



EPCG Metering and Distribution Project

State Sector Project Assessment

Prepared in line with the EBRD's Access to Information Policy¹

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Operation Description

This report refers to the debt operation with Elektroprivreda Crne Gore AD Nikšić (EPCG, www.epcg.co.me) approved by the EBRD Board of Directors on 26 October 2010 and signed on 25 November 2010.

The Client: EPCG is a vertically integrated electricity company incorporated in Montenegro. It is a joint stock company incorporated under Montenegrin law. It was incorporated from the pre-existing socially-owned enterprise in 1999 and partially privatised in 2000, when 29% of its shares were sold to investment funds and small investors. At the time of Board approval in 2010, it was owned 55% by the Government of Montenegro (the "GoM") and 43.7% by A2A SpA, a municipally owned Italian utility, which was also represented at key management positions of EPCG. Presently, EPCG is de facto owned 98.6% by the GoM (de jure 88.65%, along with 10% Treasury shares, and 0.1% custody account), while the rest is owned by individuals, the greatest share among whom owns 0.0337%. At the time of Board approval EPCG was functionally organized into three business units: generation, distribution and supply. Presently, the company operate 867 MW of generation capacity, of which 657 MW (76%) is hydropower and 210 MW (24%) is lignite-fired, and is retaining the supply function. The distribution operation has been spun off in 2016 into a legally and functionally unbundled subsidiary – CEDIS.

EBRD's financing and deal structure:

The proceeds of the Loan were to be used by EPCG to fund the purchase and installation in the Montenegrin electricity distribution network of electronic meters together with related infrastructure, software, communications equipment (the "Project"), alongside a grant funded

¹ 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.

implementation assistance. The total investment of initially €43.5 million was financed with EBRD's corporate senior loan of up to €35 million (breakdown below). The repayment period was 12.5 years. The use of proceeds was the purchase and installation of approximately 175,000 electronic meters together with related infrastructure, software, communications equipment, training and commissioning.

Original loan sources:

<u>Sources:</u>	
EBRD	EUR 35,000,000
EPCG funds	EUR 8,500,000
	EUR 43,500,000

Extension loan sources

<u>Sources:</u>	
EBRD	EUR 30,000,000
EPCG funds	EUR 6,500,000
	EUR 43,500,000

The key covenants included:

- Compliance with Environmental and Social Action Plan.
- Maintenance and support of a Project Implementation Unit.

Any agreed changes to the scope or design of the project following approval:

On 1 April 2014 a loan extension was signed between EPCG and the Bank in the amount of EUR 30 Million to extend the installation of smart meters and associated infrastructure in order to improve energy efficiency, enable demand side management, and further reduce distribution losses and increase collections. The company was providing additional EUR 6.5 million from their own funds to the Project. It was planned to extend the scope of implementation and install additional 97,000 meters, thus covering effectively all of the year-around electricity consumers in Montenegro (the only consumers who would not be covered would be consumers with occasional use holiday homes for whom the installation of smart meters would not be economic).

Any previous operations with client: none

Project primary objective(s)

The primary objectives were that the operation would enable the Company to purchase and install smart meters and the associated infrastructure and software in the Montenegrin electricity distribution system. These measures were going to target the existing high level of electricity losses in the network with the aim of reducing these from 23% to 14%. The Project was also assisting in increasing bill collections from the current level of 90% to 94%. Together, these measures were aimed at supporting the Company's transition of the Company to an independent commercial entity, as well as to support the liberalisation of the Montenegrin electricity sector and the improved energy efficiency of the Montenegrin economy. The

anticipated improvements targeted a result in a reduction in CO2 emissions of 88,000 tonnes each year (of which over 86,000 tonnes per annum was achieved).

Relevance

The operation was consistent with the Bank's Country Strategy for Montenegro, and also consistent with the Bank's Energy Operations Policy and with the Agreement Establishing the Bank.

The Bank's Country Strategy for Montenegro aimed for "robust effort to tackle energy security and energy efficiency issues, by promoting reform agendas and a more conducive environment for renewable and energy efficiency projects via dedicated resources available under existing facilities". It also highlights that "The Bank will work with the vertically integrated electricity company EPCG to finance needed investments and will work with the Government to identify possible investments in generation and to work for compliance with EU environmental standards".

The Bank's Energy Operations Policy stated that "The Bank will seek to support qualified strategic investors and governments to adopt measures in an appropriate timescale to ensure support for those unable to afford the services. Financing will be aimed at improving commercial practices (metering, billing and collection) and upgrading infrastructure (lines, substations, transformers, etc), including enhancing safety measure".

One of the major challenges facing EPCG and its shareholders was addressing the high level of losses and bad debts in the distribution network. Losses were 23% in 2009 compared to best international practice of 6-8%, while the collection rate was 90%, compared to best international practice of over 99%. In addition to contributing to Montenegro's high energy intensity, this issue was an obstacle to the ongoing development of the company, reducing its cash flow and so constraining its ability to carry out necessary investments. Recognising the importance of this issue, and the role of metering in addressing it, one of the targets set for EPCG management was the installation of at least 175,000 smart meters within four years.

The Bank's EUR 35 million loan addressed this challenge by funding the acquisition and installation of these 175,000 meters throughout the Montenegrin distribution network, together with the related software, systems integration and ancillary facilities. It built on the experience gained in similar Bank-financed projects in North Macedonia, Bosnia and Herzegovina, and Serbia. The Project's goals were:

- Reducing Montenegro's energy and carbon intensity, encouraging greater energy efficiency throughout the country and improving its environmental characteristics. It also marked the beginning of Montenegro's transition to a "smart" grid, where energy efficiency is facilitated by accurate, timely and transparent monitoring of consumption and where future renewable or micro-generation capacity could more easily be accommodated. It was expected to result in a reduction of CO2 emissions of 88,000 tonnes annually;
- Generating positive impact on the financial performance of the company; and

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- Facilitating the development of a liberalised power sector, opening the way for competition, with the related benefits of improved efficiency and quality of supply.

Rationale and expected outcomes:

- The introduction of modern meters and their relocation to public spaces served the goal to inhibit theft through meter tampering. Better information on customer consumption together with remote disconnection facilities was intended to improve EPCG's ability to bill and collect from its customers.
- The introduction of meters within the distribution network was expected to allow EPCG to identify losses accurately, for example by highlighting areas with abnormal consumption (i.e. where there are unregistered consumers or where consumers are bypassing meters). It was also aiming to improve the quality of supply, reducing unplanned outages.
- It was anticipated that the Project would reduce EPCG's commercial losses by approximately 70% and its bad debts by approximately 40%.
- Financially, the Project was aiming to generate attractive and quick returns for EPCG.

Implementation and procurement

The Project was prepared by EPCG with close support from experts from A2A's distribution business. They have helped EPCG to define the overall scope of the Project and prepare the concept of the system structure and technical specifications. They also provided ongoing support to EPCG in procurement and implementation. A2A had at the time recently completed programme to install one million smart meters in Milan and Brescia and consequently had extensive experience in this area. In 2009 Project development was also supported by an international consulting firm, SOCOIN, funded by the Spanish Government through a Bank-led Technical Cooperation ("TC") project.

While considering the Project implementation strategy, it was decided to proceed with a multiple contract strategy as opposed to a single point responsibility approach, based on the recent experience of A2A. Understanding the risks involved with the chosen strategy, EPCG engaged qualified international consultants to support the implementation and the management of multiple contract interfaces. At the same time the procurement strategy helped to drive the cost of the Project down and gave more flexibility to EPCG during installation.

Specifically, the decision was taken to procure the meters and associated concentrators as one single package with the installation divided between several contractors, each working in a specific area of Montenegro during pre-set period of time. The Bank-financed contracts were procured in compliance with the Bank's procurement policies and rules (the PP&R), which is one of the main aspects of the loan that the client appreciated. Main supply and installation contracts were subject to open tendering,

while low value, "off-the-shelf" items such as modems, poles, boxes, cables and fuses etc. were procured using shopping procedure in accordance with the procurement provisions. All contracts have been successfully procured and completed.

Additionality

This loan was EPCG's first non-sovereign financing. In the financial climate at that time, there was limited availability of private credit in Montenegro and none for the tenor required for long-term investments of the nature of the Project. EBRD also brought experience from similar loss reduction and metering projects implemented in other countries of operations, together with TC-funded support for the technical development of the Project. This was important support for EPCG, which has not implemented a project of this nature before. Lastly, the ESAP agreed between EPCG and the Bank has helped the company to implement an environmental, health and safety policy.

Effectiveness

Many of the Project's expected outputs directly contributed to the delivery of the Transition Impact ("TI") benchmarks. However, while the Project was completed successfully, some Transition Impact benchmarks could not be achieved or have been only partially achieved.

Following the setting of the ambitious Transition Impact agenda at Board approval, which included the privatisation of the company with the support from the minority shareholder at the time, A2A, the Project was rated as "Excellent" in terms of its expected TI (ETI score of 100). Following the successful technical implementation of the Project (installation of smart meters), its TI risk has been further revised down from "High" to "Negligible".

However, due to the failure to achieve all of the agreed TI benchmarks, the Project's Portfolio TI ("PTI") score was reduced to 60 and its respective PTI rating to Moderately Good. **Successful introduction of A2A as manager of EPCG - Not Achieved**

Benchmark comment: A2A sent three key expatriate managers to Montenegro: the CEO, CFO, and Investment Director, plus significant input from short term experts from the head office in Milan (and backstopping), and the extensive use of external (foreign) experts, allowed A2A to take over daily management of the Company. However, in July 2017 A2A activated the put option and exited management control, and fully exited its shareholding in EPCG in December 2019.

Eventual full privatisation of EPCG - Not Achieved

Benchmark comments: This target was re-considered by the Government of Montenegro as the main shareholder in EPCG in the years following the signing of the Loan.

Tariff innovations: additional time of use tariffs introduced to the market (Project Extension TI) - Not Achieved

Benchmark comments: Although this benchmark was delayed, significant progress to enable its achievement has been observed in the last years. Legal unbundling of the distribution system operator from the supply function was completed on 30 June 2016 by establishing a new company Montenegrin Electricity Distribution System (CEDIS). The new Energy Law set an action plan for market opening and development of competition in the retail market. As of 1 January 2017, suppliers of households and small customers are allowed to adjust their prices to a market price up to a defined cap. Montenegro has meanwhile introduced innovative tariffs, but not according to the Project's TI deadline. Three suppliers have purchased the supply license. In conclusion, achievement of this benchmark was delayed as a result of market forces and local regulation.

Reduction in consumption of previously un-metered or unpaid for energy of residential consumers whose meters are changed through the Project and improvement of energy efficiency (achieving energy savings) for residential consumers (Project Extension TI) – Partially Achieved

Benchmark comments: The initial scoping of the smart metering installation did not take into account the extensive development of the real estate sector in Montenegro, which has increased significantly the number of new consumers, leading to the prioritisation of new smart meters instead of un-metered or unpaid consumers. The second part of this benchmark, reaching energy efficiency for residential consumers, has been achieved. Comparing the period prior to Project meter installations and post meter installations, the average yearly consumption per customer has decreased from 7063.39kWh to 6782.27kWh. Thus, energy savings of 4% have been observed. Moreover, comparing individual years with similar consumption levels - prior to Project meter installation (2011) and post meter installation (2016) - the annual consumptions per customer decreased from 7655.39kWh to 7032.98kWh, thus implying energy savings of 8%.

Achievement of Outcomes

Adoption of company-wide environmental, health and safety management system in accordance with ISO14001 and OSHAS 18001 - Partially Achieved

Benchmark comments: The Borrower is bound to implement and adhere to the Environmental and Social Action Plan. Every year, the EPCG was developing an action plan to follow up on implementation progress of our ESAP and all standards, including ISO 14001 and OHSAS 18001 standards. Significant progress in implementing of these standards was achieved in 2017, as numerous documents and procedures aligned with ISO 14001 were prepared or drafted such as: Environmental Protection Policy, Rulebook on Environmental Protection, Procedure for management of scrapped transformers, Procedure for waste management, Procedure for management of environmental aspects, Procedure for analysis of accident risk and Instructions for environmental aspects assessment. In accordance with requirements from legal regulations in the area of occupational health and safety and OHSAS 18001 standard, the following documents were adopted during 2017: Risk Assessment Document, Regulation on Fire

Protection, Procedure for occupational injuries, and Procedure on medical examination of employees. Certified agency is engaged in sorting and disposal of old meters, while the export is organized for permanent treatment.

Reduction in distribution losses from 23% to 11% (Project Extension T1) - Partially Achieved

Benchmark comments: There is noticeable reduction of the distribution losses in those districts where the smart meter installation has been completed, compared to the pre-project situation, however, not to the levels agreed at the date of Board approval. Following the completion of the Project Phase 2, total losses were reduced to around 15%. Presently they are below 13%.

Increase in collections to 95% (Project Extension T1) - Achieved

Benchmark comments: There is a noticeable improvement in the collection performance in those districts where the smart meter installation has been completed compared to the pre-project situation. The collection in those areas has reached 95%, and in some months even exceeding the entire monthly-billed amount.

Furthermore, the Project has reached impact in the following matters:

Improved accuracy of electronic meters and ability to introduce tariff innovations: higher actual consumption is now being accurately measured, and accurately billed. Smart meters also allow EPCG to introduce more innovative 'time of use' tariffs which would further help improve demand side management and improve energy efficiency.

Implementation: The rate of installation of meters has substantially accelerated over the course of the Project implementation: during 2012, the Project's average installation rate has been of 250 smart meters per day, but afterwards it had increased to 380 meters per day. The targets for installation of meters were originally seen as challenging, but achievable. In practice they have been exceeded.

Energy efficiency is improved and distribution losses substantially reduced: Technical losses in the Montenegro distribution system are estimated to be around 9%: i.e. the smart meters appear to have essentially eliminated 'non-technical' losses (theft).

Collections are significantly increased: In January 2013 EUR 4.03 million was collected (averaging 93.3%). Today, the collection rate is nearly 100%, in some months even exceeding the entire monthly-billed amount.

Consumers with smart meters are repaying old debts: Following the first phase, 270,000 household consumers with old meters collectively owed EUR 120 million (an average of EUR 441 each), while 64,000 consumers with smart meters owed EUR 16 million (EUR 250 each). The structure of the debt is also substantially different between consumers with old meters and smart meters. The reduced amounts and tenors of receivables can be attributed to the increase transparency of the individual consumption following the installation of the smart meters.

Associated Activities

The Bank's technical, environmental and procurement due diligence was supported by an external consultant under a EUR 95,000 TC project funded by the Spanish Government.

EPCG managed to create a competent PIU with their own staff consisting of relevant technical, financial and procurement experts. The PIU was also supported by CESI, an Italian company which is in the forefront of smart meter technology and can demonstrate vast experience in successfully supporting clients for metering projects. In summary, the procurement for the project was successful due to (i) competent PIU formed by the Client with all necessary experts for metering projects, and (ii) valuable technical and engineering support from a professional and well-experience consultant in smart metering.

Efficiency

Overall, the Bank's handling of the Project is rated excellent. The Bank has engaged closely with EPCG, PIU and the consultants during all the stages of the Project, starting from inception, structuring, procurement, implementation and monitoring.

The Bank now has a long standing relationship with EPCG and is working with EPCG on the development of its renewable energy plants, in particular the WPP Gvozd 54MW, the solar PV plant Briska gora 250MW and the floating solar PV plant Slano lake 30-70MW. Furthermore, EPCG's experience with Bank-led and Bank-financed projects provided adequate knowledge for EPCG to comply with the Bank's standards and requirements.

The Bank has closely monitored the Project, with frequent site visits and regular exchanges with EPCG representatives. ESAP implementation has also been frequently monitored on site and the Bank's proactive environmental and social monitoring has contributed to a swift ESAP implementation. In addition, the Bank acted fast to advance procurement streams for the Project.

The Project has helped EPCG to achieve a number of 'the first of its kind' features:

- 1) the first project finance under Bank's A/B loan syndication structure in Montenegro;
- 2) the first smart metering project in the Western Balkans; and
- 3) the country has become the regional leader in smart metering coverage (82%), way above EU average of 43%.

The financial performance was significantly improved during the Project implementation.

The Project's outcome is expected to be sustainable in the long term. It starts with environmental and social elements such as the reduction of distribution network losses which in 2009 were in excess of 22%, and by the end of 2020 were brought down to below 13%. The initial goal of reaching 11% was proven as unrealistic due to the strength of other drivers creating the losses, such as un-metered consumers. Quantified, the energy

saved is 800 GWh, approximately at the value of €60 million. Furthermore, this translates into over 86,000 tonnes of CO₂ savings per year – that is the equivalent of about 19,000 cars taken off the road.

The Company has partially achieved the TI goals, but it is still using the metrics established on this Project for measuring its own performance. EPCG is now encouraging the household solar PV panels and therefore the usage of the “prosumers” system, which can be applied thanks to the Project’s smart meters.

Implementation Summary

The Project introduced the first smart metering in Montenegro in 2010 with a €35 million loan to EPCG (the national energy company, operating in the sectors of electricity generation and supply) to procure and install 175,000 remotely operated meters (smart meters) for domestic consumers. The Bank’s financing support was extended in 2013 with another €30 million loan in 2013 for the additional installation of 97,000 smart meters. Furthermore, in 2017 the Bank provided a €32 million A/B loan to the unbundled distribution company CEDIS to support the third phase of the smart metering project. The outcome of these initiatives was the installation of 339,000 smart meters, reaching a coverage of 82% of the consumers, significantly above the EU average of 43%. The reduction in distribution losses from 23% in 2009 to 13% in 2020 has so far resulted in savings of 800 GWh, or more than €60 million in the respective years’ prices. From environmental perspective, this translated in CO₂ savings in excess of 86,000 tonnes per year – the equivalent of about 19,000 cars taken out of the roads.

The positive transition impact is also reflected in achieving the targeted increase in collection rate of above 95%, the reduction of unpaid consumers by 60% and the implementation of upgraded environmental standards. On the same note, the anticipated privatisation of the majority stake in the company has not been achieved as a result of changed priorities of the Government of Montenegro as the main shareholder of EPCG.

Thanks to this project, Montenegro has become a regional leader in smart meters’ deployment and the first country among the EBRD countries of operations to meet the EU target for smart meter coverage. Most of the neighbouring countries started the process in the following years and the Bank applied best practices and lessons learnt from the EPCG project to enhance the implementation of the respective smart metering projects.
