



1. Project Data

Project ID P108023	Project Name Energy Efficiency Project		
Country Belarus	Practice Area(Lead) Energy & Extractives	Additional Financing P133442	
L/C/TF Number(s) IBRD-76980,IBRD-82810	Closing Date (Original) 31-Dec-2014	Total Project Cost (USD) 208,816,680.85	
Bank Approval Date 28-May-2009	Closing Date (Actual) 31-Dec-2017		
	IBRD/IDA (USD)	Grants (USD)	
Original Commitment	125,000,000.00	0.00	
Revised Commitment	209,100,000.00	0.00	
Actual	208,816,680.85	0.00	
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2. Project Objectives and Components

a. Objectives

The project development objective (PDO) was "to improve energy efficiency in heat and power generation in selected towns of the Borrower." (Schedule 1, page 5 of the Loan Agreement dated June 8, 2009). Both the Project Appraisal Document (PAD dated May 1, 2009) and the Implementation Completion and Results Report (ICR dated June 14, 2018) state exactly the same PDO, specifying "Belarus" in place of "the Borrower."



b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

No

d. Components

The original loan approved on May 2009 included the following three components:

Component A: Conversion of existing HOB plants to CHP plants

(Estimated cost at appraisal, US\$181 million; actual cost US\$150.5 million; difference resulting from restructurings, see below)

This component would finance the works for conversion of Heat Only Boilers (HOB) to natural gas-based Combined Heat and Power (CHP) plants in six sites that were proposed by the Ministry of Energy and the Energy Efficiency Department (EED) of the State Committee for Standardization, in order to add power supply capacity to meet the increasing demand in the selected towns. Two sites were located in Borisov and the other four were in Mogilev, Oshmiany, Retchitsa, and Ruba. The overall electricity capacity added was up to 90.5 MW of installed capacity (Borisov I, 65 MW; Mogilev, 15.5 MW; Oshmiany, 3 MW; Retchitsa, 3 MW; Ruba, 3 MW; and Borisov II, 1 MW). Among others that were proposed, these sites had the most favorable technical feasibility for upgrading.

Component B: Design and supervision consultancy

(Estimated cost at appraisal, US\$9.09 million; actual cost US\$100,000)

This component would finance consultancy for (a) technical design of HOB-to-CHP conversion for the four small sites (Borisov II, Oshmiany, Retchitsa, and Ruba) during preparation and (b) bidding documents during implementation.

Component C: Project implementation and management

(Estimated cost at appraisal US\$2.7 million; actual cost US\$40,000)

This component would support the staffing, training and incremental operating costs for the Project Management Unit carry out the procurement and financial management of the project, including the independent auditing firms.

Additional Financing (AF)

(Estimated cost at US\$90 million; actual cost of US\$93.36 million, including the borrower contribution of US\$3.36 million)

The Government of Belarus (GOB) requested AF to scale-up the project by adding two sub-projects, namely, 54 MW of additional capacity to be installed in Mogilev and Gomel regions, with 46,700 thousand cubic meters (tcm) of expected gas savings. The subprojects would be implemented by Mogilevenergo and Gomelenergo, the two corresponding branches of the national utility. Components B and C above remained the same. Since the AF was intended to improve total energy efficiency via CHP generation



systems, the PDO was not revised. The scale-up Combined Cycle Turbine Plants (CHP) targets were reflected accordingly in the targeted outcome indicators.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. At appraisal, the original project cost was estimated at US\$193.1 million, in which the World Bank loan was US\$125 million and the borrower's contribution was US\$68.1 million. At closing, the actual project cost was US\$150.5 million, and the actual Bank loan was US\$118.8 million while borrower contribution was US\$31.7 million. Additional financing was approved on June 6, 2013 for US\$90 million. Including the Borrower's contribution of US\$3.36 million, the actual Additional Financing cost was US\$93.36 million. Taking both the original loan and the Additional Financing together, the total project cost estimated at appraisal was US\$283.1 million, and the total actual cost at project closing was US\$243.86 million.

Financing. The total Bank loan was US\$215 million, comprised of an original loan on May 2009 of US\$125 million and Additional Financing on June 2013 of US\$90 million. The borrower contributed to the financing of the project, as discussed below.

Borrower Contribution. At appraisal, the borrower's contribution was estimated at US\$68.1 million; its actual contribution was 53 percent less, at US\$31.7 million. The borrower contributed US\$3.36 million during the Additional Financing stage. Taken together, the total actual borrower contribution to the project was US\$35.06 million at project closing. The actual borrower contribution was about half of the appraised amounts because (a) the borrower funds needed for Component A were over estimated at appraisal, and (b) the owners of the two largest plants self-financed the preparation of technical specifications under Components B and C, instead of using project funds for consultancy support as appraised originally.

Dates. The project was approved on May 28, 2009 and became effective 4 months later on September 30, 2009. About three and a half years later, a mid-term review was carried out on March 18, 2013 and shortly thereafter Additional Financing was approved on June 6, 2013. Subsequently, four restructurings were undertaken (August 2014, March 2015, November 2015, and December 2017) to either extend the loan's closing date or reallocate among disbursement categories. The project closed on December 31, 2017, more than three years beyond the original closing date of December 31, 2014. From the effectiveness date, the project took a total of slightly over eight years to implement.

3. Relevance of Objectives

Rationale



The country context in Belarus at the time of project preparation in 2008 consisted of energy trade shocks and a deterioration of exports that by 2009 had resulted in a drastic fall in the GDP growth rate. Although GDP was growing at an average annual rate of 8.2 percent between 2002 and 2005, reaching 10 percent in real terms in 2006, a downturn started in 2007 when (i) the price of natural gas imports from the Russian Federation more than doubled and (ii) Russia started eliminating tax subsidies on oil exports to Belarus. This had the direct effect of increasing Belarus' net energy import bill to almost US\$2.5 billion or about 5 percent of GDP. In addition, by the end of 2008, the global financial crisis hit Belarus, especially its exporting industry. The worldwide financial crisis resulted in real exchange rate appreciation, limited access to the external capital market and delays in payments for Belarusian exports as its partner countries also entered periods of economic slowdown. It was during this period of difficulty in withstanding external shocks when the project was appraised and approved.

The sector context during project preparation showed that the Belarusian energy sector was in the process of intensifying its efforts to reduce energy intensity, improve energy efficiency, and increase the share of domestic resources in producing energy. By the time the financial crisis hit the Belarusian economy, the Government of Belarus (GOB) had already succeeded in reducing energy intensity (per US\$1,000 of GDP) from 0.78 tons of oil equivalent (toe) in 1990 to 0.31 toe in 2008. Moreover, GOB had been moving the country's energy sector toward increasing energy security by approving large energy programs in 2006 and 2007--at an estimated cost of US\$9 billion over five years--that were intended to modernize major power plants, convert existing heat-only boilers to combined heat and power plants, and deploy renewable energy and energy efficiency programs. The project's timeliness was further underlined by the issuance of the World Bank's energy sector report: "Belarus: Addressing Challenges Facing the Energy Sector", which served as a basis for (i) discussing prospects for sector and institutional reforms and (ii) opening the dialogue between GOB and the European Commission.

The PDO was fully aligned with the national energy programs approved by GOB in 2006 and 2007. The Country Assistance Strategy for 2008-2011 also focused on reducing energy intensity, increasing self-sufficiency, and meeting global environmental challenges. The PDO remained highly relevant to the Country Partnership Strategy for FY2014-2017, by supporting two of its pillars: (i) creating a competitive and sustainable growth model and (b) achieving sustainable provision of infrastructure and efficient use of natural resources. More specifically, the PDOs directly help GOB in meeting the current priorities in its medium-term strategy, namely, to reduce dependence and mitigate the economic costs of high energy imports, and allocate resources to modernize the country's energy sector. Finally, the PDO is highly relevant to the Systematic Country Diagnostic (SCD) of February 2018. The SCD highlights energy efficiency as one of the cross-cutting areas that would contribute to a more sustainable growth pathway for Belarus. More specifically, the SCD considers energy efficiency and modernization of energy facilities as opportunities for the economic transformation of Belarus, as well as key drivers to increase the operational and commercial efficiency of state-owned enterprises.

In light of the country and sector context discussed above, as well as the Bank's country strategy, the relevance of the project's objectives is rated **high**.



Rating

High

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

To improve energy efficiency in heat and power generation in selected towns in Belarus.

Rationale

For this Efficacy assessment, it is useful to note that the near-totality of project funding was disbursed to implement the following energy efficiency conversions:

Under the Original Loan: Heat Only Boilers (**HOB**) were converted to Combined Heat and Power (**CHP**) plants

Under the Additional Financing: existing plants were converted to Combined Cycle Gas Turbine (**CCGT**) CHP plants

Theory of Change

The Project Appraisal Document (PAD) provides a detailed and well-prepared results framework that is directly useful for monitoring purposes during project implementation. Given the project's essentially technical content (i.e., plant conversions), the baselines of zero gas savings and lower levels of total efficiency were clearly defined; moreover, the new gas savings and the incremental gains in Total Efficiency were specifically quantified in Year 3 (for the original project) or Years 4 and 6 (for the Additional Financing). The straightforward design also lent itself appropriately to centralized collection of performance data by the Project Management Unit (PMU).

The Implementation Completion and Results Report (ICR) does make a laudable effort to discuss the project's theory of change in one paragraph and Figure 1. However, the text provided (paragraph 6, page 7) is not really an analysis of the change theory underlying the project, because causality and attribution (to the Bank-financed project) were not evaluated. Rather, the text describes the on-lending arrangements and lists the activities to be carried out by the concerned regional entities, followed by a list of outputs and outcomes that are essentially the intermediate and final outcome indicators. Figure 1 provides the direct graphic representation of the text, i.e., basically the same words as the preceding paragraph but placed in boxes and equipped with arrows. However, to properly analyze the project's theory of change, it would be necessary to present a credible counter-factual, and analyze whether the project's activities were the right ones (i.e., other important activities were not neglected), whether they were of an adequate scale and timing, whether there were other causal factors aside from the project's interventions, and if there were institutional factors that played critical roles. In the absence of this kind of analysis, it is more difficult to identify the specific factors



that could explain the project's successful performance (or to which the performance could be attributed, delineate the Bank's role and contribution, and derive relevant lessons accordingly. To the ICR's credit, paragraph 19 and Figure 2 provide an update (in light of the Additional Financing) but these same analytical weaknesses are evident.

These shortcomings, however, are considered minor, given the highly technical nature of the project as indicated above and the existing track record on implementing energy efficiency programs in Belarus, compared to energy projects in other countries that require significant policy and regulatory reforms as well as substantial capacity-building, or have major objectives such as harnessing private investments or sensitive safeguards issues such as resettlement, land acquisition and compensation.

Outputs

- Eight site-specific designs were completed, partly in-house by Belarusian counterparts.
- Eight supply and installation (S&I) contracts were awarded competitively: six under the original loan (Borisov I, Borisov II, Mogilev, Oshmiany, Retchitsa, and Ruba) and two under the Additional Financing (Gomel and Mogilev AF).
- Compared to the original loan's end-target of cumulatively adding capacity of 90.5 megawatts (MW), the cumulative electricity-generating capacity that was installed by the project closing date was 144.5 MW, including the sites financed under the Additional Financing.
- Eight sites under the original project (6 sites) and the Additional Financing (2 sites) were commissioned and in commercial operation by the project closing date.
- Compared to 14 staff as the target, 8 staff of the PMU were trained in procurement (including S&I bidding procedures) and financial management.

Outcomes

Additional generation capacity:

At the project's closing date, the actual total efficiency values achieved, nearly achieved or exceeded the project completion targets. The total efficiency calculation is comprised of the heat plus the electricity generated per unit of fuel consumption (in GWh). The project targets and the total efficiencies achieved at closing (in brackets, respectively) are as follows for each of the plants, in percentages:

Borisov 1 (85.2; 85.2)

Mogilev (76.7; 81.2)

Oshmiany (82.7; 88.0)

Retchitsa (82.7; 80.6)

Ruba (82.7; 82.7)

Borisov II (82.0; 86.8)

Mogilev AF (82.4; 81.9)

Gomel AF (82.3; 83.9)



Gas savings:

Significant annual gas savings resulted from the project, amounting to 92.4 percent of the target, i.e., currently at 123,389 thousand cubic meters (tcm) based on recent 2018 figures compared to the project completion value of 133,580 tcm. The rate of gas savings varies depending on outside temperature and climate factors. At the project's closing date of December 2017, the gas savings stood at 110,780 tcm or almost 83 percent of the target.

Reduction in greenhouse gas (GHG) emissions:

At project closing, the project achieved almost 93 percent of its GHG emissions reduction target, i.e., 223,181 tons of carbon dioxide equivalent (tCO₂e) compared to the project completion target of 240,600 tCO₂e. The methodologies and coefficients used were derived from the Guidelines for National GHG Inventories from the Intergovernmental Panel for Climate Change (IPCC).

Project Beneficiaries:

By the time of project closing, 87 percent of the target beneficiaries were reached, defined as the number of people who were connected to the plants that were upgraded under the project. As a percentage of this total, 86 percent were female beneficiaries in the targeted districts of Borisov, Gomel, Mogilev, Oshmiany, Ruba, and Retchitsa.

Counterfactual:

In the absence of the project, the six plants under the original loan would have remained HOBs with no capacity for electricity generation. The installation of the CCGTs resulted in an increase in the total efficiency (of the combined generation of heat and electricity generation in these sites) ranging from 16.6 to 30.3 percent, against a baseline of not installing CCGTs. Under the Additional Financing, the installation of CCGTs added 62.9 MW of power generation capacity to the Mogilev and Gomel sites, without which the two municipalities could be assumed to continue depending on the simple steam turbine CHPs that existed without the project. The new CCGTs in these two sites increased the total efficiency by 10.2 percent and 15.7 percent, respectively. With respect to meeting the demand of 212,000 beneficiaries of the six sites in the original project, the counterfactual without the project would have entailed higher gas consumption and poorer service.

Given the achievement rates that exceeded or were very near the targeted achievement rates, the project's efficacy is rated substantial. It would be useful to note that for almost six consecutive years (2012-2018), the Bank teams had consistently rated the project as Satisfactory for both the Development Outcome (DO) and Implementation Progress (IP).

Rating
Substantial



Rationale

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Analysis

The project's economic internal rate of return (EIRR) at project closing was 9.7 percent (when the economic value of reducing GHG emissions is excluded), compared to the higher 17.4 percent estimated at appraisal. When GHG emissions reduction is factored into the calculation, the EIRR increases to 13.4 percent, which is still lower than the appraisal estimate of 18.5 percent. The steep decline in the international price of natural gas accounts for this lower EIRRs at project completion. The PAD used a gas price of US\$300 per thousand cubic meters (tcm), whereas at completion, the average gas price was US\$200 per tcm, based on imports of Russian gas (US\$150 per tcm) and gas supplies from Europe (US\$250 per tcm). Consequently, the Net Present Values (NPVs) were also lower than the corresponding appraisal estimates. If only the import price of gas from Europe is used (given the uncertainty that the specially negotiated price of Russia will continue indefinitely), the EIRR (including the economic value of GHG emissions reduction) would increase to 16.8 percent, which is near the PAD estimate. The ICR (paragraph 40, page 20) concludes that the EIRRs at completion were still substantially higher than the discount rate of 6 percent that is applicable for investment projects under current World Bank guidelines.

Financial Analysis

The project's financial internal rate of return (FIRR) was calculated at 5.7 percent at completion (on a post-tax basis to be comparable with the appraisal estimates). This is significantly lower than the PAD estimate of 13.8 percent due to the substantial decline in gas prices since appraisal. Through sensitivity analyses on various gas prices, it was estimated that a 10 percent FIRR would result if the gas price were US\$240 per tcm. Taking the 5.7 percent FIRR, gas price changes of plus or minus 20 percent over the prevailing one would result in FIRRs in the range of 3.2 to 8.0 percent.

Administrative and Operational Efficiency



The closing date extensions were necessitated by the Additional Financing (AF), the time needed to implement the two new investments under AF at Mogilev and Gomel, and reallocations among disbursement categories. Disbursements had reached 97.1 percent (US\$208.6 million) of the original and AF loans by the time the project closed. International procurement practices for bidding and contracting were introduced; moreover, financial management and advanced project management practices were also provided through training and consulting support, which enhanced administrative and operational efficiency. In particular, the Letter of Credit (LoC) method triggered additional approvals and authorizations (compared to handling smaller loans), which had the effect of strengthening national procurement procedures and keep abreast with international methods. The institutional capacities of the local utilities of Oshmiany, Retchitsa and Ruba were also strengthened by the influx of up-to-date knowhow in heat and power generation, maintenance and management, as well as in potentially generating selling surpluses to the regional energy companies. Regular operation and maintenance (O&M) and sustainability of the plants are assured through maintenance contracts signed by the site owners with certified companies that provide regularly scheduled inspections and emergency support when needed. (See also Section 10-b)

Efficiency Rating
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	18.50	98.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	16.80	98.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The current relevance of the project's objective to the Government's medium-strategy, as well as to the Bank's CPS and SCD (2018), is **high**. The achievement of the project's objective is **substantial**. The project's efficiency is also **substantial**. On this basis, the project overall development outcome is **satisfactory**.

a. Outcome Rating
Satisfactory



7. Risk to Development Outcome

Technical risks could have a high impact if they arise but are less likely over time. For the smaller plants, the maintenance and inspection contracts could be interrupted before the site operators have fully acquired the know-how and skills to maintain the CHP and CCGT technologies installed. If interruptions do occur, there could be prolonged equipment downtimes, discontinued supplies, and additional but unnecessary maintenance costs. However, the familiarization process has already occurred and this risk decreases as time passes.

Financial risks could materialize if spare components and equipment replacements become expensive and unaffordable, as a result of any acceleration in the depreciation of the Belarusian ruble in the coming years. The depreciation of the official exchange rate has increased steadily over the past 20 years, which increases the import costs of those spare parts and equipment upgrades.

Economic risks could result from the elimination of the special arrangement with Russia for a negotiated gas import price into Belarus that is lower than import prices from Europe (see page 21 of the ICR).

There are no discernible risks related to Government and implementing agency commitment (see the first lesson in Section 12). There are no social, environmental, political, governance or other risks that can be identified at this stage.

8. Assessment of Bank Performance

a. Quality-at-Entry

The Bank supported a development objective that was strongly in line with the Government's own strategy and goals. The technical design of the project was streamlined and realistic for the country and sector context, by building up on capacities and experience with energy programs that already existed. Consequently, the capacity-building components were well-tailored to the actual needs for implementing the project efficiently. The risk assessment was accurate and the mitigation actions were adequate. The results framework captured the priority activities to deliver the PDO, and the indicators to measure intermediate and final outcomes were appropriate. Given the highly technical nature of the project, the Bank was able to prepare and appraise an outcome-oriented, well-focused project that, at entry, had a significant basis for achieving its development objective (based on the ICR, page 30).

Quality-at-Entry Rating
Satisfactory



b. Quality of supervision

According to the ICR (paragraph 78, page 30), "the World Bank conducted an adequate supervision throughout the implementation of the project." Supervision missions were carried out at least two times a year, during which the need for restructurings was identified to address lags between implementation plans and actual budgets and work schedules. The field visits also identified the need for Additional Financing in order to maximize the PDO outcomes by expanding the size of the energy efficiency investments. The Bank team monitored environmental and social aspects as well as fiduciary compliance, and intensified efforts to replicate procurement training and capacity building in order to accelerate procurement processes. Implementation shortcomings did arise but were satisfactorily addressed by the time of project completion. For example, the Bank team provided close support and maintained regular contact with the PMU in order to address the initial weaknesses in procurement (see Section 10 on Fiduciary Compliance below), which helped the PMU to remove early bottlenecks and apply good international procurement practices. The turnover of the Bank team leader was low and the team members had the relevant experience required for this type of project.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The three PDO indicators (total efficiency, gas savings, and generation capacity of conventional generation) are appropriate and adequate to measure the achievement of the PDO. These indicators were monitored regularly for each of the sites, and were updated accordingly when the project's scope was scaled up. Other PDO indicators included GHG emissions reduction and number of beneficiaries (of which female), which were added to the project's Results Framework in line with Bank policies for tracking and monitoring environmental and social impact of Bank-financed operations. Intermediate outcome indicators were monitored through regular site supervision conducted by the site owners and the PMU.

Two shortcomings are worth noting. First, the M&E design could have incorporated the tracking of degree-days and annual weather information in order to improve the accuracy of the project's attribution of natural gas savings, hence the GHG emissions reduction as well. Second, the M&E



design could have also included indicators for beneficiary feedback and citizen engagement (ICR, paragraphs 63 and 64, page 27)

b. M&E Implementation

The M&E implementation strategy included: (i) quarterly progress reports; (ii) one midterm review; (iii) World Bank team supervision visits to the sites and corresponding aide memoires and Implementation Supervision and Results Reports (ISRs); (iv) annual financial audits; and (v) ICR prepared by the PMY. These components were formalized in the Project Operations Manual and accepted by all parties. The PMU and the owners of each specific site were responsible for implementing their respective M&E activities. The ICR (paragraph 66, page 27) indicated that throughout implementation, these M&E requirements were completed in a timely manner by the responsible parties."

One shortcoming to note was that "the number of site-specific designs completed" (an intermediate outcome indicator) was not regularly tracked and reported. The ICR (paragraph 67, page 27) also indicates that Bank's ISRs did not explicitly report on the number of supply & installation (S&I) contracts that were competitively awarded, the commissioning of the project sites, and the start of commercial operation. However, these were regularly tracked and reported on in the supervision mission aide memoires.

c. M&E Utilization

The borrower regularly received the reports on M&E findings. The Bank team and the implementing agencies used the findings to make appropriate adjustments to the implementation plan, depending on the status of physical progress. For example, the progress of works and the S&I contracts was a critical input in preparing the project restructuring documents and the AF, determining the realistic project completion and closing dates, as well as the reallocation of funds among the components.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was assigned a Category B for the purposes of safeguard policy OP4.01 on Environmental Assessment, which the project triggered. No other Bank safeguard policies were triggered. According to the ICR (paragraph 71, page 28), "The Project successfully complied with the requirements of this policy." The ICR further indicates that the project followed best practices in the handling and disposal of asbestos and



insulation waste from decommission works, by subcontracting specialized and certified companies. The average rating for compliance was satisfactory throughout the implementation period. At the time of project closing, the additional preventive measures (to meet the requirements of the Environmental Impact Assessment and the Environmental Safeguards Management Plan) had been implemented. However, the safeguards performance rating at closing was moderately satisfactory due primarily to the delay in reporting the accident during works in the Gomel plant. Although no fatalities occurred, the supervision capacity for occupational health and safety had to be strengthened.

On the borrower's side, the ICR also reports compliance with national social and environmental requirements, such as the Law on the Environmental Protection of the Republic of Belarus, the Law on State Environmental Expertise, and the Regulation (approved by the Cabinet of Ministers) on the procedure for organizing and holding public discussions on environmental decisions, environmental impact assessment reports, and the like. Moreover, according to the site owners, national requirements to redress grievances were in operation. The Grievance Redress Mechanism included telephone lines or email address to file complaints, which occurred near the Gomel site when nearby residents complained about the noise. The ICR (paragraph 73, page 29) indicates that "the technology supplier and site operators are working on a proposal to mitigate the noise produced by the gas turbine intake." No other grievances were received from the other sites, according to the site operators.

b. Fiduciary Compliance

The project complied with the fiduciary requirements of the World Bank and the government, and with the legal covenants of the Financing Agreement as well, according to the ICR (paragraph 75, page 29). Works and consulting services were procured in accordance with Bank policies and procedures. However, there were initial shortcomings, such as inadequate translation, inconsistent evaluation of bids, cancellation of tenders and rebidding, complaints by bidders, etc. Consequently, the prequalification method was dropped, and the PMU was asked to strictly apply the same evaluation criteria to all bidders, use market-based cost estimates, improve the quality of translations, and expedite contract awards. The Bank project team provided hands-on support throughout this process, which helped address the issues and expedite procurement.

Project audit reports were submitted on time and did not have any qualifications. The firm engaged to audit the project was procured through international bidding. Only in 2013 did the audit report contain presentational deficiencies and inaccurate information in the financial statements. The report was revised and the Bank found the revised report satisfactory. In 2014, PMU appointed a new auditor. The handover proceeded smoothly, with no disruptions in financial management and disbursements.

c. Unintended impacts (Positive or Negative)



d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Bank Performance	Satisfactory	Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		Substantial	---

12. Lessons

The following main lessons were derived from the project’s implementation experience, as paraphrased from the ICR (pages 31-32):

Strong government support is key to catalyzing energy efficiency investments. Borrower commitment and the support of implementing agencies are critical to fulfilling energy efficiency objectives. High proactivity by implementing agencies is important in overcoming implementation challenges. Open dialogue with the borrower on sector structural reforms can stimulate more energy efficiency endeavors and help attract new players, such as new donors and partners in the sector.

A thorough market assessment during project preparation can help develop an appropriate procurement approach. The unsuccessful tendering early in the project caused delays in implementation. International procurement of supply and installation services for package sizes of US\$20 million and above was unusual at that time, as international firms were not used to investing large amounts in Belarus. Many Belarusian construction firms would not qualify if the procurement guidelines were applied and if state-owned enterprises were set aside from participating in the tenders. The prequalification process failed to anticipate the uncertainty of the international market response and did not gather adequate information on the capacity of local bidders. A rigorous market assessment needs to be conducted before the procurement process so that solutions to these issues can be developed before the tendering commences.

Good operation and maintenance practices need to be established in order to sustain project results and development impacts. The project applied good practices on O&M training for state-of-the-art technology. First, all plants upgraded through the project included onsite O&M training provided by the supplier as part of its contract. Second, although site owners of the smaller sites conducted the daily operation tasks, they mobilized biyearly contracts with certified companies to mitigate their insufficient capacity and human resources. In the



larger sites, the "energo" operators were required to pass formal O&M training to operate any of their district heating plants in the country. The borrower and implementing agencies need to maintain strict O&M training and, continue the inspection and maintenance contracts particularly for smaller plants, while building local capacities and know-how.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is of high quality. What stands out is its consistent focus on accountability and providing quantitative evidence. Prior to (and in support of) presenting evaluative findings, the ICR took adequate care in presenting underlying assumptions, by making extensive use of well-designed and clearly presented tables that can be easily understood by readers, and dutifully comparing PAD and completion figures. While this may be partly a result of the highly technical nature of the project (with little or no "soft" components), the ICR demonstrates nonetheless a clear effort to adhere to the project's results framework as an organizing principle for the report.

The ICR is to be especially commended for explicitly tackling the issue of causality and attribution to the project, as well as presenting a counter-factual. These are often not discussed substantively in ICRs. Annex 4 on the project's economic and financial analysis was thorough and transparent. The Borrower's extensive, in-depth and well-written comments (Annex 5) further enhance the quality of the ICR. Annex 6 on the Supporting Documents and Annex 7 on the Procurement History are also comprehensive and provide a good foundation for more in-depth evaluation (or impact assessment) of energy efficiency programs in Belarus. In addition, the ICR was written clearly and was in compliance with OPCS requirements for the preparation of ICRs.

However, the ICR was long at 32 pages for the main text, in part because of repetitiveness of some information provided. In future ICRs, this could be addressed by minimizing repetition and the provision of non-critical background information, especially those related to interesting but non-salient implementation history, which could be compiled in an annex. Moreover, a shorter main report would result if--instead of a "storytelling" lens--the focus is kept throughout on (i) identifying the causal factors that explain the project's performance, (ii) succinctly presenting the underlying evidence, and (iii) selecting for the main text only those key evaluative lines of argumentation that establish attribution of the development outcomes that were achieved to the project's interventions, and support the validity the lessons learned.

There were also minor shortcomings, which careful editing could have addressed, such as misspelled words, missing units, confusing presentation of long lists, and the like. Annex 1 for example, seemed to have intended Megawatts (MW) as the Unit of Measure, and not "Text". The last two columns also present a



jumble of site names and unit sizes that are hard to read. "Increase" in the title of the Schedule 1 table in page 79 is misspelled, as in other places in the report.

a. Quality of ICR Rating
Substantial