

# MOLDELECTRICA TRANSMISSION NETWORK REHABILITATION

## State Sector Project Assessment

Prepared in line with the EBRD's Access to Information Policy<sup>1</sup>

Country	Moldova
Sector	Power and Energy
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## Operation Description

### Project description and client:

The purpose of the Project was the rehabilitation of existing internal power transmission network of Moldelectrica (the "Company") to improve its efficiency and reliability. Moldelectrica is a state-owned transmission company under the supervision of the Ministry of Economy and Trade ("MoE"). It is fully functionally and legally unbundled from the generation and distribution assets of the state.

The Project involved the design and rehabilitation of a number of substations, transformers and transmission lines as follows: (i) reconstruction of one 400/100 kV substation; (ii) reconstruction of two 110/10 kV substations; (iii) reconstruction of three 110 kV transmission lines (1x10 km, 1x1 km, 1x20 km); (iv) supply and install of two 330/110/10 kV, seven 110/35/10 kV and three 110/10 kV transformers; and (v) installation of cells and switches in several substations.

### EBRD's financing and deal structure:

Total original Project cost was USD 51.2 million. The Project was financed through a sovereign loan to the Republic of Moldova represented by the Ministry of Finance of Moldova in the amount of up to USD 20.0 million (approximately EUR 14.3 million) by EBRD. Tenor was 15 years. A parallel loan of the same amount was provided by the European Investment Bank. In addition, the EU Neighbourhood Investment Facility provided a EUR 6.0 million investment grant and a EUR 2.0 million technical assistance grant for the Project implementation. The Ministry of Finance made a subsidiary loan to Moldelectrica while the Bank entered into a Project Agreement with Moldelectrica.

<sup>1</sup> As required by Section IV paragraph 1.4.8 of EBRD's Directive on Access to Information (2019), the Bank shall disclose information (excluding Confidential information) contained in Operational Performance Assessment (OPA) reports for State Sector Projects selected for extended review, within 60 calendar days after completion of the relevant OPA report.

**Changes to the scope or design of the project following approval:**

There were no changes to the scope of the project. However, there were substantial savings of EUR 13.9m achieved during the project components procurement and the Bank approved expansion of the scope of the Project, while fully staying in line with the original objective - strengthening of the Moldovan Electricity Network. Moldelectrica has requested to utilise the EBRD loan savings for additional investments into the reconstruction of several 10 kV switchgears on prioritised substations, fully in line with the original objective of the Project.

**Previous operations with client:**

This project is the first operation with the client;

**Project's primary objective:**

The operation will enable Moldelectrica to design and rehabilitate a number of substations, transformers and transmission lines. The rehabilitation will result in improved efficiency and reliability of the Moldovan transmission network.

## Relevance

The Project is in line with the Bank's Energy Operations Policy which explicitly supports rehabilitation of transmission networks and regional trading. The Project is also in line with the Moldova Country Strategy by providing "financing for the rehabilitation and expansion of energy sector assets, including strengthening international connections." The Country strategy also states the Bank's support to Moldova in "joining the coordinated European transmission network and meeting the Energy Community Treaty requirements." The Project is strongly supported by the Government of Moldova and will be one of the first projects to be financed in Moldova following the signing of the Sustainable Energy Action Plan between the EBRD and Moldova on 4 February 2011. This Action Plan calls for investments in interconnection lines and renewable energy, both of which require a stable, robust transmission network.

The main objective of the Project was to finance upgrade of the power transmission network of Moldova to improve reliability and be ready for ENTSO-E interconnection.

At the time of approval the following comprehensive transition objectives were set for this Project:

- (i) Frameworks for markets - improving the functioning of regulatory entities and practices through revisions of transmission tariffs. The Bank has been in discussions with ANRE (energy sector regulator) in amending its transmission tariff methodology to be more cost reflective, in particular to allow an improved return on capital to facilitate new investments on the grid. ANRE in May 2011 approved the new tariff methodology and starting from 2012, tariffs are approved according to that methodology which was confirmed to be in line with best practice and based on cost recovery by the Bank during due diligence.
- (ii) Market expansion - ENTSO-E interconnection and synchronisation with the grid. The rehabilitation of the transmission lines through the Project helps meet the technical specification for ENTSO-E interconnection,

- which took place on 16 March 2022 due to the urgent need for Moldova and Ukraine to depart from IPS/UPS as a result of the war on Ukraine.
- (iii) Transfer and dispersion of skills – as part of the Project a consultant was contacted to assist the Moldelectrica’s Project Implementation Unit. The consultant provided assistance in aspects of procurement, disbursement, and compliance with the Bank’s performance standards. With involvement of the consultants, the Moldelectrica had access to best practices on technical, procurement, and environmental standards to implement. The involvement of the consultants and exposure to international best practices helped improve the implementation capacity of Moldelectrica’s staff that is part of the PIU. One change in particular included development and implementation of a routine preventative maintenance system, which was not in place before the Project.

For each of the objectives the following monitoring benchmarks were selected:

<b><i>Transition impact objectives of project</i></b>	<b><i>Monitoring benchmarks</i></b>	<b><i>Implementation timing</i></b>
Market expansion	Improve Average Interruption Time (AIT) Keep transmission losses down Increase quantity of cross border flows	By end 2015  Throughout life of loan By end 2015
Transfer and dispersion of skills	Successful tendering of implementation contracts  Develop and implement a routine preventative maintenance system	By end 2015  By end 2013
Frameworks for markets	Final agreement of initial parameters and establishment of tariff based on cost recovery  Annual agreement of new tariffs during renewal period  Improvements in transparency and methodology for cross border trading  Participation in the Coordinated Auction Office	By June 2012  Throughout life of loan  By time of entry into ENTSO-E By time of entry into ENTSO-E

As a result of the implementation of the Project, the power transmission network of Moldova was upgraded and resulted in successful synchronisation with ENTSO-E that took place on 16 March 2022. And with the ENTSO-E synchronisation in place most of the benchmarks have been achieved. More details on each objective implementation is provided below

This operation anticipated two dimensions for the Bank’s additionality which have been duly achieved and completed:

- (i) The Bank's participation was essential for the realisation of this Project due to the lack of available long term debt financing capacity in Moldova which is still observed to the present date. Moldova's access to long term investment funds was limited and was complemented by grant funds which accounted for 22% of the total financing package. Moreover, no commercial bank was willing or capable of providing the amounts and tenors required for this type of sovereign project in the distribution sector.
- (ii) Policy dialogue. The Bank was closely engaged with Moldovan authorities in the energy sector, and brought its sector expertise as part of this Project as well as its ability to mobilise EU NIF grants.

The Project also envisaged the following set of conditionality's:

- Adoption and implementation of the Bank's Performance Requirements and the Bank's Procurement Policy.
- PIU consultant requirement.

**Effectiveness** Positive transition impact for this Project was mainly expected from:

- (i) market expansion, by helping to meet technical and reliability standards for future ENTSO-E interconnection;
- (ii) transfer of skills through TC assistance with procurement, disbursement and compliance with environmental standards, areas in which the Client has limited experience to date, and
- (iii) improving the framework for markets through revision of transmission tariffs to improve cost reflectivity.

At the time of approval the following comprehensive transition objectives were set. The majority of the objectives were met:

- (i) Market expansion:
  - a. improvement of technical parameters:
    - 1. Average Interruption Time: AIT has reduced from 11 min/year at Project preparation to 9.1-9.4 min/year in 2020/2021,
    - 2. Transmission losses: the transmission losses were comfortably below 3.5% by 2021. In 2022 post synchronisation they increased as a result of the lower capacity of existing interconnection line Vulcanesti-Issaccea.
  - b. increase in cross border flows: After the synchronisation with ENTSO-E the cross border flows have increased and depend mostly of where the electricity has been acquired (internally or externally)
- (ii) Transfer of skills:
  - a. development and implementation of a routine preventative maintenance system: The preventative maintenance system has been developed and introduced.
  - b. tendering of implementation contracts: The contracts have been tendered and fully implemented.
- (iii) Market framework:
  - a. revision of transmission tariffs methodology based on cost recovery: The tariff methodology has been introduced based on cost recovery.

- b. Annual agreement of new tariffs during renewal period: Partly achieved
- c. Improvements in transparency and methodology for cross border trading: After ENTSO-E synchronisation the cross border trading methodology with Romania is in place and the one with Ukraine is being finalised.
- d. Participation in the Coordinated Auction Office: After ENTSO-E synchronisation Moldelectrica is doing joint capacity allocation with Transelectrica and is currently in the process of finalisation the agreement with Ukrenergo.

The progress to date is good. Most of the objectives have been implemented. The objectives under point (ii) “transfer of skills” have been fully achieved as all contracts financed under the project have been signed and are currently implemented. Similarly, “market framework” indicators under point (iii) either are achieved or are on track: in May 2012, the company and the Moldovan Authorities reached a final agreement and established a transmission tariff based on cost pass through. Starting from 2012, tariffs are approved according to this new methodology which was confirmed to be in line with best practice and based on cost recovery. The tariffs were renewed in July 2015 as part of the new methodology. However, there are still discussions as to what to do with the cumulated deficit incurred by Moldelectrica while the tariffs were not in line with the company's costs. No further significant progress has been reported on this later point. After ENTSO-E synchronisation, the relevant objectives under (iii)(c) and (d) are being implemented as well. The main delays occurred with regards to “market expansion” indicators (point (i)(a) and (b)), as the project was until recently under implementation. However, they are currently also either implemented or close to being fulfilled.

Apart from the transition impact the success of the Project derives from the implementation of the following physical implementation benchmarks as presented below.

- i) Compliance with investment budget and completion schedule in accordance with contracts.

The rehabilitation of the network was split into the following components, each of which corresponded to a specific contract that was procured and implemented:

- A. Change of 9 substations' power transformers 110/35/10kV and one reactor 400kV;
- B. Change of 330 kV and 110 kV disconnections, circuit breakers and related current transformers;
- C. Reconstruction of 400 kV, 110 kV and 35 kV substations bays as well as 10kV switchgear cells;
- D. Reconstruction of 5 portions of 110 kV High Voltage Lines (total of 128 km);
- E. Reconstruction of 11 kV MV switchgear.

Initially, the EBRD loan proceeds were to finance items (B) and (D) together with NIF, while EIB financed items (A) and (C). The procurement process for items (B) and (D) was completed and contracts were signed on 25 February 2016 and 3 December 2015 respectively for the total amount of USD 13m, compared to USD 26m initially budgeted in the Project Implementation Plan. Therefore, Company requested the Bank to allow the loan savings (estimated at USD 13.9m) for additional investments into the reconstruction of several 10 kV switchgears on prioritised substations, fully in line with the original objective of the Project. These additional works were grouped into a new tender, Tender (E). All contracts have been finalised by mid-2023.

**The Project was fully completed by end June 2023.**

**There were some saving vs the original budget, which were subsequently utilized in agreement with the Bank for additional investments.** The Company mostly achieved the operational objectives of the Project, resulting in improved quality and efficiency of electricity transmission in Moldova and synchronization with ENTSO-E.

ii) The Company servicing the IFI loans and meeting the ratios and covenants as per the Loan Agreement.

The Project implementation benefitted to a significant extent from the provided TC for PIU consultant funded from EUR 2 million EU NIF grant. The cost-reflective tariffs, a result of the Bank's policy dialogue with the Moldovan regulator ANRE, enabled Moldelectrica to execute its investment plan in sustainable way and secure stable operations and predictable environment for future investments.

Last but not least, the Bank's loan to Moldelectrica enabled the utilisation of the EU-NIF grant of EUR 6 million, which completed the funding package for the entire project.

## Efficiency

Despite the fact that the Borrower is the Moldovan Ministry of Finance, at origination the financial analysis was performed for Moldelectrica in order to assess the soundness and sustainability of the Bank's investment. The financial analysis and projections were prepared for a period of 17 years from 2011 to 2027.

The Russian-Ukrainian military conflict in 2022 created disturbances on the energy market in the Republic of Moldova. As such, Company's performance in 2022 is not directly comparable to the previous period. Additionally, starting from June 1, 2022 with the entry into force of the Electricity Market Rules, the Company has a new activity on the wholesale market, namely electricity imbalance coverage services. Moldelectrica is obliged to buy and/or sell active electricity from/to the participants in the electricity market in order to

compensate for deviations from the programmed values of the production and/or consumption of electricity.

The Project was fully implemented by June 2023. The Government has been repaying on time without any delays. The Bank has made its intended return.

The Bank's involvement in the various stages of the Project, from selection, appraisal, structuring and negotiation to implementation, was focused both on physical implementation and on transition impact components to ensure that the Bank's mandate would be met.

Preparation; design; structuring: the Bank performed standard due diligence for the Project that included technical, environmental, financial and regulatory. For the technical and environmental due diligence the Bank contracted an independent consultant. As part of environmental due diligence the consultant prepared an Environmental and Social Action Plan that was subsequently implemented by Moldelectrica. The financial and regulatory due diligence was performed in-house. The project team worked closely with the Ministry of Economy and Moldelectrica, and focused on the structuring of the project in particular on the implementation and strengthening of transition components that have worked well.

The team considers that the quality of the project's documentation, including risks identification and mitigation, as presented in the Board document and supported by the due diligence reports was adequate for the project.

Implementation and monitoring: To support the project implementation the Bank appointed an independent consultant that supported the Project Implementation Unit of Moldelectrica. The consultant supported PIU at all stages of implementation, including procurement, reporting as well as works supervision and monitoring.

The Bank has been permanently assisting Moldelectrica on procurement issues during the procurement process and fast feedback including for comments and recommendations related to the procurement and implementation documents, processes and decisions.

The Bank has also actively engaged in the policy dialogue with the Government on the reform components.

The monitoring and reporting of the Project is handled by the team directly with the Moldelectrica's management.

The cross-border transmission interconnections between Moldova, Romania and Ukraine require upgrade of the internal transmission system in Moldova as the economic viability of these interconnections rely on the ability of Moldova's transmission lines and substations to efficiently and reliably transmit power. Existing and new interconnections cannot function without a reliable internal transmission network. As a result of the implementation of the Project, the power transmission network of Moldova was upgraded and its reliability has improved to support the ENTSO-E interconnection that took place in 2022. In particular, interruption times as measured by Average

Interruption Time (AIT), has reduced from 11 min/year at Project preparation to 9.1-9.4 min/year in 2020/2021. The Project will also benefit the existing and future 400kV and 110kV interconnections with Romania.

As of June 2023 most of the transition objectives have been achieved and the impact will persist after the project completion, as follows:

- (i) Frameworks for markets - improving the functioning of regulatory entities and practices through revisions of transmission tariffs. The tariff methodology is in place and tariffs are adjusted on cost recovery basis. After ENTSO-E synchronisation the cross border trading methodology with Romania is in place and with Ukraine is being finalised.
- (ii) Market expansion - ENTSO-E interconnection and synchronisation with the grid. This was achieved in 2022 and will continue after the Project completion. The AIT has reduced from 11 min/year to 9.4 min/year by 2021 and the transmission losses were comfortably below 3.5% by 2021. In 2022 post synchronisation they increased as a result of the lower capacity of existing interconnection line Vulcanesti-Issaccea, but this will be solved only through building more interconnection capacity.

Transfer and dispersion of skills – the skills gained by Moldelectrica’s staff during Project implementation will continue to be used for implementation of future projects large projects, such as cross-border interconnection lines and further network rehabilitation. The routine preventative maintenance system implemented will continue to be used by Moldelectrica.

## Implementation Summary

The Project supported Moldelectrica in improving the efficiency and reliability of the power system by rehabilitating a number of substations and transmission lines reducing inefficiencies and meeting the ENTSO-E’s technical requirements. As a result of the implementation of the Project, the power transmission network of Moldova was upgraded and its reliability has improved to support the ENTSO-E interconnection that took place in 2022.

The Project was implemented in accordance with the Bank’s environmental and social policy and the Bank’s involvement ensured that transparent and efficient procurement procedures were followed. Through the Environmental and Social Action plan developed, the Project helped the company to strengthen environmental, health and safety management as well as stakeholder engagement attaining international EHS management standards.

As a part of its wider Transition Impact, the Project contributed to successful implementation of country and energy sector strategy and to the establishment of a transmission tariff based on best practice and cost recovery.