



## 1. Project Data

**Project ID**

P151086

**Project Name**

Vietnam Energy Efficiency Financing

**Country**

Vietnam

**Practice Area(Lead)**

Energy &amp; Extractives

**L/C/TF Number(s)**

IBRD-87390,IDA-60110

**Closing Date (Original)**

31-Jul-2022

**Total Project Cost (USD)**

53,418,038.90

**Bank Approval Date**

14-Apr-2017

**Closing Date (Actual)**

31-Jul-2022

**IBRD/IDA (USD)**
**Grants (USD)**

Original Commitment

101,700,000.00

0.00

Revised Commitment

53,379,113.01

0.00

Actual

53,418,038.90

0.00

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## 2. Project Objectives and Components

### a. Objectives

As mentioned in the Project's Loan Agreement (August 18, 2017, page 6), the Project Development Objective (PDO) is "to improve energy efficiency (EE) in Vietnam's industrial sector". The PDO was stated the same way in the Project Appraisal Document (PAD). The Loan Agreement also states that the Project "would contribute to achieving the Borrower's energy efficiency and greenhouse gas reduction objectives".

The PDO was not revised.



For the purposes of this ICR review, the objective will not be parsed into sub-objectives but will be assessed as formulated in the PDO statement.

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

**Did the Board approve the revised objectives/key associated outcome targets?**  
Yes

**Date of Board Approval**  
16-Sep-2021

**c. Will a split evaluation be undertaken?**  
Yes

**d. Components**  
**1. Original components**

The PAD states that this Project was “designed to help remove the principal barriers to investments in industrial EE projects”. The technical assistance (TA) was to “address the knowledge, institutional, and capacity-building needs of the banking and industrial sectors, mitigate risk concerns of enterprises, and strengthen government supervision of industrial EE and energy conservation. Those efforts” would “be accompanied by an EE financial intermediary lending program, which” would “demonstrate viable mechanisms for financing industrial EE investments, in direct support of the Government’s EE targets and green growth strategy”. (PAD, page 7) Most of the World Bank funding (US\$100) was to support the creation of the demonstration financial intermediary for industrial EE, and a small part of the loan was to finance the TA (US\$1.7 million).

**Component 1 *EE Investment Lending*** (cost at appraisal: US\$156.3 million; actual cost: US\$140.5 million) was to invest in financially viable EE subprojects. The component was designed to mainstream EE financing business lines in PFIs through a learning by-doing process (PAD, page 11). The PFIs were expected to benefit from the creation (with the support from the Project) of new loan products for industrial EE, thereby building technical capacity for EE investment appraisal and monitoring, which would enable them to scale up EE lending to IEs. The IEs would benefit from adopting improved technologies and optimizing production, thus reducing energy consumption and production costs and increasing their overall competitiveness in the domestic and international markets. It was expected that the PFIs would build expertise in EE lending to specific industries and project types, based on their project portfolios and targeted markets.

EE financing to subprojects was to be provided through a credit line to the Ministry of Finance (MoF), a LIBOR-based U.S. dollar denominated instrument for US\$100 million, with fixed spread (commitment fee) and disbursement-linked repayments. The MoF would on-lend to the participating financial institutions (PFIs) on the same financial terms. The PFIs would then on-lend to the industrial enterprises (IEs), either in U.S. dollars or Vietnamese dong, and charge commercial interest rate, which would include the PFI’s



margin (based on cost to the PFI, subproject risk, and sub-borrower's creditworthiness) and foreign exchange risk premium.

The subprojects would support technologies such as:

- i. Energy systems: upgrading boilers and switching fuels, using cogeneration facilities and electric-driven systems, including compressed air systems, electric chillers, machinery, and lighting;
- ii. Process technology: upgrading and replacing equipment, machinery, and facilities; and
- iii. Waste heat and waste use: use of waste heat (of hot/warm gases, liquids and solids) and burning combustible waste (gases, liquids, solids);

with investments in EE subprojects utilizing renewable energy (RE) potentially also being considered, including:

- i. Cogeneration facilities or process furnaces and stoves, and
- ii. Solar water heaters for sanitary hot/warm preparation.

**Component 2 Project Implementation Support** (cost at appraisal: US\$1.7 million; actual cost: US\$ 0.457 million) aimed to provide the following technical assistance and capacity building: (i) to the Ministry of Industry and Trade (MOIT) on Project's monitoring and supervision; (ii) to the relevant government agencies on developing the regulatory framework, and EE standards and guidelines (PAD, page 6); and (iii) to the PFIs in evaluating and extending EE loans; for generating an EE lending pipeline; for providing due diligence of eligible EE sub-loans; and for developing EE-related financing instruments.

## **2. Changes in components during implementation**

The Project's components remained unchanged during implementation.

The Project underwent one restructuring, requested by the Government on August 16, 2021 and approved by the Bank on September 16, 2021. The restructuring was needed to cancel the undisbursed loan amount of US\$47 million and to adjust the scope of the Project, the allocation of financing to the disbursement categories, and the results framework (RF) accordingly. The cancellation was requested due to: (i) the regulatory banking constraints (a cap on medium-term credit, limited US\$ lending to IEs, credit limit for a single borrower, and high foreign exchange premium), which prevented many enterprises from accessing the credit line supported by the Project and (ii) the impact of the COVID-19 pandemic, which slowed down investment in general and in EE particularly, as it was not a high priority for the PFIs. The amount disbursed at the time of restructuring was US\$34.4 million.

Additionally, a new Government regulation, which was not in effect at appraisal and was enacted on June 30, 2018 (ICR, page 30), prevented the use of ODA funds for capacity building activities, affecting Component 2. The regulation was related to the Government's efforts to reduce the overall public debt, which was reaching the debt ceiling set at 65 percent of GDP. However, the Project team mobilized US\$350,000 from the Bank-executed Korean Green Growth Trust Fund (KGGTF), which made it possible to implement capacity building under Component 2 as planned at appraisal.

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



Project Cost: The appraisal estimate was US\$158.0 million, and the actual Project cost was US\$140.9 million.

Project Financing: The Project financing comprised an IBRD loan (appraisal amount: US\$100 million; actual amount: US\$53.0 million) and an IDA loan (appraisal amount: US\$1.7 million; actual amount: US\$0.457 million).

Borrower/Recipient contribution: The Borrower's contribution was US\$56.3 million at appraisal and US\$87.5 million at closure.

Project Dates: The Project was approved on April 14, 2017 and became effective on December 29, 2017. The mid-term review was held on September 28, 2020. The original closing date was July 31, 2022. The Project was not extended, and the actual closing was on the same date.

### 3. Relevance of Objectives

#### Rationale

Country and Sector Context: Vietnam is one of the most energy-intensive countries in East Asia; the energy elasticity of GDP is estimated at 2, compared to less than 1 for most industrial countries. Industry is the most energy-intensive economic sector, and the continuing industrialization of the economy is contributing to the increase in the country's energy intensity. Vietnam's limited domestic energy resources and growing reliance on imported coal raise concerns about energy security and greenhouse gas (GHG) emissions. The World Bank's Vietnam Low Carbon Study estimated that comprehensive demand-side EE investments would result in up to 11 GW savings in new generation capacity by 2030, which would support Vietnam's commitment to the Paris Agreement goals.

Relevance to Government Strategies. Vietnam has advanced experience with supporting EE initiatives. Prior to Project's approval, the Government passed the Vietnam Green Growth Strategy for the period 2011–2020 with vision to 2050, which aims to restructure and improve economic institutions toward more efficient use of natural resources and improved competitiveness of the economy. One of the important strategic objectives is to encourage EE. Vietnam's Energy Efficiency Program includes national level targets and comprehensive plans to improve EE and energy conservation in all economic sectors. Law on Energy Efficiency and Conservation was passed in 2010, and a series of national level decrees to promote EE was issued afterwards, setting a target to reduce energy consumption by 5–8 percent as compared to the forecast for 2015. To achieve the Program's targets, barriers to EE investment had to be lowered, and the Project was to support this goal. The Project was also aligned with Vietnam's green banking initiative, which aims to strengthen the climate finance capacity of financial institutions and to motivate them to build up green investment portfolios. Specifically, the Project addressed the need in long-term maturity loans for EE investments.

Furthermore, the Project was expected to contribute to Vietnam's National Energy Development Strategy up to 2020 with a vision to 2050; the Vietnam Green Growth Strategy for 2011–2020, with a vision to 2050; the Law on Energy Efficiency and Conservation; and Vietnam Power Development Plan VII for 2010–2020, with a vision to 2030.



Relevance to the World Bank Group's (WBG's) Assistance Strategies:

The Project was aligned with the World Bank Group's Vietnam's Country Partnership Strategy (CPF) for 2012–2016, specifically, with its “Sustainability” pillar, which had a focus on improvements in supply- and demand-side EE. The Project directly supported both energy sector and climate change outcomes of the CPF, specifically: (a) Outcome 1.2: Improved Quality and Efficiency of Infrastructure Services, and (b) Outcome 2.2: Climate Change Mitigation: CO2 Emissions Reductions. The Project was also aligned with the World Bank's Energy Engagement Strategy for Vietnam, contributing to its key engagement pillar focused on supply- and demand-side EE.

More importantly, the Project was aligned with the World Bank Group's CPF for 2018-22, specifically, with Focus area 3 *Ensure Environmental Sustainability and Resilience*, Objective 9 *Promote low carbon energy generation, including renewables and energy efficiency, and reduce GHG emissions*. The CPF provides the following details to this Objective: “the WBG energy sector program seeks to help the country transition in its energy mix: (i) increase energy efficiency (demand and supply sides), including targeting enterprises to upgrade inefficient production systems and introduce new and clean technologies; (ii) scale up non-hydropower renewable energy, with particular focus on solar and wind, and gas-to-power; (iii) promote the financial viability of EVN and the power sector; (iv) introduce competition in gas and electricity markets; and (v) improve sector governance.

Link to other WBG operations

Importantly, the Project was based on lessons learned for setting up an EE financing mechanism from several Bank EE credit lines in other countries, including the China Energy Efficiency Financing (CHEEF, China), Uzbekistan Energy Efficiency Facility for Industrial Enterprises (UZEEF, Uzbekistan), Ukraine Energy Efficiency, and Tunisia Energy Efficiency. This experience demonstrated that dedicated credit lines are effective in mainstreaming EE financing in PFIs and can leverage substantial debt contributions from the PFIs themselves and equity financing from the IEs, as well as revolve the loans that are paid back and continue to provide EE financing after the Bank's project closure.

While this was the first IBRD/IDA project in Vietnam that aimed to demonstrate a financial mechanism for EE investments in the industry, it had links to several WBG operations that supported EE development and one that supported a credit line for renewable energy (RE) investment. Specifically, the World Bank's *Clean Production and Energy Efficiency (CPEE) Project* provided analytical underpinnings and was to advise the Project on industrial energy consumption surveys, EE benchmarking, and service agreements. The Project was also using the experience of the ongoing IFC's EE financing advisory services to the PFIs, including for EE in the industry. Also, the Project was to be implemented in parallel with the ongoing IFC project - a credit line to Techcombank for EE investment in SMEs, which promoted a similar financing instrument in the business sector.

The relevance of objective is rated High.

**Rating**

High



## 4. Achievement of Objectives (Efficacy)

### OBJECTIVE 1

#### Objective

To improve EE in Vietnam's industrial sector.

#### Rationale

The theory of change (ToC) for the Project was developed for the ICR. It showed a direct, logical causal link from inputs to outputs and to expected PDO outcomes of this Project. Investment in financially viable EE subprojects with innovative technologies, in combination with related capacity building and awareness raising activities, were intended to result in the adoption of the EE technologies by the IEs and in new EE investments by IEs and PFIs. These outputs were logically linked to the outcomes, and the TOC showed how the combination of outputs supported the following: (i) demonstration of financially viable EE investments (by creating a credit line through the PFIs to IEs) and (ii) application of innovative EE technologies (by supporting the EE subprojects). Overall, the Project would lead to improved EE in the industrial sector and avoided GHG emissions by IEs. There is one small limitation in the TOC: the missing interlinks from specific outputs to intermediate outcomes. If the links were present, it would be easier to understand what processes were employed to transform the outputs into the project-level outcomes.

#### Original project:

#### Outcomes (as per the ToC in the ICR):

Outcome 1. Credit line financing for EE investment was demonstrated and was financially and functionally sustainable. The mechanism of industrial EE financing through a credit line to PFIs and further to IEs had been created, was functional, and led to a scale-up of the industrial EE financing even prior to Project's closure. This was an important intermediate outcome of the Project (as per the ToC), as the PDO was to be achieved through this mechanism. The Project team has confirmed that the credit line supported by the Project was the first industrial EE financing instrument in the country and played the role of an "ice breaker", inspiring development partners and commercial banks to scale-up Project outcomes. The ICR reports that the Project was able to mobilize private financing for EE from PFIs and IEs in the amount of US\$87 million (by Project design, the PFIs were to co-finance investment in IEs at 20 percent of the loan amount; and the IEs were also to contribute 20 percent of the investment as equity financing). The financing model developed by the Project has been presented as a best practice experience at various discussion forums, in the country and beyond.

Outcome 2. Pilot investments in EE technologies: the original target was exceeded. At Project closure, the share of investment in EE subprojects by the IEs and PFIs was 62 percent, against the original target of 36 percent. Note that this indicator was not part of the RF in the Project's PAD, however, its baseline and target were defined both in the PAD and in the 2021 Project Restructuring Paper. This indicator reflected sustainability of the Project's outcomes by providing evidence that private sector entities were incentivized to invest in industrial EE and therefore important conditions for a scale-up of EE investments demonstrated by the Project have been established.





Outcome 3. The original PDO target for energy savings was achieved. By closure, the Project had achieved total (investments' lifetime) energy savings of 92,101,479,871 MJ, against the original target of 16,700,400,000 MJ (*Note that the ICR presents the Original Project's energy savings data in MWh, the unit used at appraisal. At restructuring, the units were changed to MJ to comply with a new Corporate Results Indicators' requirement to measure energy savings in MJ. At IEG's request, the Project team recalculated the Original target data in MJ for the purposes of this ICR review, to present outputs of the Original and Revised Projects in the same units of measurement*).

Outcome 4. A related avoided emissions' original target was not achieved. At closure, annual avoided GHG emissions amounted to 996,250 tCO<sub>2</sub>e, against the target of 5,027,000 tCO<sub>2</sub>e.

#### **Outcome not captured on the ToC:**

1. Capacity building outcome. Capacity building activities resulted in improved skills of the PFIs' officers to appraise EE subprojects, including the capacity to estimate the benefits of EE investments in terms of energy savings and GHG emissions' avoidance, as well as to monetize these estimates. During the ICR preparation, the beneficiaries of the Project reported that the capacity building activities provided them with knowledge and competence for screening and appraising energy efficiency subprojects. As a result, a barrier to EE lending was removed, increasing the incentives of the PFIs to provide loans to the IEs for EE investments. *Note: This information was provided by the Project team at IEG's request.*

#### **Outputs (as per the ToC in the ICR):**

1. At closure, the Project had delivered 48 bankable EE subprojects, against the original target of 60 subprojects. This target was not achieved. Some of the targeted subprojects were dropped from the pipeline for the following reasons: (i) regulatory constraints to EE financing (a cap on medium-term credit, limited US\$ lending to IEs, credit limit for a single borrower, and high foreign exchange premium); (ii) decisions by the IEs not to participate in the Project due to the COVID-related slow-down in investments and the low priority of EE investments; and (iii) inability to complete the loan applications due to COVID-related constraints.

2. Number of IEs who have invested in EE technologies: this original PDO target was not achieved. At Project closure, the number of IEs who invested in the Project-supported EE technologies was 11, against the original target of 25. The ICR reports that the adopted EE technologies included three waste heat recovery and co-generation at sugarcane plants, three waste heat recovery for power generation at cement factories, one rooftop solar subproject, two biomass/waste steam generation subprojects, one retrofit production line in a steel factory, and one switching fuel subproject at a glass production factory (ICR, page 19).

3. Capacity building for staffs of the MOIT/ Project Management Board (PMB) and PFIs resulted in the following outputs:

- A Project website was developed for marketing, raising awareness of EE technologies, and sharing lessons learned from the Project.
- Training was conducted for 20 PFI staff on marketing and due diligence of EE sub-loans and development of EE-related financing instruments and risk management tools.
- Training was conducted for MOIT/PMB on subproject monitoring and supervision including auditing and safeguards monitoring.



- Project-supported information workshops were conducted, with hundreds of participants from PFIs, IEs, and industrial associations.

Overall, by closure, the Project had accomplished the creation of an “EE financial intermediary lending program” through the demonstrated “viable mechanism for financing industrial EE investments” (PAD, page 7), which was the core activity under Component 1. The Project achieved or exceeded the original RF targets for the following indicators: the share of investment in EE subprojects by the IEs and PFIs (reflecting the potential for a scale-up) and lifetime energy savings. However, the Project did not achieve several of its original targets, namely: annual GHG emissions savings, the number of IEs who had invested in EE technologies, and the number of bankable EE subprojects developed. It should be noted that an extension with the objective of providing more time to fully achieve Project’s objectives was not possible due to the previously noted new government regulations on using ODA loans (as per IEG’s communication with the Project’s TTL).

Rating. Based on the evidence provided in the ICR, the Original Project only partially achieved its objectives/intended outcomes, and its efficacy is rated as Modest.

**Rating**  
Modest

## **OBJECTIVE 1 REVISION 1**

### **Revised Objective**

To improve EE in Vietnam's industrial sector.

### **Revised Rationale**

Please see the ToC discussion under Original Project.

At restructuring, three types of changes were applied:

1. The scope of the Project was reduced. The original Project did not take into account important regulatory barriers for the IEs to access the credit line supported by the Project. Many IEs were not able to participate, and part of the loan had to be cancelled. The negative impact of COVID-19 on investment in general and in EE particularly led to additional reduction in the Project’s scope.

2. The outcome indicators were modified. The indicator “Projected lifetime energy savings (MWh)” was replaced by the indicator “Projected lifetime energy savings (MJ)” (to comply with the Corporate Results Indicators’ (CRIs’) requirement to report energy savings in MJ); and the indicator “Annual GHG emissions avoided in IEs (tCO<sub>2</sub>e/year)” was replaced by the indicator “Projected lifetime GHG emissions avoided in IEs (tCO<sub>2</sub>e)”.

3. The RF targets were lowered for the following indicators: energy savings (a PDO outcome indicator target), avoided GHG emissions (a PDO outcome indicator target), and the number of EE subprojects developed (an output indicator target). This was necessary not only due to the reduction of the Project’s scope, but also because the design-stage estimate of energy and emissions savings from subprojects was exaggerated. This





happened because it was unknown at design which EE technologies would be adopted by the subprojects, and the indicative pipeline had a larger share of IEs with high savings potential than the actual pipeline.

**Outcomes (only for the outcomes that were not achieved by closure under the Original Project):**

1. At closure, the Project had achieved total (investments' lifetime) energy savings in the amount of 92,101,479,871 MJ, against the revised target of 50,000,000,000 MJ. This PDO target was exceeded.
2. Related lifetime avoided GHG emissions amounted to 21,333,659 tCO<sub>2</sub>e, as compared to the revised target of 18,000,000 tCO<sub>2</sub>e. This target was exceeded.

**Output:**

1. At closure, the Project had delivered 48 bankable EE subprojects, against the revised target of 42 subprojects. The revised target was exceeded.
2. At Project closure, the number of IEs who invested in the Project-supported EE technologies was 11, against the target of 25 (this target was not revised at restructuring). The target was not achieved.

Overall, by closure, the Revised Project had achieved most of its outcomes and outputs and reached most of the RF targets. Specifically, it had demonstrated the mechanism of EE financing and created conditions for a scale-up of EE investments; achieved the revised energy and emissions targets; and improved the capacity of the PFIs, IEs, and the MOIT in relation to industrial EE financing. The target for the "Number of IEs adopting improved EE technologies" was however not achieved - which was of consequence to the goal of improving EE in the industrial sector.

Rating. Taking account of the fact that the Project achieved most but not all of its objectives, its efficacy is rated as Substantial.

**Revised Rating**  
Substantial

## OVERALL EFFICACY

### Rationale

For the Original Project, the efficacy is Modest because ToC outcomes and outputs were achieved only partially.

**Overall Efficacy Rating**  
Modest

**Primary Reason**  
Unintended negative effects



## **OVERALL EFFICACY REVISION 1**

### **Overall Efficacy Revision 1 Rationale**

For the Revised Project, the efficacy is Substantial. The Revised Project almost fully achieved its ToC outcomes and outputs, with the exception of one RF target. Specifically, by closure, the Project had demonstrated the usefulness of the credit line mechanism for EE financing and created conditions for a scale-up of EE investments: developed a pipeline of EE subprojects adapting the EE technologies and motivated the PFIs and IEs to contribute to the Project's EE investments (mobilized significant private capital). The revised targets for the outcomes of energy and emission savings were reached.

### **Overall Efficacy Revision 1 Rating**

Substantial

## **5. Efficiency**

### **I. Economic and Financial Analysis.**

Economic and financial analysis was conducted for Component 1 (investments in subprojects), both at appraisal and closure. The same methodology was used at both points of time.

#### 1. At appraisal.

The analysis was done separately for specific (representative) technologies used in the subprojects, such as cogeneration from waste heat recovery in the cement industry, variable speed motors and regenerative burners in steel industry, and energy-efficient pulp washers in pulp and paper industry.

a. Financial analysis. The financial internal rate of return (FIRR) on the PFI loans for the IEs was estimated in the range from 19 percent to 103 percent depending on the technology assessed. The benefits included avoided costs of purchased fuel oil, coal, and electricity, estimated at nominal financial prices; and increased revenue from the additional power generated.

b. Economic analysis. The economic rate of return (ERR) and the net present value (NPV) were calculated with and without consideration of the avoided emissions externality. Without accounting for the externality, the ERR ranged from 17 percent to 124 percent, and when the externality was considered, the ERR was in the range from 30 percent to 325 percent. The NPV for the IEs was positive, while the NPV for the utility (Vietnam Electricity (EVN)) was negative, as expected, due to the loss in tariff revenue from the IEs. The economic benefits included industry's savings of electricity, reduced usage of thermal generation, avoided purchases of imported coal and oil, reduced transmission grid losses, avoided power capacity to be added, and avoided GHG emissions. The estimates of benefits were based on the simulations by the National Load Dispatch Centre for calculation of the avoided cost tariff (ACT) for small renewable energy (RE) producers and on international (border) prices. For valuing the externalities, the Bank's guidance for carbon accounting and social value of carbon were used.

#### 1. At closure.



The analysis was done for all subprojects.

**a. Financial analysis.** All 11 subprojects had a positive financial return on investment. The estimated FIRR for all subprojects (the entire Component 1) was 52 percent, ranging from 14 percent for the co-generation technology in the Tra Vinh Sugarcane plant to 188 percent for the retrofit production line technology in the Toan Thang Steel plant. The approach to calculating Project benefits was the same as at appraisal, except actual annual energy savings (as opposed to expected) and actual financial benefits of saving coke (for steel production) were used.

**b. Economic analysis.** The ERR and NPV of Component 1 without accounting for the avoided emissions externality were 73 percent and US\$259 million, respectively. When accounting for the avoided emissions externality, the aggregate ERR and NPV were 105 percent and US\$425 million, respectively. These estimates are close to the appraisal level ones, indicating that the Project was efficient based on the ERR indicator. All 11 subprojects had sound economic return on investment, above 14 percent before the GHG avoidance externality is considered, which is above the economic opportunity cost of finance in Vietnam (10 percent). The methodology of calculating the benefits was the same as at appraisal, except actual annual energy savings at Project completion were used and the Economic Net Present Value (ENPV) was calculated (only NPV was calculated at appraisal).

## II. Administrative and Operational efficiency.

The project was able to implement its activities, however with a significantly reduced scope, without an extension of its closing date (note that the extension was not possible due to a new government regulation limiting the usage of ODA financing) and without a corresponding decrease in administrative and operational costs. The impact of COVID-19, which accounted for 44 percent of the implementation period, was however managed efficiently. Procurement was conducted through competitive bidding, which did result in some cost savings (approximately US\$350,000; ICR, page 25).

Based on this, the Project's efficiency is rated substantial.

## 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	✓	30.00	98.90 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	105.00	99.70 <input type="checkbox"/> Not Applicable

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



## 6. Outcome

### Original Project:

Relevance of objectives: High

Efficacy: Modest

Efficiency: Substantial

Outcome: Moderately Unsatisfactory (a value of 3).

### Revised Project:

Relevance of objectives: High

Efficacy: Substantial

Efficiency: Substantial

Outcome: Satisfactory (a value of 5).

Due to the Project restructuring, a split evaluation has to be applied. When a split evaluation is undertaken, the overall outcome rating is calculated by weighting the outcomes of the Original and the Revised projects using the shares of disbursed financing before and after the restructuring. Based on the shares of the disbursed funds before and after restructuring (US\$34.4 million or 63.5 percent before the restructuring in September 2021 and US\$19.1 or 36.5 percent after restructuring), the overall project outcome rating is Moderately Satisfactory ( $0.635 \times 3 + 0.365 \times 5 = 3.73$ ).

### a. Outcome Rating

Moderately Satisfactory

## 7. Risk to Development Outcome

Government ownership. This risk could arise if EE development in the industrial sector loses its priority position in the Government agenda, as it relates to the IEs' energy efficiency improvements. However, there is a high degree of confidence that the Government's commitment to the industrial EE investments will stay as a top priority because it supports industrial modernization and constitutes a critical and most cost-efficient measure of the Vietnam's climate change mitigation agenda. The risk is assessed as negligible.

Policy. This risk could arise if there were further policy or legal barriers to EE investment in the industrial sector or disincentives for the private sector to invest in EE. Considering the Government's commitment to climate change mitigation, related priority of the EE development, and a track record of developing regulations that support EE, this risk is low. However, as it happened during Project implementation, new regulations, which are not directly aimed at EE development, can have a negative impact on EE investments.



In Project's case, the regulations created limitations for ODA lending. Overall, this risk is estimated as moderate.

Financial. This risk could arise if the PFIs are not able to maintain the created credit line, and the Project's outcomes are not scaled up as a result. However, this risk has been mitigated. First, to sustain the credit line, the Project included capacity building support to the PFIs, which resulted in PFI's improved ability to appraise EE subprojects and increased incentives to provide loans to the IEs for EE. Second, an ongoing Bank project *Vietnam Scaling Up Energy Efficiency* (P164938), approved in June 2019, complements the Project reviewed here by supporting EE investments in the IEs through a risk sharing facility, which will finance partial credit guarantees to the PFIs to cover potential IEs' defaults on the loans they provided for EE investments. This risk is assessed as low.

## 8. Assessment of Bank Performance

### a. Quality-at-Entry

The Project's design was adequate to respond to the need to incentivize EE investment in the industrial sector by financing a credit line for those PFIs that require long-term funding to be able to lend to IEs for EE. Most of the related risks were analyzed and mitigated during the preparation stage. The ICR reports that the Project's design "covered the required aspects of the project implementation, such as a list of 103 potential subprojects in the pipeline, project operation and maintenance (O&M), and capacity-building activities needed for project implementation" (ICR, page 33). In addition, as reported in the Efficiency section, the Project is among the most cost-efficient EE projects financed by the World Bank, based on unit cost of both energy and emissions savings.

However, certain weaknesses in design, in combination with external challenges that were outside of the Project's control, led to the need to restructure the Project. The regulatory constraints to the IEs' borrowing for EE from the PFIs, as well as the PFIs' due diligence process, could have been analyzed and mitigated at the preparation stage. However, this opportunity was missed, and "the PFIs applied restricted credit appraisal and collateral requirements", disqualifying some "IEs with high potential thermal energy saving" (ICR, page 33). This is considered a moderate shortcoming because most of the risks were anticipated at appraisal and the consequences of missing the opportunity to mitigate this risk from start had a moderate impact on Project outcomes.

### Quality-at-Entry Rating

Moderately Satisfactory

### b. Quality of supervision

During implementation, the Project was supervised by a locally-based multi-disciplinary team consisting of highly qualified technical specialists, enabling hands-on supervision. The Project was regularly monitored: eleven implementation support missions took place and were thoroughly documented. Project performance indicators and ISR ratings were shared with the client and also used as early warning signs of the



challenges to achieving Project's objectives. Importantly, the team was able to realize the necessity to restructure the Project on time while it was still possible to significantly improve its efficacy by adapting the Project to both the negative impact of COVID-19 on demand for loans for EE and the regulatory constraints that were not mitigated at appraisal. At restructuring, the Project's scope was reduced, and the IEs that satisfied the PFI's requirements for EE lending were targeted. This timely restructuring provides a good practice example for future operations.

During implementation, the PFIs were not always capable of providing support to IEs in the preparation of loan applications, and the team should have stepped in but missed such an opportunity. As a result, IEs were dependent on individual consultants' help with the completion of loan applications, which included such complicated and time-consuming tasks as conducting feasibility studies and preparing investment appraisal reports. Due to this constraint, some of the applications were not completed, and the related subprojects were not financed. This is considered a deficiency.

### **Quality of Supervision Rating**

Satisfactory

### **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The Project's RF adequately reflected the logic of Project interventions and was sufficiently linked to the PDO. All indicators were quantitative, time-bound, had baselines and targets, and were attributable to the Project. There was a gender-disaggregated indicator. The RF adequately measured the project-level outcomes (energy and emission savings) and the outputs, including the key ones: number of IEs adopting improved EE technologies and number of EE bankable subprojects developed.

However, the RF had minor deficiencies. *First*, the RF did not have any outcome level indicators measuring results of capacity building activities, which were important for Project's sustainability. *Second*, the RF indicator "number of direct project beneficiaries" incorrectly defined the staff of the beneficiary IEs as Project's beneficiaries. In fact, since the Project's objective was to improve EE in the industry, the benefits were in reduced energy usage and increased climate change mitigation, benefitting three main constituencies: global population, the population of Vietnam (through such economic benefits as reduced demand for imported fossil fuel and improved industrial sector efficiency), and local population (through reduced pollution from fossil fuel combustion). The Project did not aim at benefiting the staff of the beneficiary IEs, and if such unintended benefits occurred, this population constitute a very small part of the beneficiary population.

The Project's M&E is assessed by the IEG as Substantial, due to the minor weaknesses.





## **b. M&E Implementation**

Data collection and reporting of the M&E indicators were provided to the Project team quarterly and biannually using a standard template. The financial and disbursement data were well collected and presented by the PMB/MOIT in an appropriate manner. (ICR, page 31)

## **c. M&E Utilization**

The ICR reports that the M&E data was utilized to inform Project management and decision making. The data and the proposals to address arising issues were shared and discussed with the Government stakeholders. The M&E supported Project restructuring. A web-based reporting system was developed for online reporting of Project indicators, including disbursements, energy savings and emission reductions, and the financing plan. Also, loan applications from the IEs could be submitted through the online system. Related training on the use of system was provided to IEs, PFIs, and the MOIT. (ICR, page 31-32)

## **M&E Quality Rating**

Substantial

# **10. Other Issues**

## **a. Safeguards**

Environmental Safeguards. The Project was classified as Environmental Category F; potential impact was minor to moderate. The following Bank's safeguard policies were triggered: Environmental Assessment (OP/BP) 4.01, Physical Cultural Resources (OP/BP) 4.11, Involuntary Resettlement (OP/BP 4.12), and Indigenous Peoples (OP/BP 4.10). Safeguard instruments - the Resettlement Policy Framework (RPF), the Ethnic Minority Development Framework (EMDF), and the Environmental Management Framework (EMF) - were prepared, consulted, and disclosed at design. Environmental Management Plans for the 11 participating subprojects and Environmental Due Diligence and Environment Protection Commitments for other subprojects were prepared, consulted, approved, and disclosed per the Bank's and Government's requirements. Throughout implementation, the Project complied with safeguard policies. No accidents, environmental issues, or affected households were reported during implementation.

Social Safeguards. The Project closed without any outstanding social safeguard issues. The Project followed the World Bank's social safeguard policies, guidelines, and quality standards, including during construction works and fiduciary and environmental and social safeguards that ensure compliance with OP 4.12, OP 4.01 and other safeguard policies.

## **b. Fiduciary Compliance**

Procurement. The ICR reports that procurement was efficient, contributing to the Project's successful completion. Eight consultant bidding packages were completed. All bidding processes were conducted in



compliance with the required procedures as confirmed through World Bank prior and post reviews. (ICR, page 33)

Financial Management (FM). The ICR reports that financial management was in compliance with the World Bank's financial management policies and procedures. Quarterly financial reports were submitted by the MOIT/PMB to the World Bank. Financial audits by an independent firm were conducted annually and were of acceptable quality and submitted in accordance with the Loan Agreement. The MOIT and PFIs were submitting their annual audited financial statements, prepared as per international financial reporting standards. The audit reports were unqualified and stated that the financial management was well-executed and the Project had no financial management issues. (ICR, page 33)

### c. Unintended impacts (Positive or Negative)

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### d. Other

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## 11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	IEG agrees with the ICR's rating of the Original Project as Modest but disagrees with the ICR's rating of the Revised Project as High and rates it as Satisfactory because one of the RF targets was not achieved.
Bank Performance	Satisfactory	Moderately Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

## 12. Lessons

The following lessons were derived from the ICR with some modifications by IEG (ICR, pages 35-36):

1. The Project has been recognized by the Government and private sector for demonstrating economic, financial, and environmental benefits of EE investments and for creating an on-lending mechanism, which was effective in mobilizing remarkable private capital funding. The credit line supported by the Project had a significant leveraging effect, mobilizing a sizable private financing for EE in the amount of US\$87 million, from PFIs and IEs, and turned out to support a scale-up. Such an important outcome would not be possible if the Project did not address such EE financing barriers



as the lack of incentives, insufficient liquidity, and short-term maturity of the loans. It did so by using the KGGTF grant funding and by utilizing TA support from other Bank and IFC projects. The lesson is that in countries with economic and political incentives to implement EE and a strong Government ownership in relation to EE projects, a parallel development of a financial mechanism for EE and capacity building for EE can be a most effective and efficient approach to EE mainstreaming.

2. Selection of strong PFIs with dedicated project teams was vital for the success of the EE credit line created by the Project. The Project benefited from a sound commitment of the PFIs' management to the EE lending strategy and their dedicated project teams. The Project also benefited from a wide PFI participation, which enhanced the IE client base, covering a range of industrial clients and increasing the opportunities for EE lending. The lesson is that during the preparation stage, a careful selection of strong PFIs with dedicated project staff is critical for a successful creation of an EE financing mechanism.

3. The Project relied too much on the risk tolerance of the PFIs and credit ratings of the IEs, which explains why it was not successful in attracting the expected number of subprojects and a variety of EE technology types. The Project suffered from risk aversion of some PFIs (in particular, to lending to steel and cement IEs), and many perspective EE subprojects were not financed because the PFIs considered the IEs' credit ratings to be too low. The lesson is that to avoid such experience: (i) a more intensive, well-financed, and well-supervised TA to the PFI would be a good mitigating mechanism; and (ii) a wider range of EE technologies and additional financial instruments could be considered. Specifically, the follow-up Vietnam Scaling up Energy Efficiency Project (P164938, approved in 2019) used a US\$8.3 million grant for TA and focused on the development of a risk sharing facility to provide partial credit guarantees to the PFIs.

### 13. Assessment Recommended?

No

### 14. Comments on Quality of ICR

The ICR provides sufficient technical details to understand the value-added of the activities and the outcomes of the Project; a good justification of the PDO relevance; comprehensive and robust evidence on all aspects of Project's evaluation; and a clear linking of evidence to findings. The ICR is analytical and has internal consistency. The lessons learned are linked to the narrative and the ratings and are useful for future lending operations. At the same time, the ICR has the following minor weaknesses:

1. The ICR could have provided more evidence regarding one of the central Project outcomes: the creation of the mechanism of EE financing and the conditions for a scale-up of EE investments (establishment of a credit line for EE financing, development of a pipeline of EE subprojects adapting the EE technologies, and creation of incentives for the PFIs and IEs to contribute to the Project's EE investments).
2. Evidence of the outcomes of capacity building activities could have been included in the ICR, in addition to the listed inputs/outputs, such as the number of workshops conducted, the number of people trained, and a website developed. The outcomes would include relevant skills developed by the trained staff,



increased awareness due to the workshops conducted, and the acknowledgement of the applicability of the information on the website that was created by the Project.

3. Data presentation could have been more rigorous: the ICR could have included clearer disbursement data and report on energy and emission savings (major RF indicators using consistent units of measurement).

**a. Quality of ICR Rating**  
Substantial