategies and action plans. Funding in the next OPs should be targeted to sectors where there is willingness to leverage the use of EU funds demonstrated by the existence of a national strategy and availability of other sources of funding.