Funding Proposal

FP071: Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam

Vietnam | International Bank for Reconstruction and Development and International Development Association (The World Bank) | B.19/12

16 March 2018

GREEN CLIMATE FUND

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Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title: Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam

Country/Region: Vietnam / East Asia and Pacific (EAP)

Accredited Entity: The World Bank

Date of Submission: August 8, 2017

GREEN CLIMATE FUND

Contents

Section A	**PROJECT / PROGRAMME SUMMARY**
Section B	**FINANCING / COST INFORMATION**
Section C	**DETAILED PROJECT / PROGRAMME DESCRIPTION**
Section D	**RATIONALE FOR GCF INVOLVEMENT**
Section E	**EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**
Section F	**APPRAISAL SUMMARY**
Section G	**RISK ASSESSMENT AND MANAGEMENT**
Section H	**RESULTS MONITORING AND REPORTING**
Section I	**ANNEXES**

Note to accredited entities on the use of the funding proposal template
• Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document. • The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

A.1. Brief Project / Programme Information		
A.1.1. Project / programme title		**Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam**
A.1.2. Project or programme		Project
A.1.3. Country (ies) / region		**Vietnam / East Asia and Pacific**
A.1.4. National designated authority (ies)		**Ministry of Planning and Investment (MPI)**
A.1.5. Accredited entity		**The World Bank**
A.1.5.a. Access modality		☐ Direct ☒ International
A.1.6. Executing entity / beneficiary		**Executing Entity:** • **Ministry of Industry and Trade (MoIT):** responsible for the overall project coordination and supervision as well as the implementation of the components on the risk sharing facility and TA/capacity building • **State Bank of Vietnam (SBV):** will represent the Socialist Republic of Vietnam in the Loan Agreement with the World Bank and supervise performance of participating financial institutions (PFIs). • **Ministry of Finance (MoF):** allocate credit lines to PFIs, and monitor subsidiary loan agreements between the MoF and PFIs. **Beneficiaries** include: • Ministry of Industry and Trade (MoIT) • Participating financial institutions (PFIs) • Industrial enterprises (IEs) • Energy service companies (ESCOs)
A.1.7. Project size category (Total investment, million USD)		☐ Micro (≤10) ☐ Small (10<x≤50) ☒ Medium (50<x≤250) ☐ Large (>250)
A.1.8. Mitigation / adaptation focus		☒ Mitigation ☐ Adaptation ☐ Cross-cutting
A.1.9. Date of submission		July 14, 2017
A.1.10. Project contact details	Contact person, position	Thi Ba Chu, Energy Specialist, Task Team Leader Franz Gerner, Energy Sector Coordinator, Vietnam
	Organization	The World Bank
	Email address	tchu@worldbank.org; fgerner@worldbank.org
	Telephone number	+84 4 39367311
	Mailing address	World Bank Office, 63 Ly Thai To Street, Hanoi, Vietnam

A.1.11. Results areas *(mark all that apply)*

Reduced emissions from:

☐ Energy access and power generation
(E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)

☐ Low emission transport
(E.g. high-speed rail, rapid bus system, etc.)

☒ Buildings, cities and industries and appliances
(E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)

☐ Forestry and land use
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

☐ Most vulnerable people and communities

(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)

- ☐ Health and well-being, and food and water security
  (E.g. climate-resilient crops, efficient irrigation systems, etc.)
- ☐ Infrastructure and built environment
  (E.g. sea walls, resilient road networks, etc.)
- ☐ Ecosystem and ecosystem services
  (E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

The World Bank (the Bank) has agreed with the Government of Vietnam (GoV) to adopt a holistic approach to scaling up energy efficiency (EE) in the high-energy intensive industrial sector aiming to unlock the huge potential for energy savings and greenhouse gas (GHG) emission reductions. The proposed Scaling up Energy Efficiency for Industrial Enterprises in Vietnam ("the Project") will substantially contribute to achieving Vietnam's Nationally Determined Contribution (NDC); i.e. 25% GHG emission reduction compared to the Business-As-Usual scenario with international support, under the Paris Agreement.

Overall, the Project comprises an integrated package of credit risk mitigation, technical assistance and capacity building activities to various stakeholders from public entities to local financial institutions and industrial enterprises, complemented by an IBRD credit line project. This will reduce EE investment market barriers, such as lack of access to finance and capacity of stakeholders, high project risk perceptions, and the existence of an insufficient policy and regulatory framework that governs EE in the industrial sector.

The Project comprises two interrelated and closely coordinated components:

- **Component 1:** US$78 million GCF Risk Sharing Facility (GCF-RSF)
- **Component 2:** US$10 million World Bank and GCF Technical Assistance (WB/GCF-TA)

The Project is complemented by:

- **IBRD Loan project:** US$100 million World Bank Energy Efficiency Credit Line - Vietnam Energy Efficiency for Industrial Enterprises Project (WB-VEEIE)

The joint implementation of the two components and the IBRD supporting project will promote a market-driven approach to industrial energy efficiency and opening up the commercial lending market to local banks and non-bank financial institutions developing a new EE product line. With financial and technical support from the World Bank and the GCF, the Project and the supporting IBRD Loan will mobilize approximately US$ 407.3 million of EE investments, supporting over 100 industrial companies to reduce energy consumption and generate about 120 MtCO2eq of GHG emission reductions over the lifetime of the investments.

Ultimately, the Project will contribute to a paradigm shift in the nascent EE market, by providing know how and experience and by strengthening of capacity and creating an enabling environment for local financial institutions and industrial enterprises to scale up investments in energy efficiency.

A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	31/3/2018
Expected financial close (if applicable)	*N/A*
Estimated implementation start and end date	Start: 01/09/2018 End: 31/08/2023
Project/programme lifespan	15 years 0 months

B.1. Description of Financial Elements of the Project / Programme

The Project consists of two interrelated and closely coordinated components, and is complemented by an IBRD loan to support energy efficiency investments in the industrial sector as below.

Component/parallel project	Currency[1)]	GCF		World Bank	PFIs[2)]	IEs/ ESCOs[3)]	Total EE Investment[4)]	Total Financing[5)]
		Guarantee[7)]	Grant					
1. GCF-RSF	US$ m	75	3	-	201[6)]	50[6)]	251	329
2. WB/GCF-TA	US$ m	-	8.3	1.7	-	-	-	11.9
WB-VEEIE (IBRD co-financing)	US$ m	-	-	100[8)]	25[8)]	31.3[8)]	156.3	156.3
TOTAL	**US$ m**	**75**	**11.3**	**101.7**	**226**	**81.3**	**407.3**	**495.3**

[1)] WB and GCF financing will be provided in USD. Part of financing from PFIs/IEs will be in VND; the table presents USD equivalent figures.

[2)] PFIs: Participating financial institutions, representing the amount of co-financing (in the case of IBRD loan) or loans (in the case of GCF RSF) provided for investment in energy efficiency

[3)] IEs/ESCOs: Industrial enterprises and energy service companies, representing 20% equity for each investment

[4)] Total EE Investment: Amount directly invested in EE transactions, excluding amount for the risk sharing facility and TA/capacity building

[5)] Total Financing includes not only EE investment but also financial resources used to mobilize EE investment, e.g. grant, guarantee

[6)] This is considered as parallel financing.

[7)] Financing to be provided by GCF to IBRD for the guarantee to be provided by IBRD (as an Accredited Entity of GCF) to the RSF (IBRD/GCF Guarantee)

[8)] This is considered as complementary financing.

Component 1 - GCF Risk Sharing Facility (GCF-RSF) seeks to mobilize US$251 million from PFIs and IEs through the Risk Sharing Facility, to be capitalized by US$3 million of grant and US$75 million of guarantee. The guarantee will provided by IBRD, as an Accredited Entity of the GCF (the IBRD/GCF Guarantee), to the Program Implementing Entity (PIE) of the RSF, in an amount of up to $75 million to be financed by GCF (IBRD/GCF Guarantee). The GCF-RSF will provide PFIs with partial credit risk guarantees to cover loans extended to IEs for EE investments. It is expected that these loans would be funded from PFI's own local currency financing resources, and not from the USD financing sources provided through the IBRD loan[1]. <u>All investments mobilized under Component 1 are additional to the investments made under the IBRD supporting project, since the loans provided under the IBRD Loan are not eligible for the partial risk coverage offered by the Facility.</u> The IBRD/GCF guarantee will only be available to loans or tranches of loans (in case of parallel financing with the IBRD supporting project) made to IEs by PFIs using their own resources.

Any default on loan repayment to PFIs will be covered by the GCF-RSF, expected to be 50 percent of the loss on average during the project life. The Program Implementing Entity (PIE) managing the RSF will have flexibility in setting the coverage ratio based on market demand. A guiding principle in setting the coverage amount is not to over- or under guarantee commercial lending but to provide an optimal level of coverage to encourage PFIs to lend while at the same time requiring them to have "skin in the game" through risk sharing. Based on market sounding, a 50 percent coverage level would be considered acceptable by the market, although the coverage ratio in the first 1-2 years of the project may need to be higher to increase the attractiveness of the guarantee product to PFIs. After the ramp-up period, and assuming that PFIs have become comfortable with lending for EE projects, the guarantee coverage is expected to be reduced to 50 percent or less to mobilize more commercial financing. The RSF will cover losses pro rata (not as a first loss) with the PFIs and the guarantees will amortize along with the underlying loans.

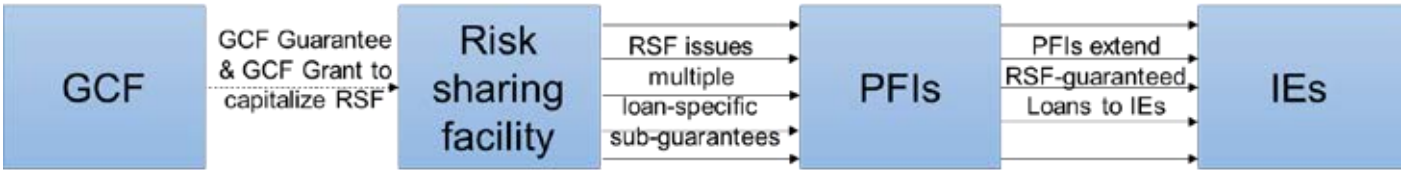
The GCF-RSF grant will cover administrative start-up costs and operating expenses for the first two years, and provide initial seed capital for possible sub-guarantee payouts during the early stages of the operation. After an initial ramp-up period, the GCF-RSF is designed to operate on a cost recovery basis so that sub-guarantee fees collected from PFIs would be sufficient to cover GCF-RSF operating expenses, IBRD/GCF guarantee fees, and guarantee payouts for expected losses from the covered loan portfolio. The GCF-RSF issues partial credit guarantees (or sub-guarantees) to

[1] During market sounding activities, PFIs expressed interest to apply for the guarantee using their own financing resources.

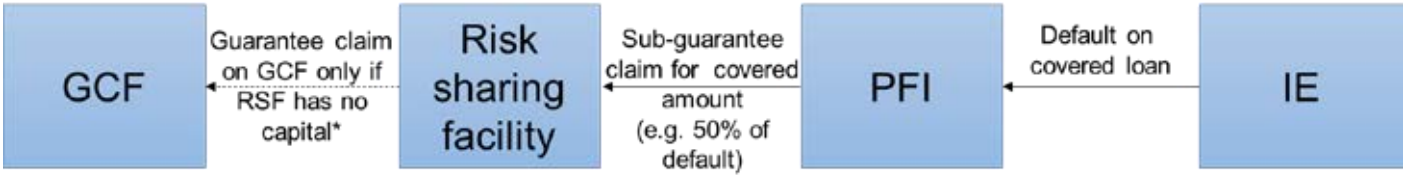
PFIs to extend loans to IEs for eligible projects. For greater efficiency and simpler administration, the GCF guarantee in turn is not issued directly to the PFIs but to the GCF-RSF as a whole as reserve capital to be used in downside scenarios (see guarantee issuance diagram below). In the base case, the IBRD/GCF guarantee is not expected to be called as long as actual losses are kept below the expected losses, which are to be recovered by a pool of the seed capital and the reserve capital coming from the collected guarantee fees. The above-mentioned cost recovery principle in guarantee pricing would allow for the GCF-RSF to generate sufficient revenue to pay for guarantee claims. The IBRD/GCF guarantee would be called if actual losses (i.e. guarantee payouts) PFIs incur on their loans to IEs (i.e. if IEs default on their scheduled principal and interest payments) exceeded expected losses and the GCF-RSF was unable to meet calls for guarantee payouts from its loss reserve account (see guarantee payoutdiagram below).

Recognizing the significance of appropriate risk management practice for the effective use of WB and GCF resources, an Operations Manual (OM) along with a Risk Management Framework (RMF) will be developed before implementation begins to provide the Program Implementing Entity (PIE) with detailed rules and guidelines on day-to-day operations and risk management practices of the GCF-RSF. Throughout the development of the OM and RMF, GCF will be consulted to reflect the appropriate risk appetite. Some of the key elements to be included in the OM and RMF have been in discussion with the GCF Secretariat, which is summarized in Annex 11. Based on experience and market feedback, the OM and RMF will be open for further review during project implementation, and any revisions will be made in consultation with GCF.

Sub-guarantee issuance



Sub-guarantee payout sequence



**Would be expected to happen only if actual defaults resulting in guarantee claims from PFIs exceeded the expected defaults.*

The proposed GCF-RSF design was informed by IBRD's Articles of Agreement (Article 1(ii), reflected in the applicable IBRD policy OP 10.00, which states that guarantee instruments are intended to promote private foreign investment and not be used to support lending from public sources, including multilateral development banks. Given that Component 1 will be implemented within these policy limits, the IBRD/GCF Guarantee cannot therefore be used to backstop repayment of loans PFIs extend to IEs using the IBRD loan. As a result, the GCF financing provided through the GCF-RSF has been designed to be fully additional to the resources mobilized through the IBRD loan. The IBRD supporting project seeks to mobilize PFI co-financing in a ratio of 1:4 to the IBRD loan and additionally IEs will be required to contribute 20 percent of the EE project cost as equity. Component 1 will guarantee PFI co-financing which is additional to the 20 percent required under the IBRD loan or PFI financing covered entirely from their own resources for eligible EE projects.

Component 2 - World Bank and GCF Technical Assistance (WB/GCF-TA), (Bank US$1.7 million/GCF US$8.3 million), provides TA and capacity building to promote EE in the industrial sector. More details of the activities are provided in section C.3. As a separately processed but coordinated activity KOICA expects to provide US$1.9 million of TA funding.

IBRD Loan project - Vietnam Energy Efficiency for Industrial Enterprises Project (WB-VEEIE) finances US$156.3 million of EE investments, of which US$100 million comes from the Bank, US$25 million from PFIs, and US$31.3 million from IEs that implement investments. GCF will not play any financing role for the IBRD supporting project although some subprojects may receive parallel financing support under Component 1 (GCF-RSF). The Bank IBRD loan will be on-lent through the MoF to PFIs, which will extend loans to IEs from the blended financing of the on-lending and PFIs' own

resource at a ratio of 4:1[2]. The contributions from IEs are estimated based on equity participation, which is around 20% of the total investment cost.

The Bank loan product chosen by the MoF is a LIBOR-based U.S. dollar denominated single currency for US$100 million, on IBRD terms. The MoF will on-lend to the PFIs at the same financial terms and conditions and will not provide any interest subsidy to the PFIs. The PFIs will be fully responsible for debt service and will bear all financial risks associated with the Bank loan. The PFIs can extend the loan to the IEs either in U.S. dollars or Vietnamese dong. If the loan to the IEs is in U.S. dollars, the PFIs will decide the interest rate to the IEs, on commercial basis by adding a margin that will be determined by its cost, subproject risk, and sub-borrower's creditworthiness. If the loan to the IEs is in Vietnamese dong, the PFIs will carry FOREX risk and the interest rate to the IEs shall be determined on commercial basis by adding up FOREX risk premium to the margin. The Bank Board approved the IBRD Loan project and WB TA part of Component 2 on April 14, 2017. Two PFIs, Bank for Investment and Development of Vietnam (BIDV) and Bank for Foreign Trade of Vietnam (VietcomBank), were selected by SBV/MOF for the participation in theWB-VEEIE.

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	**(a) = (b) + (c)**	88	million USD ($)		
(b) GCF financing to recipient	(i) Senior Loans	……	Options	( ) years	( ) %
	(ii) Subordinated Loans	……	Options	( ) years	( ) %
	(iii) Equity	……	Options		( ) % IRR
	(iv) Guarantees	75	million USD ($)		
	(v) Reimbursable grants *	……	million USD ($)		
	(vi) Grants *	11.3[3]	million USD ($)		
	Economic and financial justification for the concessionality is provided in section F.1.				
	Total requested (i+ii+iii+iv+v+vi)	86.3	million USD ($)		

	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
(c) Co-financing to recipient	Senior Loans	1.7	million USD ($)	World Bank	25 years	IDA terms	senior

[2] It is assumed that the PFIs will provide co-financing of $25 million for the $100 million IBRD portion of the project.
[3] Includes a US$3 million grant for seed capital funding for the RSF
[4] Includes US$201 million lending under the VEEIE RSF where PFIs use their own funds and are eligible for the IBRD/GCF Guarantee and the US$50 million co-financing requirement under the IBRD loan which is not eligible for use of the IBRD/GCF Guarantee
[5] US$31.3 million in equity is attributed to the US$100 million IBRD portion with US$25 million co-financing from PFIs; US$50 million in equity is attributed to equity requirement under loans made by PFIs using their own resources, using IBRD/GCF Guarantee.

	Lead financing institution: World Bank; KOICA co-financing in parallel
	** Provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.*
(d) Financial terms between GCF and AE (if applicable)	The proposed financial terms of IBRD/GCF guarantee are described in Annex 5. As stated in Annex 5, the requested Accredited Entity Fee is seven percent (7%) of the GCF grant funding and three percent (3%) of the IBRD/GCF guarantee funding, subject to finalization of the AMA and FAA. The GCF interim policy on fees indicates the cap is seven percent (7%) of the GCF funding for large scale public sector projects/programs. It should also be noted that the Accredited Entity Fee is not included in the project budget in section (b) above.

B.3. Financial Markets Overview (if applicable)

Sector overview. Vietnam's financial system is as a bank-based system. According to the SBV, by the end of 2015 the banks' assets were almost 3.8 times of GDP and accounted for more than 90 percent of financial sector's total assets. By the end of 2016, the banking sector consisted of 97 banking entities including 4 fully state-owned commercial banks, 33 joint-stock banks, 51 foreign banks and branches, and 2 policy banks. The top 10 banks account for approximately 78 percent of the assets of the entire banking system. Much of the rapid credit growth in recent years has occurred through the banking system. According to Central Bank data, credit growth was at approximately 18 percent in 2016, compared to the targeted 15-18 percent in the beginning of the year. However, continuing weaknesses include undercapitalization and a suboptimal allocation of resources. The level of non-performing loans (NPLs), which was high in the past, has lowered through recent debt restructuring. The NPL ratio across the sector was around 2.8% at the end of 2016[6].

Capital markets in Vietnam remain small and underdeveloped but growing. As reported by the MOF, by the end of 2016, the combined stock market and bond capitalization was 71 percent of GDP, compared to 56.5 percent in 2014. Capitalization remains low compared to other countries in the region, such as 106 percent in Thailand and 136 percent in Malaysia in 2014. Total Government bond issuance volume in 2016 was estimated to reach VND280 trillion (i.e. more than USD12 billion). Vietnam's formal market is highly retailed in nature with more than 98 percent of accounts registered with the Vietnam Securities Depository.

Macroeconomic setting. Over the past few years, the monetary policy measures of the SBV – aimed at controlling inflation, easing interest rates, and restoring liquidity in the banking system – have provided reliable conditions for credit institutions to lower their lending rates. At the same time, it administratively required banks to consider reducing interest on existing loans to share the borrowers' burdens. This measure has dual impact, inducing the banks to increase their capital controls and improve credit risk management capabilities. As a result, bank liquidity has been gradually improved, which in turn helped stabilize financial markets and meet capital needs in the economy at more sustainable interest rates, in harmony with current economic conditions.

The SBV planned to consolidate the banking system and the introduction of new rules on prudential ratios under Circular 36 (effective February 1, 2015) and the revision by Circular 06 (in May 2016) are commonly viewed to benefit the sector. Consolidation should improve efficiency through better economies of scale and reduce supervisory burden. The SBV announced plans to approve banking mergers and acquisition deals in 2015 to reduce the number of banks from around 40 to between 15 and 17 by 2017. However, implementation may be a challenge while such long-term structural problems such as weak asset quality, poor transparency, and low capital buffers remain. The bulk of the consolidation wave is expected to comprise weak, smaller banks merging into large state-owned commercial banks. The impact on state-owned commercial banks should be manageable as potential targets remain small relative to their suitors' total assets, although absorbing weaker banks could heighten asset quality and execution risks in the near term.

Interest rate trends and liquidity. Interest rates have been on a downward trend since 2013 and they stabilized in 2016. While the caps on deposit rates were removed, deposits of 6 months and below are still subject to a cap of 5.5 percent per annum. Recently, a few banks have attempted to cut deposit interest rates owing to favorable macro-conditions, including good liquidity and low inflation, but smaller banks have kept the higher rates to maintain or expand market shares. Low inflation and declining deposit rates may also motivate many retail depositors to switch to higher-yield investment channels such as stocks and properties. The SBV used several monetary policy tools for lowering lending

[6] National Financial Supervisory Commission, 2016, Financial Sector Overview Report

interest rate, such as (i) requiring credit institutions to reduce lending rates by cutting and managing operation costs (ii) keeping low discount rates, encouraging low interbank rates. To date, Vietnamese dong lending rates to prioritized sectors are commonly set at 6-9 percent p.a. for short-term loans, while medium- and long-term rates charged by state-owned commercial banks remain in the 8–10 percent p.a. range; lending rates to normal manufacturing/business sectors commonly range of 7-10 percent p.a. for short terms and 9-12 percent p.a. for longer terms. To put this into perspective, current lending rates have now become even lower than the past levels during the booming period of 2005–2006. System liquidity has been stable and banks normally do not have to use short-term deposits for medium and long-term loans up to the threshold set forth by the SBV.

Credit growth and dynamics. Since 2015, credit activities have developed strongly, a positive sign for monetary and banking operations with the economy's continued turnaround. The growth pattern has been maintained with credit growth almost surpassing 2016 targets (18 percent). Banks' lending rose quickly in the last few months of 2016, reflecting strengthened domestic demand as well as accommodative monetary policy of the authorities in order to support economic activities. However, quick credit growth raises concerns on the quality of lending. This trend should come as no surprise since many enterprises had been expecting further economic recovery and factoring it in. Some bank executives have been quoted as saying that many sources had predicted that economic performance would improve, so they expected good credit growth. Both lending and deposit rates are at stable and lower levels as outlined above, which also fueled credit growth. The SBV's new policy of allowing lenders to use up to 60 percent of short-term deposits for long- and medium-term loans has also contributed to credit growth (however, this ratio will be gradually revised down, especially to 50% starting 2017 according to Circular 06/2016/TT-NHNN which amended Circular 36/2014/TT-NHNN).

C.1. Strategic Context

Country Context. Vietnam is one of the most energy-intensive countries in East Asia. Its energy intensity of GDP is steadily increasing, and its energy elasticity of GDP is estimated at 2, compared to less than 1 for most countries.[7] As a result, the final energy consumption tripled over the past decade. Industrial growth has been one of the key drivers of Vietnam's increasing energy intensity, accounting for 48 percent or almost half of the final energy use. Vietnam Energy Statistics 2013 shows that cement and constructional materials and food processing industries consumed most energy. Because industry is the most energy-intensive economic sector, this increase in the industrialization of Vietnam's economy by itself contributes to the increase in Vietnam's overall energy intensity.

Vietnam's emissions are expected to increase dramatically by 2030. Between 2010 and 2030, Vietnam's overall GHG emissions will increase fivefold, per capita emissions fourfold, and the carbon intensity of GDP by 20 percent[8]. The government recognized the importance of green growth and 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, which will be achieved through increased investments in technological innovation, natural capital, and economic instruments. This will contribute to responding to climate change, reducing poverty, and addressing sustainable economic development challenges. One of the important strategic objectives is to encourage energy efficiency (EE), with a 2020 target to reduce the intensity of greenhouse gas (GHG) emissions by 8–10 percent as compared to the 2010 and reduce emissions from energy activities from 10–20 percent compared to business-as-usual case.

Vietnam has also pledged, in its Nationally Determined Contribution (NDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC), to reduce 8 percent of the greenhouse gas (GHG) emission by 2030 compared to the business-as-usual scenario and to further aim at 25 percent reduction with support from the international community. One of the measures to achieve the mitigation target is to "improve effectiveness and efficiency of energy use; reducing energy consumption", with a particular focus on manufacturing industries where energy consumption is high. Vietnam has ratified the Paris Agreement of the UNFCCC, through Resolution No 93/NQ-CP on October 31, 2016.

As part of an overall Bank engagement in Vietnam, the Bank has been providing various forms of support including technical assistance and financing resources for achievement of Vietnam's climate change and green growth agenda. The Clean Production and Energy Efficiency Project (CPEE), financed by the Global Environment Facility, provided technical assistance on assessment of EE potential in key industrial sectors and development of a voluntary agreement mechanism for EE performance. Vietnam's Low Carbon Development and Policy-Marginal Abatement Curve study supported by the Bank identified low carbon options and provided policy recommendations for scaling up RE and EE. The Fossil Fuel Subsidy and Power Sector Financial Recovery studies give insights of sectorial issues and recommendations for sustainable development of Vietnam power sector. Also, the Bank is providing technical and financial support to solar PV development and regional interconnection, promoting RE investment, regional power trading, to change VN's coal trajectory. The Bank's financing resources have been provided through related energy and climate change projects including the Renewable Energy Development Project, Power Reform and Climate Change Policy Lending series, and in particular the upcoming Energy Efficiency for Industrial Enterprises (VEEIE). The latter will contribute to achieving RE/EE national targets and NDC's commitments.

Vietnam has witnessed impressive economic growth and poverty reduction in the past 25 years. The country's gross domestic product (GDP) has grown from about US$33.6 billion in 2000 to US$185.3 billion in 2014. Access to electricity services, which was below 10 percent in 1986,[9] has grown to 98 percent in 2014, contributing to reducing poverty and boosting shared prosperity. Expanded grid electrification of rural households was mirrored by a sustained increase in the value of GDP per capita. Rural electrification has been a critical component of the government's program to eliminate poverty, redress imbalances in development, and improve overall welfare levels by providing reliable energy sources,

[7] World Bank. 2014. Vietnam Low Carbon Study.
[8] World Bank, 2014, Vietnam Low Carbon Study
[9] Van Tien, H. 2010. *Vietnam Rural Electrification Program*. World Bank.

better living conditions, health care, and rural services.[10] Using the extreme international poverty line of US$1.25 per person per day, the extreme poverty headcount in Vietnam fell from 64 percent in 1993 to less than 3 percent in 2012.

The development of the energy sector has been a key factor in the recent industrialization process, creating jobs and increasing shared prosperity. While the energy access agenda drove electricity demand expansion in the 1990s, the industrial sector has taken the lead in the past decade. In the period 2000–2011, industrial demand grew 8.2 percent per year, more than any other sector. Employment by industry has grown substantially by 7 percent per year. According to the General Statistics Office, the number of 'Plant and Machine Operators and Assemblers' and 'high-level professionals' is sharply on the rise, more so than any other non-managerial job category at 18 and 29 percent, respectively.

Growth in the number of skilled professionals in the industry sector runs parallel to the strengthening of small and medium enterprises (SMEs), which are the cornerstone of the Vietnamese economy. Currently, SMEs represent roughly 97 percent of the overall number of businesses, employ 77 percent of the workforce, and account for 80 percent of the retail market. Electricity supply to industry and SMEs has been a crucial contributor to employment growth and with that to increased prosperity. In fact, the income of the bottom 40 percent grew 9 percent on average over the last decade. The main centers for industrial growth and proliferation of SMEs are the greater Hanoi area and the greater Ho Chi Minh City area. The rapid industrialization of the economy, along with the high rate of urbanization, has led to massive requirements for energy in these urban areas.

Sector context. Electricity demand has grown at a rapid pace, averaging 15 percent per year between 2008 and 2010 before dropping to 9 percent in 2011 due to the growth slowdown and increasing to 11 percent in 2012. Vietnam's energy sector is facing two major challenges to meet future energy demand: (a) resource constraints and energy security; and (b) high energy demand and huge financing needs. Vietnam has achieved 98 percent electricity access rates connecting over 20 million households and industry and commercial customers – this is a remarkable achievement. Today's biggest energy challenge is to provide those customers with reliable electricity services and meet future demand. Per capita electricity consumption remains relatively low (that is, one-third of China), and it is anticipated that electricity demand will continue to grow fast for the next two decades. Current demand projections show a dramatic increase from 32 GW of installed capacity in 2013 to 70 GW in 2020 to 120 GW in 2030.

Vietnam has limited domestic energy resources and will rely increasingly on imported coal to meet future energy needs. Most of the larger hydropower projects are developed, and Vietnam will need to improve the regulatory and pricing framework to further develop smaller hydro and largely unexplored solar and wind potential. There is potential to bring more gas into the market from domestic fields. However, these resources will not materially alter the dependence on coal for power generation and industrial usage in the near to medium term. Therefore, increasing reliance on energy sources from abroad over the next decade raises issues of energy supply security, vulnerability to international price fluctuations, and subsequent impacts on domestic energy prices. The cost of energy to Vietnam's consumers currently amounts to around US$14–15 billion per year. In the power sector alone, the financing needs are about US$5-6 billion annually to meet future demand for generation and network investments.

The 2009 Prime Minister Decision 21 initiated the electricity tariff reform process, establishing both the principles of a market-based mechanism to annually adjust the tariffs for the period 2010–2012 and a subsidy regime aimed at protecting vulnerable and poor consumers. This decision was further reinforced by an updated 2011 PM Decision 24, which allows the tariff to be adjusted during the course of a year to reflect changes in uncontrollable costs (e.g. fuel, rate of exchange). Through the application of these mechanisms, the average electricity tariffs have increased steadily and have started to be revised more than once per year. The PM Decision 2165 from November 2013 approves an average electricity retail tariff bracket in 2013–2015 between a price floor of VND 1,437/kWh (US¢ 7.2/kWh) and a price ceiling of VND 1,835/kWh (US¢ 9.2/kWh), demonstrating the government's commitment to further adjust electricity prices.

The industrial sector is the largest energy consumer. The electricity consumption accounts for 53% of total electricity in the country. Electricity retail tariff for industrial consumers follows time of use (TOU) mechanism by voltage level. The maximum tariff now for manufacturing industries is VND 2,735/kWh (US¢ 12/kWh) during peak hours and VND 1,518/kWh (US¢ 6.7/kWh) during normal hours, and at voltage of 6kV.

[10] Khandker, S. R., D. F. Barnes, H. A. Samad. 2013. *Welfare Impacts of Rural Electrification: A Panel Data Analysis from Vietnam.* Economic Development and Cultural Change 61 (3): 659–692. The University of Chicago Press.

Gas consumption in the power sector accounted for 83% of total Vietnam's gas consumption in 2015 and gas in Vietnam is currently priced on the basis of bi-lateral negotiations between project proponents and PetroViet (PVN). Existing gas pricing appears also to be driven by a perceived need to achieve low electricity prices. Most of the gas sources are located in the southern offshore fields. The prices for gas up to take-or-pay quantities for power plants in the southeast region are set by negotiation between PVN/PVGas and the power plant owners. A pricing formula is set out at the Office of the Government Directive 2175/VPCP-KTTH for (i) gas quantities exceeding take-or-pay quantities for power stations in the southeast, (ii) gas delivered to power stations in the southwest region, and (iii) the Phu My fertilizer plant. The formula includes a ramp up of the market price from 70% of MFO (monthly average fuel oil price of Singapore market) MFO in 2014 to 100% from January 1, 2015: (Gas price for user = Market gas price plus transportation and distribution charges). For industrial users, PVN sets annual gas pricing schemes based on the pricing of alternative fuels (FO, LPG) and market acceptance

Vietnam, previously a coal exporter, imported 10.5 million tons (mt) of coal in the first nine months of 2016, surging 140% compared to the same period of the previous year, as coal exploitation has not been able to meet the higher demand required by the power plants. The country's power sector is the largest coal consumer, consuming about 33.2 mt in 2016 or about 67% of the estimated total coal consumption in the year. Historically, the coal sector has been subject to export restrictions and price controls. In the past years, coal sold to power sector was lower than production cost, but recently this subsidy was substantially phased out and coal prices now largely reflect market prices, and imported coal price is competitive to domestic coal.

Meeting future energy demand by improving EE is the single best and lowest cost option to improve energy security, help consumers save and cope with potential rate hikes, reduce pollution, and mitigate climate change. If stronger programs and policies were put in place, current wasteful practices could be reduced and more efficient energy use technology could be adopted. This can meet a sizable portion of the business-as-usual demand for increased energy services, at costs which are typically one-fourth the cost of additional energy supply. The Bank's Low Carbon Study has demonstrated that Vietnam could save up to 11 GW of new generation capacity by 2030 if comprehensive demand-side EE investments are carried out.

The Vietnamese government passed a Law on Energy Efficiency and Conservation, issued a series of decrees to promote EE by the prime minister, and set a target of 5–8 percent of energy savings from 2012 to 2015 compared to the forecast energy demand. The Vietnam Energy Efficiency Program (VNEEP) is a national target program and the first ever comprehensive plan to institute measures for improving EE and conservation in all sectors of the economy in Vietnam. VNEEP Phase I (VNEEP-I) from 2006 to 2010 aimed to actively start up all components of the program, and VNEEP Phase II (VNEEP-II) from 2011 to 2015 aimed to expand each component, based on lessons learned from Phase I. In addition to the government's national programs, a number of parallel efforts have been initiated in direct cooperation with donor agencies. Also, to promote efficient use of electricity and reduce consumption, the government has introduced time-of-use electricity tariffs for medium and large customers and developed an EE standard and labeling road map. A pilot demand side response program using the time-of-use tariff was implemented by the Ho Chi Minh City Power Company (PC) under the Distribution Efficiency Project financed by the World Bank.

C.2. Project / Programme Objective against Baseline

Rationale for Public Sector Financing and Engagement: Despite a number of various initiatives for EE from both the government and donor community, significant barriers remain to implement energy-saving measures. The constraints to EE investments are usually not due to the financial viability and maturity of EE technologies but to market failures and barriers, which include:

a) *Low or subsidized energy pricing.* The cost of energy consumption has been low and subsidized. The share of the energy cost represents a small share of operating costs, which has led to consumers' low interest in energy conservation. This issue is currently being addressed through a series of energy pricing and electricity tariffs reforms. The Government of Vietnam adopted the Power Sector Reform Roadmap, which has been supported by the World Bank through a series of development policy operations. The Power Sector Reform Development Policy Operations (PSRDPO) 1, 2 and 3 were implemented over 2010-2015, supporting four policy areas including development of competitive power market, power sector restructuring, electricity tariff reform and improving demand-side energy efficiency and quality of service. PSRDPO 4 is currently under preparation, planning to introduce market-based tariff mechanism and improve the transparency of tariff determination, among

other measures. The average tariff has gradually been increased from VND1,053/kWh in 2010 to VND1,622/kWh in March 2015. With continuous support through PSRDPO 5 and 6, the ongoing sector reform is expected to achieve full cost recovery tariffs, which will help address one of the major barriers, low electricity pricing, to promote investments in energy efficiency.

b) *Lack of institutional champions due to the fragmented nature of EE measures.* The EE policies and measures remain fragmented and lack institutional champions and accountability to enforce national-level EE targets. The objectives of EE policies and programs are not duly incorporated into sector master plans, which prevents allocation of financial resources to support achievement of the expected results. Despite the established mandatory reporting requirements, no established systems exist for monitoring and reporting on the achieved results of energy savings and emission reductions.

c) *Limited financing for the up-front capital expenditure*. Despite high financial viability of EE investments in the industrial sector, access to finance has been limited for the majority of industrial enterprises with high energy intensity. Most local financial institutions lack the required technical expertise to appraise EE investments, and view EE lending as risky. Credit risk associated with EE lending is perceived high by most of local financial institutions, and often leads to high collateral requirements. In particular, the concept of project-based financing that focuses on the cash flows from energy savings has not yet been widely accepted by financial institutions. The lack of expertise, interest, and confidence in EE financing on the part of financial institutions leads to insufficient supply of financing for the capital expenditure of EE investments.

d) *Lack of EE awareness and capacity to identify and develop EE projects.* Industrial enterprises, the main beneficiaries of EE investments, have inadequate information on their energy consumption and efficiency measures that can be adopted. Furthermore, only a few experts are capable of identifying opportunities of energy saving and conservation in each subsector and developing technical designs suitable for the operating environment. Only in a few cases have consumers invested in EE and benefited as a result. These success stories have not been widely shared with other potential consumers with equally high energy intensity and opportunities to save from EE investments. This will be addressed via Component 2 of the IBRD VEIEE project.

International experience demonstrates that the development of ESCOs and a functional Energy Performance Contracting (EPC) market would be critical to scale up energy efficiency investments. However, the ESCO market in Vietnam is at a nascent stage. There are currently about 70 related energy services providers (EESPs) which could potentially be considered as ESCOs but they are very small and lack the necessary experience and capacity to access financing for project implementation. Existing legislation does not encourage ESCOs' operation, and the 5 year implementation review of the Law on EE recently stated that new regulations need to be prepared to support ESCO activities for scaling up EE investment.

Unless other measures to address these existing barriers are carefully designed and implemented, the market failure would persist, and unlocking the energy saving potential in the energy intensive industries would not be scaled up or at least would be delayed for a long time, exacerbating the challenges of energy security and climate change.

Scaling up Energy Efficiency for Industrial Enterprises - Project Development Objective: The Project Development Objective is to improve energy efficiency in Vietnam's industrial sector. The project would thereby contribute to achieving the government's energy efficiency and GHG reduction objectives.

The primary beneficiaries will be industrial enterprises (IEs) and participating financial institutions (PFIs). The IEs would benefit from adopting improved technologies and optimization of production, thus reducing energy consumption and production costs and increasing their overall competitiveness in the domestic and international markets. The PFIs would benefit from the creation of new loan products for industrial EE, thereby building technical capacity for EE investment appraisal and monitoring, enabling them to scale up EE lending to industries. Participating government agencies would be supported in the development of the relevant EE regulatory framework, standards, and guidelines. The results of the Project will be measured upon a set of performance indicators, which are explained in more detail in section H.1.2.

Higher Level Objectives to which the Project Contributes: The Project will contribute to the government's objective of Vietnam's National Energy Development Strategy up to 2020 with vision to 2050; Vietnam Green Growth Strategy period 2011–2020, vision to 2050; the Law on Energy Efficiency and Conservation; Vietnam Power Development Plan VII period 2010–2020, vision to 2030; and the Nationally Determined Contribution (NDC) under the Paris Agreement.

The Project is consistent with the World Bank Country Partnership Strategy for 2012–2016 and contributes directly to the 'Sustainability' pillar. Furthermore, the project addresses the cross-cutting theme of 'resilience' by reducing energy consumption and contributes to climate change mitigation. The cross-cutting nature of the operation reflects its direct support to the following Country Partnership Strategy outcomes: (a) Outcome 1.2: Improved Quality and Efficiency of Infrastructure Services and (b) Outcome 2.2: Climate Change Mitigation: CO2 emissions reductions associated with investments supported.

The Project contributes to the Bank's 'twin goals' strategy of eliminating extreme poverty and promoting shared prosperity through economic growth in the bottom two quintiles. The Project is expected to generate positive poverty reduction by comparatively lowering energy bills for consumers, reducing air pollution and CO2 emissions, and mitigating climate change impacts. The Project is closely aligned with the World Bank Energy Strategy and contributes to the Bank's Energy Engagement Strategy for Vietnam to support supply- and demand-side EE, which is a key engagement pillar. It will leverage the ongoing Clean Production and Energy Efficiency (CPEE) Project that provides the analytical underpinning of the Bank's EE engagement in industrial enterprises.

C.3. Project / Programme Description

The Project comprises two interrelated and closely coordinated components and is complemented by a parallel IBRD Loan project:

- **Component 1:** US$78 million GCF Risk Sharing Facility (GCF-RSF)
- **Component 2:** US$10 million World Bank and GCF Technical Assistance (WB/GCF-TA)
- **IBRD Loan project:** US$100 million World Bank Energy Efficiency Credit Line - Vietnam Energy Efficiency for Industrial Enterprises Project (WB-VEEIE)

The Project has been designed to help remove the principal barriers to investments in industrial EE projects. The TA and capacity building activities will 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 will be accompanied by an IBRD financial intermediary lending program for EE, which will demonstrate viable mechanisms for financing industrial EE investments, in direct support of the government's EE targets and green growth strategy. The establishment of a risk sharing facility, backed by the IBRD/GCF guarantee instrument, will further address concerns of local financial institutions on performance of EE investments and mitigate credit risk of loans extended to industrial enterprises for EE, and thus encourage scaling-up of EE loans in the market.

The Project will support financing for various subprojects under energy intensive industries such as cement, iron and steel, and pulp and paper, public and private; using potential energy saving measures such as: (a) adoption of energy saving industrial technologies (e.g., efficient industrial boilers, kilns, and heat exchange systems); (b) recovery and utilization of wastes and waste heat; (c) installation of highly efficient mechanical and electrical equipment (e.g. motors, pumps, heating and ventilation equipment); and (d) industrial system optimization to reduce energy use. Use of RE sources to decrease fuel and/or electricity consumption in IEs may also be considered. Investments may include (a) cogeneration facilities or process furnaces and stoves and (b) solar water heaters for sanitary hot/warm preparation, and/or power PV. Eligible subproject criteria will be detailed in the Operations Manual (OM). Component 1 and the IBRD Loan project will share the eligibility criteria for subprojects as well as target industrial sectors and technologies, and PFIs can use either Component 1 or the IBRD Loan for eligible projects. More details on industrial subsectors and EE technologies to be supported under the Project are provided in section F.2 and Annex 2.

Component 1: GCF Risk Sharing Facility (US$329 million, of which US$201 from PFIs and US$50 million from IEs for EE investments; on average 50%[11] of the PFI loans will be guaranteed by the Facility using a US$3 million GCF grant and a US$75 million IBRD/GCF guarantee as capital)

The GCF Risk Sharing Facility mobilizes additional lending from PFIs own resources by mitigating credit risks associated with commercial loans to industrial enterprises for energy efficiency purposes. The objective of the Facility is to issue

[11] Depending on the actual risk-sharing ratio on average, the amount of mobilized investment from PFIs and IEs would vary.

partial credit risk guarantees to mobilize private sector lending and equity, and contribute to opening up a market for commercially financed energy efficiency investments. Global experience shows that providing partial credit guarantees can be effective in enhancing creditworthiness and easing collateral requirements of potential borrowers, incentivizing banks to lend at more attractive terms. Currently, financial institutions' lack of understanding and perceived high risk on energy efficiency investments make it difficult for IEs to borrow for such projects than for normal business purposes. Eligible industrial enterprises would be borrowers under the Facility and they would benefit from access to financing at more competitive terms and at lower collateral requirements than would be available to them on a stand-alone basis. PFIs as lenders under the component would benefit from low cost credit risk mitigation and access to new lending opportunities in the area of industrial energy efficiency. The expected impact of the Facility would be to crowd in additional investment in EE, expanding the EE market beyond what the IEs can financed through the IBRD Loan project.

PFIs would have the flexibility to use Component 1 or the IBRD Loan for three types of EE sub-projects: (i) "IBRD Loan only" sub-projects where the PFI is comfortable taking the full credit risk and for which it needs liquidity from the IBRD Loan; (ii) "RSF guarantee only" sub-projects for which the PFI would be willing to pay for credit enhancement but for which it does not need external liquidity; and (iii) "blended IBRD/RSF" sub-projects for which PFIs would need both risk mitigation and funding support from the two facilities. In the third type, subprojects would receive support from both the IBRD Loan and RSF, as long as the two facilities were supporting separate debt tranches. Especially if the loan size is large, a PFI could be incentivized to finance some of it through the IBRD Loan, including co-financing as appropriate, and financing the balance from its own resources with risk mitigation support from the GCF-RSF. By combining two different tranches, PFIs can access for a single subproject both liquidity through the World Bank Loan and lower cost through credit risk mitigation from the Facility, with the extent of such benefits set by the size of the individual tranches.

While part of subprojects submitted for guarantees under Component 1, particularly the above-mentioned second type, could be marginally less creditworthy than those under the IBRD Loan, the same appraisal and credit standards will be applied for both Component 1 and the IBRD Loan to ensure that all projects meet the minimum requirements. Under Component 1, PFIs will only be given partial guarantees to enable risk sharing between them and the Facility and to incentivize the PFIs to undertake the loan appraisal as diligently as they would for any loan.

The decision on which modality of support to use ultimately falls on the PFIs. All EE sub-projects need to meet the same eligibility requirements to be considered for either Component 1 or the IBRD Loan but their financing needs can vary. The IBRD Loan provides relatively longer-term financing in US Dollars whereas more price compression can be expected through the RSF. PFIs will need to assess the needs of candidate EE subprojects and their own constraints before seeking support from the RSF or the IBRD Loan.

A separate Operations Manual (OM) along with a Risk Management Framework (RMF) will be prepared for the GCF Risk Sharing Facility. It will build on the Operations Manual for the IBRD project incorporating many of the arrangements, especially sub-borrower and sub-project eligibility, and appraisal requirements. The RMF particularly will include risk management practices and corrective actions at different loss levels to guide the PIE for portfolio risk management over the life span of the GCF-RSF. Some of the key elements for the RMF, which have been in discussion with the GCF Secretariat, are summarized in Annex 11. A professional program implementing entity (PIE), such as a commercial bank or similar entity, will be competitively selected by MoIT to manage the Facility under the supervision of MoIT. In this capacity, the PIE will issue RSF sub-guarantees to PFIs.

The Facility would be capitalized with a seed funding grant of US$3 million and backstopped by a guarantee of US$75 million issued by IBRD with funding from GCF. The grant would be used to pay for operating expenses associated with the Facility in the first two operating years and provide funding for expected guarantee payouts. The guarantee would disburse to the Facility only if needed as additional capital. GCF would have the option of clawing back disbursed guarantee payments should the Facility be able to recover some of the losses being guaranteed. IBRD, as an accredited entity of GCF, will enter into a guarantee agreement with the PIE, and the PIE in turn will issue sub-guarantees under the RSF to PFIs as described below.

The Facility would be managed by the PIE and it would issue partial credit guarantees (or "sub-guarantees") to eligible PFIs to support their loans for eligible EE subprojects undertaken by IEs. Guarantee coverage would only be available for loans made from the PFIs' own resources, made in addition to the minimum co-financing requirement under the IBRD funded loans, if any, and would be partial to enable risk sharing with the PFIs and incentivize them to carefully appraise the underlying loans. It is expected that guarantee coverage over the life of the project would on average be 50 percent,

but the PIE would have flexibility to set the coverage ratio based on market needs, with the expectation that higher than 50 percent guarantee coverage may be needed in the initial years of the program. The sub-guarantees would only cover credit risk arising from defaults on underlying loans. PFIs would be required to pay a sub-guarantee fee to the facility towards costs associated with program implementation and IBRD/GCF guarantee, and also towards expected guarantee calls resulting from possible borrower defaults on the covered loans. The objective of sub-guarantee pricing is to enable Facility cost recovery while keeping the sub-guarantees attractively priced for PFIs. The preliminary pricing also assumes that a US$3 million seed grant from GCF would be available towards Facility operating costs and guarantee payouts in the initial years.

The Facility would pay sub-guarantee claims to PFIs if the underlying credit risks materialized. The first sub-guarantee claims would be paid from the Facility's own resources to the extent funds would be available from the GCF seed grant and guarantee fee collections. If capital in the Facility fell short to meet all claims, which would only happen if actual losses exceeded expected losses, the IBRD/GCF guarantee could be called for up to US$75 million to meet the additional claims. However, the likelihood of the IBRD/GCF guarantee being called is expected to be small due to robust requirements to be set for guaranteed loan appraisal and portfolio risk management, and therefore it is expected that in the base case the IBRD/GCF guarantee would not be called.

In practice, proactive risk management of the Facility would mean that the PIE would be expected to take corrective action if actual guarantee payouts exceeded expected payouts, for example by limiting the issuance of new guarantees. The requirements for guaranteed loan appraisal will be included in the Operational Manual but will include following the same appraisal procedures as for the IBRD Loan and making sure that PFIs apply at least the same care and due diligence on IBRD/GCF-guaranteed loans as they would on their own loans. The partiality of the guarantee coverage should further incentivize PFIs to do that.

The Risk Sharing Facility could be easily scaled up if demand for sub-guarantees proved strong and actual losses stayed within expectations. The scale-up would happen through leveraging of the capital base from 100 percent capital backing to 50 percent or less, which would mean increasing the maximum guarantee portfolio size beyond the capital base available for payouts. For example, with 2 times leveraging, the capital base of US$78 million could support US$156 million worth of sub-guarantees. Even in that scenario, it would be extremely unlikely for the capital to be exhausted as it would mean that 50 percent of all loans supported would result in defaults. The theoretical, residual risk above the capital available could be borne by the Government of Vietnam or PFIs[12].

Component 2: WB-GCF Technical Assistance and Capacity Building for Improving Energy Efficiency (US$10 million, of which US$8.3 million from GCF, US$1.7 million from IDA)

This TA and capacity-building component will assist (a) the MoIT and relevant government agencies, which are responsible for EE policies and targets, to implement voluntary agreements with relevant industries, improve incentives for industry to carry out EE investments, and develop mandatory EE standards and benchmarks in the energy-intensive industries; (b) PFIs to improve their knowledge, experience, and expertise in identifying, appraising, and implementing EE lending projects in the industrial sector and business development to generate deal flows; and (c) IEs and EE service providers (such as Energy Service Companies [ESCOs]) to develop bankable projects. This component will be closely linked with the ongoing Clean Production and Energy Efficiency (CPEE) Project on developing EE policies and industry voluntary agreements.

IFC is providing advisory services to VietinBank and is working with the World Bank to identify a suitable support capacity mechanism once the PFIs are identified. Under the existing CPEE project, the Bank is providing TA to key energy-consuming IEs to develop voluntary agreements, which could form a key part of the pipeline. In addition to the ongoing TA activities, this component will support:

1) *TA and capacity building to the MoIT* will support (a) assessment of the National EE target program period 2010–2015 and preparation for implementation of the next phase EE target program period 2016–2020; (b) strengthening of the policy and legal and regulatory framework for EE in IEs; (c) development of relevant energy use standards and establishment of EE industrial benchmarks; and (d) development of the ESCOs, scaling-up

[12] Whether leveraging is possible and which entity would take the residual risk will be further explored during project preparation.

and encouraging EE voluntary agreement, and conducting a communication campaign to raise awareness on EE for IEs. In addition, the adoption of Energy Management Systems (ISO 50,001) is considered the most effective practice for industrial eco-systems to generate energy efficiency and GHG reduction projects on a sustaining basis, TA will support MOIT to promote and strengthen capacity of enterprises in application of ISO 50 001 or Energy Management System.

2) *TA and capacity building to the PFIs* include (a) business startup, including creation, organization, staffing, and initial business plan of the EE lending business unit (or team); (b) capacity building and training, including support for the development of necessary financial instruments, procedures, and the creation of an adequate knowledge base to evaluate and extend EE loans; (c) marketing and development of an EE subproject pipeline; (d) support to due diligence of eligible EE subloans, including financial, technical, social, and environmental assessments; and (e) development of energy-conservation-related financing instruments and risk management tools.

3) *TA and capacity building for IEs* will include support to (a) identify EE projects and prepare relevant energy audits, technical design, and EE project preparation and (b) raise awareness through a communication campaign organized jointly with relevant industry associations. Capacity building on safeguards for the PFIs, ESCOs, and IEs as well as on-the-job training will be provided. TA to ensure adequate capacity for the review and implementation of safeguard issues will also be considered.

A detailed TA and capacity-building program and plan for the MoIT, PFIs, and IEs and the associated procurement plan will be developed for the first 18 months. A Bank-executed grant from the Canadian Externally Financed Output is used to conduct a strategic sector study for the food processing industry in Vietnam and to support workshops and pipeline preparation, building upon an initial sector survey carried out under the Vietnam-HCFC Phase-out Project (Phase I) as well as the IFC study from 2010.

The Korea International Cooperation Agency (KOICA) expressed interest in coordinating their TA activities within the framework of the Project. US$1.9 million is expected to be allocated by the KOICA, through its own policies and procedures, to support industrial enterprises (IEs) and energy service companies (ESCOs) in Vietnam for identifying EE investment opportunities and developing implementation plans of EE investment, which initially targets energy intensive industrial enterprises in Bac Ninh Province as a pilot site. The KOICA's activity is expected to facilitate access to capital under Component 1 of the Project and/or the IBRD Loan by making the ESCOs and/or IEs ready for accessing the loans, of which process will contribute to enhancing business environment of energy efficient investment in the long term. The Project will maintain close coordination with the KOICA to support financing of identified EE opportunities through PFIs.

IBRD Loan project: World Bank Energy Efficiency Credit Line-Vietnam Energy Efficiency for Industrial Enterprises (US$156.3 million, of which US$100 million from the World Bank, US$25 million from PFIs, and US$31.3 million from IEs)

This complementary project consists of an EE lending program of US$156.3 million over five years: (a) US$100 million is from World Bank debt financing; (b) PFIs will co-finance 20 percent of the loan extended from World Bank debt financing, which will be US$25 million; and (c) sub-borrowers (that is, IEs) will contribute 20 percent of investments as equity financing, or US$31.3 million, which is common practice for loan applications in Vietnam.

A US$100 million World Bank Loan will be on-lent by the MoF to selected PFIs. The PFIs in turn will lend the funds to IEs and/or energy service companies for EE investment subprojects. Their lending rates will be determined based on market conditions and will adequately cover the financing and operating costs and provide for a reasonable profit margin for the PFIs. The PFIs will be selected in accordance with financial and nonfinancial criteria. Nonfinancial criteria will include demonstrated EE lending strategy/commitment, experience, and ability to generate a solid EE project pipeline. The selection of PFIs will fully comply with the World Bank's OP 10.0 requirements. The World Bank funds will be allocated among selected PFIs based on the demonstrated pipeline and remaining funds will be allocated on a first-come, first-served basis.

The WB supporting project was approved by the WB Board on April 14, 2017 and the IBRD Loan would be effective in September 2017. Two PFIs were selected for on-lending the IBRD Loan, including the Bank for Investment and Development of Vietnam (BIDV), and Bank for Foreign Trade of Vietnam (VietcomBank). The following sub-project pipeline was submitted by PFIs for consideration, but further due diligence needs to be carried out to ensure that the proposed subprojects are eligible for financing under the IBRD Loan.

The Carbon Partnership Facility (CPF), for which the World Bank serves a Trustee, signed a partnership Memorandum of Understanding (MoU) with the MoIT in June 2016 to develop a carbon finance program to supplement the VEEIE. The results-based grant TA will pilot the implementation of energy efficiency benchmarks in industry in Vietnam with the objective to inform and facilitate adoption of more ambitious and effective sectoral GHG emission mitigation policies, using adequate combination of market-based instruments and other policyactions.

No	Name of EE subprojects	Project Owner	Total Investment Cost (US$ ml)	Total Loan (US$ml)	Implementation Status
1	Waste Heat Recovery System of Van Hoa Clinker Plant	VCM Ltd	15.9	10.9	Preparation Stage
2	Bagasses Waste Power Generation for Quang Ngai Suger Plant	Quang Ngai Suger	55.5	38.8	Preparation Stage
3	Modernization by LED lighting technologies	STROJE	136.4	90.9	Preparation Stage
4	Replacement of agriculture production equipment	Phu Hung Ltd	0.2	0.1	Preparation Stage
5	Waste Fired EE for cement factory	Chinfon	75.0	50.0	2016
6	Replacement of water pumps and compressors	Khe Cham Coal Co.,	0.9	0.8	2015-2016
7	Replacement of Paper Production Equipment	Thien Tri Co.,	2.5	2.0	Preparation Stage
8	Installation of Waste Treatment System for textile production	Tan Quang	0.5	0.3	Preparation Stage
9	Waste Heat Recovery System of Ha Tien 1 Plant	Ha Tien 1 Cement Co.	40.0	30.0	Preparation Stage

An Operations Manual (OM) for the IBRD Loan has already been prepared. It describes the selection criteria for sub-borrowers and subprojects, appraisal procedures, roles and responsibilities of the PFIs and the government, the PFIs' internal institutional arrangement for project implementation, technical evaluation, environmental and social assessment, procurement, and financial management frameworks that are consistent with the rules and procedures of the Bank and the Vietnamese government. During project implementation, the PFIs will be responsible for identifying, appraising and financing subprojects that meet the criteria in the OM and will bear all associated risks.

Several credit lines with the PFIs are under implementation in Vietnam, including the World Bank-funded Renewable Energy Development Project (REDP). IFC has provided a US$25 million credit line to Techcombank for EE financing and Techcombank has financed US$41.5 million for EE projects for SMEs. Many Vietnamese banks are familiar with credit lines although the capacity for implementation remains to be strengthened further.

International experience demonstrates that dedicated credit lines are effective at increasing the capacity, interest, and confidence of PFIs in mainstreaming the EE financing business line through learning-by-doing and helping them recognize EE investments as profitable. This approach can achieve a double leveraging effect by mobilizing substantial debt contributions from the PFIs and equity financing from end beneficiaries and then revolving the loans that are repaid to the fund. Evidence is accumulating that PFIs continue to provide EE financing after the completion of credit line programs. The success formula for the credit line instrument is well established: (a) careful selection of PFIs against well-defined criteria; (b) inclusion of several PFIs so that developers can induce competition between them; (c) strong management commitment, dedicated teams at both headquarters and branches, and incentives to staff within the PFIs; (d) TA to support project pipeline development and capacity building of both PFIs and local project developers; and (e) aggressive marketing and business development as well as new financial products tailored to EE financing that are critical to generate sufficient deal flow.

Financial intermediation operations require special attention. The review of financial intermediary operations Bank-wide suggests several preconditions for success, including the need for a stable macroeconomic and financial framework, use of eligibility criteria for PFIs, and monitoring the PFIs and the subloans during implementation. A review of Vietnam's financial intermediary portfolio mirrored the findings of the Bank-wide review while the recent financial turmoil has underscored the importance of constant monitoring of conditions during preparation and implementation. Experience from the World Bank-funded Renewable Energy Development Project (REDP) showed that the project pipeline was adversely impacted when the financial market was volatile and interest rates sharply increased. In this operation, the MoF will

extend the World Bank loan to PFIs in U.S. dollars and the U.S. dollar rate is generally stable over the medium and long term, making it suitable to EE investment.

Linkage to results. The Project will contribute to achieving the government's energy efficiency and GHG reduction objectives. The lifetime energy saving of the EE investments, in either electricity saving or reduced coal consumption for heat generation and industrial processes, will be evaluated and reported in a GWh-equivalent form. The GHG mitigation impacts of the EE investments will be accounted in CO_2-equivalent metric and mainly focus on CO_2 emission reductions due to reduced electricity consumption and improved energy efficiency of industrial processes. The transaction-related metrics, such as volume of finance leveraged, number of bankable EE projects developed, and number of IEs adopting EE technologies, will be reported through PFIs to the MoIT based on actual information on subloans to IEs and EE service providers. Section H explains the outputs, outcomes and contribution to GCF-level impacts of the Project in more detail.

C.4. Background Information on Project / Programme Sponsor (Executing Entity)

Ministry of Industry and Trade (MoIT): The power sector falls under the auspices of the Ministry of Industry and Trade (MoIT). Through its General Directorate of Energy (GDE), it exercises all state management functions for the energy sector, including EE. The Department of Energy Efficiency and Science and Technology support the GDE in supervising and monitoring the implementation of the EE and Energy Conservation law and related regulations. Within the MoIT and directly under its minister, the Electricity Regulatory Authority of Vietnam is responsible for licensing, technical codes, and performance standards for distribution and transmission and monitoring the electricity market, supply security, and compliance with technical and performance standards. Under the GDE, there is a Project Management Board (PMB) for the ongoing World Bank-financed Clean Production and Energy Efficiency (CPEE) Project. This existing PMB has been effectively conducting project coordination activities under the CPEE project. The same PMB will coordinate the VEEIEs project monitoring and reporting requirements and implement the capacity-building component.

State Bank of Vietnam (SBV): The SBV as the central bank will represent the Socialist Republic of Vietnam in signing the Loan Agreement with the Bank. The MoF will sign subloan agreements with each selected PFI that will be responsible for implementing the IBRD credit line project. The PFIs will have full responsibility for the EE lending process and approvals, following the agreed OM, and will bear all the associated credit risks. The MoIT is not involved in the review/approval of the subloan applications of eligible IEs. Each PFI will form a Project Implementation Unit with dedicated teams supported by technical, environmental, social and procurement experts. The Project Implementation Unit will implement the sublending activities and act as the PFI's focal point to interact with the Bank, MoIT, MoF, and other stakeholders.

Participating financial institutions (PFIs): The selection criteria of the PFIs was agreed with the MoIT, MoF, and SBV based on the Bank's requirements and existing government regulations. The MoIT undertook an initial assessment of potential PFIs, and the MoF and SBV are responsible for final due diligence and selection based on the MoIT's recommendation. The selection will be reviewed and cleared by the Bank and only becomes effective once the Project Agreement is signed between the PFI and the Bank and the Subsidiary Loan Agreement between the MoF and the PFI. Potential PFIs identified to date include the Bank for Investment and Development of Vietnam (BIDV), the Bank for Foreign Trade of Vietnam (VCB), the Vietnam Technological Commercial JS Bank (Techcombank), the Vietnam JS Commercial Bank for Industry and Trade (Vietinbank), Asia Commercial Bank (ACB), Sai Gon Hanoi Commercial Bank (SHB), and Sai Gon Thuong Tin Commercial Bank (Sacombank). Under the IBRD Loan, two PFIs, BIDV and VCB, have been selected for on-lending IBRD loan. A summary of the PFIs' due diligence is set out in Annex 7.

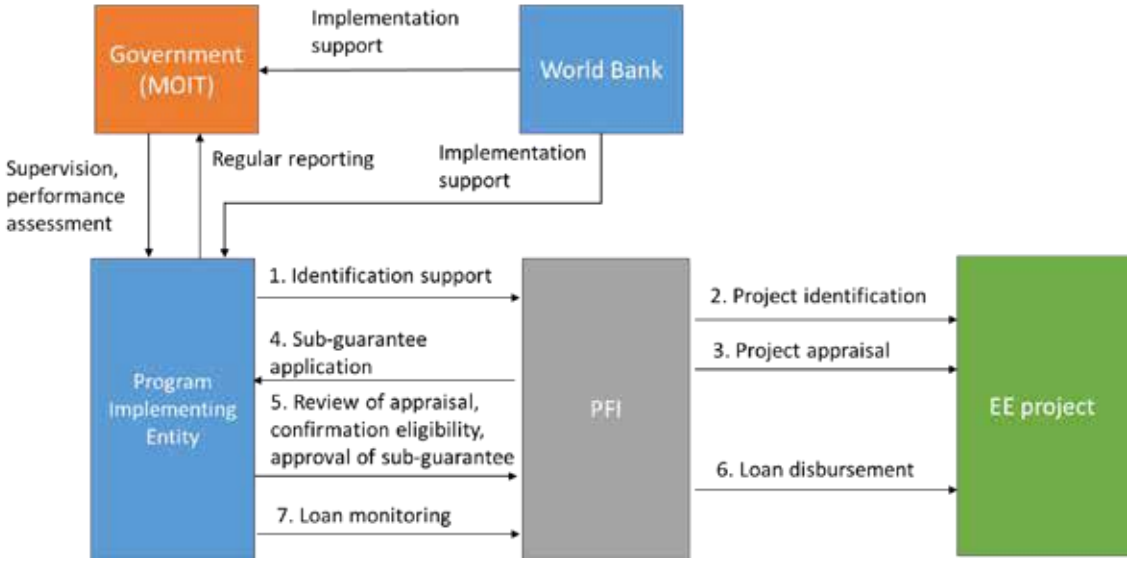
Professional guarantee program implementing entity (PIE): A professional program implementing entity (PIE), such as a bank or existing guarantee agency will be appointed by the MoIT to manage the Risk Sharing Facility. The need for a professional program manager has been validated in the World Bank's other risk sharing facility operations in the Philippines and India, where dedicated units at commercial financial institutions assumed the program management role. The PIE will be competitively selected with a focus on hiring an entity which has the capacity to assess PFIs' due diligence and manage the risks assumed by the GCF-RSF.

The PIE responsibilities include: i) review and evaluate guarantee applications; ii) underwrite and issue guarantees; iii) adjust guarantee terms based on market feedback, within pre-approved limits; iv) actively monitor and manage risk exposures and capital adequacy; v) verify guarantee calls and making payments to PFIs; vi) coordinate with PFIs and,

as necessary, relevant government agencies on loss recovery efforts; vii) make a call under the IBRD/GCF guarantee in case of capital shortfall; viii) participate in marketing efforts for the Facility; and ix) facilitate required TA and capacity building activities. The MoIT, in cooperation with the Bank and the SBV, will ensure that the selected agency has sufficient capacity to fulfill all required responsibilities over the implementation period, up to 15 years. The selection process will be launched and concluded by the MoIT before signing of the IBRD/GCF guarantee agreement, based on criteria to be determined with support from the Bank.

As the PIE will be responsible for the day-to-day operation of the GCF-RSF, MOIT's main focus would be to supervise the activities and performance of PIE, and review and revise operating procedures as needed. MOIT supervision would also be important to hold the PIE accountable for agreed performance goals. The figure below shows the sequence in individual sub-guarantee processing. The PIE will support the PFIs in identifying suitable projects, but it is the PFI's responsibility to appraise the EE projects based on the eligibility requirements set out in the OM. Subsequently, the PFI would apply for a sub-guarantee from the GCF-RSF, providing the required documentation as listed in the OM. Subject to satisfactory review of the sub-guarantee application the PIE will issue a sub-guarantee for the relevant loan and the PFI can proceed with loan disbursement. The PIE would then supervise performance of the loan throughout its life.

Individual sub-guarantee application and approval



C.5. Market Overview (if applicable)

Investment Need. The investment need in several key energy-intensive industries, such as cement, steel, pulp and paper, seafood processing and chemical, was estimated at up to US$3.6 billion, according to a recent study conducted by MoIT. The study estimated energy efficiency investment needs in these sub-sectors and calculated energy saving potential and GHG emission reduction, through literature review, existing research results, surveys and energy audits. The estimates also took into account relevant governmental regulations guiding the implementation of energy audits for industrial facilities thereby determining the energy-saving solutions for industry. Also, benchmarking method was applied which is widely used to forecast the potential of energy intensity reduction in the industrial sectors. From the total investment need, energy saving potential was estimated to be 8.29 million toe per year, and GHG emission reduction to be 43.47 million tCO_2eq per year. Annex 2-1 provides more detailed information. There is no comprehensive assessment for all industrial sectors yet, but the MoIT intends to carry out such assessments going forward.

The MoIT has had remarkable efforts to strengthen EE performance and regulate the energy intensity in industrial sector by establishment of energy baseline consumption and sectorial benchmarking. The baseline energy consumption will be expressed both in absolute terms (toe) and in terms of energy intensity or specific energy consumption (SEC). The SEC means the ratio of the net energy input into the boundary of the IE or the boundary of a system targeted by the energy efficiency measure (Ein) to the total quantity of output exported from the IE boundary (Eout). The SEC is calculated as per the formula expressed in terms of the metric ton of oil equivalent (toe)/per unit of product (SEC= Ein/Eout). EE Benchmarking and SEC have been established for chemical, beverage, plastic, steel, plastic and cement sectors as below table. With support of GCF technical assistance, MOIT can further strengthen regulatory enforcement, monitoring EE performance at IEs, and undertake baseline study for setting suitable SECs for industries.

Specific energy consumption (SEC) for Industrial Sectors

Sector/products	Unit	SEC
Chemical sector (Circular 02/2014/TT-BCT by MOIT)		
Rubber material		
<5000t/year	kOE/ton	44
5000-10000t/year	kOE/ton	36
>10000t/year	kOE/ton	28
Fertilizer NPK		
<4000t/y	kOE/ton	14.8
4000t/y-9000t/y	kOE/ton	16.8
>9000t/y	kOE/ton	19.7
Paint	kOE/ton	12.1
Solvent paint	kOE/ton	17.7
Plastic (Circular 38/2016/TT-BCT by MOIT, applicable from 2016-2020)		
Bag plastic	kWh/kg	0.7
Bottle Plastic	kWh/kg	1.96
Packing plastic	kWh/kg	0.79
Construction plastic	kWh/kg	0.46
Tech-plastic	kWh/kg	1.27
Brewery with capacity (Circular 19/2016/TT-BCT by MOIT, applicable		
>100ml	MJ/lh	*140*
20-100ml	MJ/lh	215
<20ml	MJ/lh	306
Beverage		
Carbonated beverage products or both carbonated and non carbonated	MJ/lh	55
Non carbonated beverages	MJ/lh	111
Steel and Iron(Circular 20/2016/TT-BCT by MOIT, applicable 2016-2020)		
Manufacture of coke coal	MJ/ton	4000
Sintered iron ore	MJ/ton	2350
Blast furnace iron making	MJ/ton	14000
Steelmaking by converters (Basic Oxygen Furnace)	MJ/ton	150
Electric arc furnace steelmaking	MJ/ton	2600
Induction furnaces steelmaking	MJ/ton	2600
Hot-rolled flat steel	MJ/ton	16500
Hot-rolled flat lamination steel	MJ/ton	16000
Cement		
Thermal SEC	MJ/t	3700
Electric SEC	kWh/t	59

Financing Market. Despite government's commitment to energy efficiency and a number of initiatives supported by the Government and bilateral and multilateral donors, EE market is still nascent in Vietnam, due to the significant barriers discussed in section C.2. In the banking sector, only a few local financial institutions have dedicated EE lending as part of their green financing business line, which also accounts for a small fraction of the loan portfolio. Most of the existing EE lending is focused only a small number of large industrial companies with high creditworthiness, which financial

institutions are willing to provide with credit regardless of EE transactions. The majority of IEs and EE service providers currently have a very limited access to capital from the local banking sector. Without addressing existing barriers properly, lack of understanding and perceived high risk on EE of both financial institutions and industrial enterprises would persist, limiting opportunities to unlock the energy saving and climate mitigation potential of the industrial sector.

C.6. Regulation, Taxation and Insurance (if applicable)

There is no license and/or permit that is specifically applicable to energy efficiency transactions in industry. PFIs will be selected, upon the selection criteria agreed with the MoIT, MoF, and SBV, among those that already have required licenses as financial institutions.

Taxation: Taxation that could be relevant to industrial energy efficiency includes:

- Enterprise income tax: Taxable income is defined as total revenue less deductible expenses (depreciation, cost of goods sold, research and development costs, interest). Losses may be carried forward up to 5 years.
- Value Added Tax (VAT): Applies to most goods, uses credit method. Exemptions include agricultural production, salt, some imported equipment, credit, business services, education.
- Import duties: Levied on CIF price, average tariff is about 8%. Some exemptions for aid, goods in transit, education, research, for export processing, and certain machinery & equipment. (Rates vary from 0% to 60%, with most in the 1%, 3%, 5%, 10%, 15% brackets)
- Export duties: Levied on a few items only (Oil: 4%. Wood: 5-20%. Cashews: 4%)

There are tax incentives and other forms of support to be offered by law to manufacturers and producers of EE products and technologies. Article 41 of the Law on Energy Efficiency and Conservation prescribes that "Organizations and individuals that manufacture energy-saving products and invest in production lines or expand production with energy-saving technologies are entitled to incentives and supports" which include a) incentives on import and export duties and enterprise income tax under the tax law; b) incentives under the land law; c) concessional loans from various sources such as the development bank, the fund for science and technology development support, the national fund for technological renovation and the environment facility and supports from the national programs on hi-tech development and economical and efficient use of energy; d) other incentives under this Law and relevant laws. Industrial enterprises investing in EE products and equipment are expected to benefit from the cost saving of the manufacturers and producers.

Foreign Exchange: Government's decree No. 74/2014/ND-CP details the implementation of several provisions of the Ordinance and the amended Ordinance on the foreign exchange, Article 15: Regime of Vietnamese Dong exchange rate.

- Vietnamese dong exchange rate is formed on the basis of foreign currency demand and supply on the state-controlled market. The SBV shall regulate the exchange rate through the use of monetary policies and take measures to control transactions on the foreign currency market.
- Vietnamese dong exchange rate system is a managed floating system that the SBV defines on the basis of a basket of currencies of countries that establish a cooperation of commerce, loaning, debt repayment and investment with Vietnam, which conforms to macroeconomic objectives in each period.

Source: SBV

According to the regulations, Vietnam continues to operate a crawling peg system, aimed at helping exports and promoting foreign exchange market stability. Weakening trade balance and rising expectations of higher interest rates in the United States have exerted downward pressure on the Vietnamese dong in 2015. In response to a firmer US dollar and increased devaluation pressure, the State Bank of Vietnam devalued its currency twice, in January and May 2015 by a cumulative 2 percent. After the SBV reaffirmed that there would be no

further dong/dollar exchange rate adjustment this year, the dollar exchange rate continued to fluctuate, traded at the lower end of the +/- 1 percent band.

Banks are regulated on the limit of lending denominated in US dollar. Circular 24/2015/TT-NHNN on foreign currency loans granted to the residents by credit institutions and branches of foreign banks, Article 3 states that "credit institutions shall consider granting the foreign currency loans serving certain purposes" which include:

- Short-term, mid-term and long-term loans used as outward remittance for imported goods or services, when the borrowers' foreign currency derived from their business operation is sufficient to repay such loans;
- Short-term loans granted to central petroleum importers who are given annual quotas on petroleum import by the Ministry of Industry and Trade to pay for such import when the borrowers' foreign currency derived from their business operation is not sufficient to repay such loans;
- Short-term loans granted to meet domestic enterprises' demands for short-term capital to serve the purpose of implementing their plans to manufacture and/or trade goods exported through Vietnam's border checkpoints when borrowers' foreign currency derived from the export turnover is sufficient to repay such loans; on receipt of loans disbursed by credit institutions, borrowers shall sell such borrowed foreign currency to the lending credit institutions in the form of a foreign-exchange spot transaction, unless the loans borrowers are used by the borrowers to make payments in which foreign currency is compulsory as stipulated by laws. This provision shall be effective till the end of March 31, 2016; the deadline is then extended until the end of December 31, 2016 by the Circular 07/2016/TT-NHNN.
- Loans used as direct outward investments in important national projects which are subject to investment decisions made by the National Assembly, the Government or the Prime Minister, and have been granted the Outward Investment Certificate by the Ministry of Planning and Investment.

According to the regulation, financial institutions will be limited to extending loans denominated in US dollar under the Project. Most of the lending are expected to be VND denominated loans.

C.7. Institutional / Implementation Arrangements

The Project will be implemented over five years, with an option to be extended if demand is higher. The MoIT has the overall Project coordination and supervision responsibility and is responsible for the implementation of the capacity building and TA component. The current Project Management Board (PMB) for CPEE under the GDE will coordinate and supervise the implementation of VEEIE, and partially supervise GCF-RSF component which will be managed by a professional Program Implementing Entity (PIE). This existing PMB has been effectively conducting project coordination activities under the CPEE project and will be doing the same for the WB-VEEIE and GCF-RSF. The PMB will also implement the capacity-building component of the Project. The MoIT will select an independent external auditor to conduct the annual project audit; this will be financed from the TA component. The MoIT has the main responsibility for signing the contract and coordinating the auditor's work.

The PFIs will have full responsibility for the EE lending process and approvals, following the agreed OM, and will bear all the associated credit risks. The MoIT will not be involved in the review/approval of the loan applications of eligible IEs. Each PFI will form a Project Implementation Unit with dedicated teams supported by technical, environmental and social and procurement experts. The Project Implementation Unit will implement the lending and guarantee activities and act as the PFI's focal point to interact with the World Bank, MoIT, MoF, and other stakeholders.

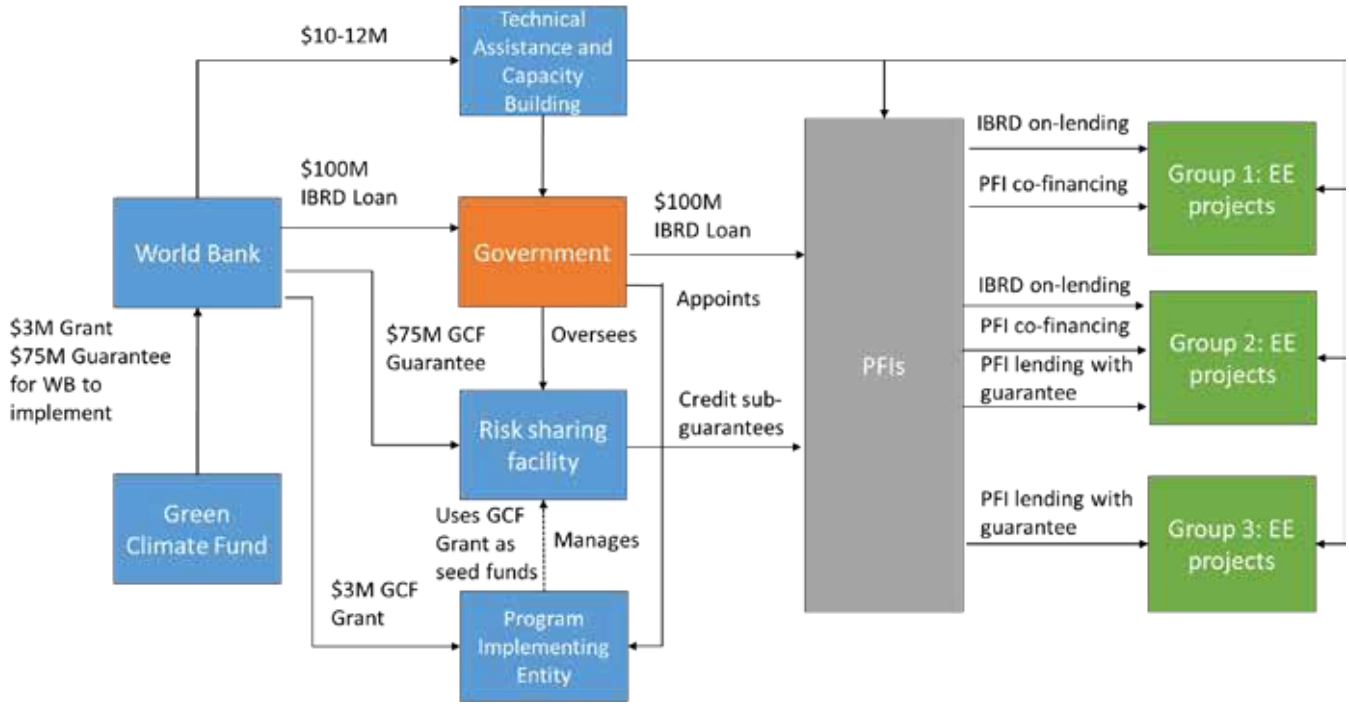
The PFIs are responsible for appraisal and evaluation of projects and bear the associated risks regarding the unguaranteed portion of their loans to the IEs. The PFIs will supervise/monitor all loans to ensure they are implemented according to Vietnamese and Bank requirements and provide periodic reports, including fiduciary and safeguards reports to the MoIT, MoF, and the Bank. Independent auditors will be selected to conduct annual project audit on the performance of the PFIs and IEs.

A detailed project OM covering technical, fiduciary, safeguards, and management requirements and procedures has been prepared for the IBRD Loan. The OM is incorporated into the project agreements between the World Bank and PFIs and will be binding on all participants. The OM defined the detailed eligibility criteria for subprojects, for example, the minimum energy savings to be achieved.

A separate Program Implementing Entity (PIE) will be selected by the MoIT for management of the GCF Risk Sharing Facility Component. For example, it could be one of commercial banks or an existing guarantee agency. The MoIT, in cooperation with the World Bank and the SBV, will ensure that the selected agency has sufficient capacity to fulfill all required responsibilities over the implementation period, up to 15 years. A separate OM along with a Risk Management Framework (RMF) for the GCF-RSF will be prepared, building on the OM prepared for the IBRD Loan. Compliance with the OM and RMF will be included as a covenant in the applicable legal agreements between the PIE and MoIT and the PIE and World Bank.

The implementation arrangements for the Project are summarized in Figure 1. Both Component 1 and the IBRD Loan mobilize PFI loans to support EE subprojects of IEs/ESCOs, through on-lending or risk sharing, respectively. As Figure 1 shows, PFIs can support eligible EE subprojects in three different forms: (i) through WB-VEEIE on-lending and PFI co-financing only (Group 1), (ii) by combining IBRD on-lending, PFI co-financing and guaranteed PFI financing together (Group 2) or (iii) by providing only guaranteed PFI loans for eligible subprojects (Group 3)[13]. All three types of financing combination would require IEs to contribute 20 percent of the total investment cost in equity. The Government will play a central role in implementing and supervising both operations. TA and capacity building support will be provided for the benefit of the Government, PFIs and IEs. Figure 1 also shows the basic flow of funds associated with the combined operations. It is important to highlight that only the GCF grant is initially disbursed into the GCF-RSF. The IBRD/GCF guarantee will remain available committed but undisbursed as stand-by capital, should sub-guarantee payouts exceed the losses that have been provisioned for.

Figure 1: Scaling up Energy Efficiency for Industrial Enterprises in Vietnam (the Project) and IBRD Loan Overview of Implementation Arrangements



The following contractual arrangements are expected to be required for the Project:

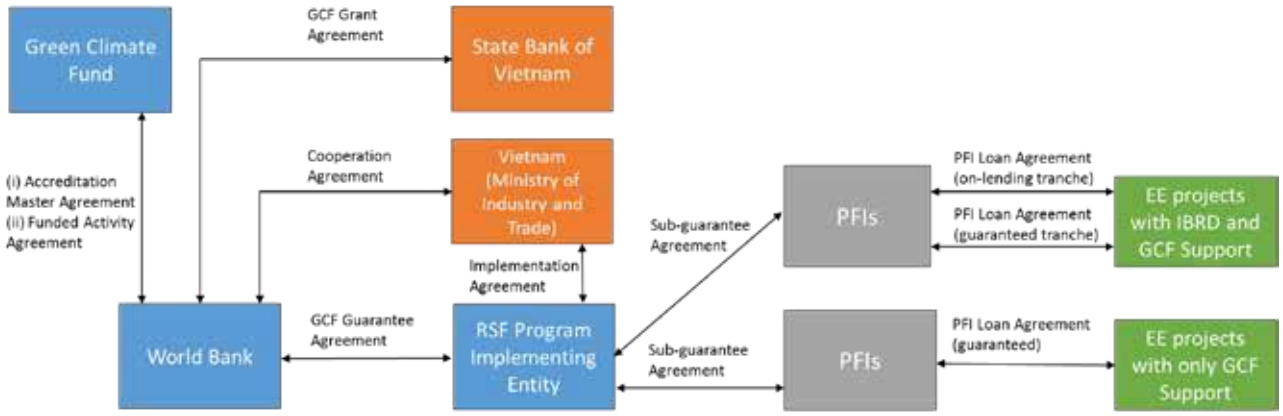
[13] To illustrate with a hypothetical US$10M EE investment, projects in the first group could be financed with US$2M in equity, US$6.4M in IBRD on-lending and US$1.6M in PFI co-financing; projects in the second group could be financed with US$2M in equity, US$3M in guaranteed PFI lending (e.g. with US$1.5M guarantee coverage), US$4M in IBRD on-lending and US$1M in PFI co-financing; and in the third group, the whole debt balance of US$8M after a US$2M equity contribution could be funded through guaranteed PFI lending (e.g. with US$4M guarantee coverage).

1. Funded Activity Agreement between GCF and IBRD: Providing for the $75 million for the IBRD/GCF guarantee, the $3 million grant for the start-up costs for the RSF; and the $8.3 million grant for TA, and all in accordance with the Accreditation Master Agreement (AMA).
2. GCF Grant Agreement between IBRD and Vietnam: Providing for the downstream transfer of the funds (other than RSF funds) to the Government of Vietnam

Additional agreements for the RSF:

3. Implementation agreement between the PIE and the Government of Vietnam: sets out the responsibilities and obligations of the government and the PIE in respect of the Project.
4. IBRD/GCF Guarantee agreement between IBRD and the PIE as guarantee beneficiary: defines the terms and conditions of the guarantee offered, including covered risks, guarantee amount and term, payout procedures etc.
5. Sub-guarantee agreements between the PIE and PFIs as sub-guarantee beneficiaries: defines the terms and conditions of the sub-guarantees offered, including covered risks, sub-guarantee amount and term, payout procedures, etc.
6. PFI loan agreements between PFIs and industrial enterprises: defines the terms and conditions of the loans to be made from PFIs and industrial enterprises, which will be backed by the relevant sub-guarantees.
7. IBRD/GCF Cooperation agreement between WB and the government: defines key undertakings to be made by the government related to cooperation and information sharing to facilitate the implementation of the Project and ensure government ownership of the Project.

Figure 1A below summarizes these arrangements:

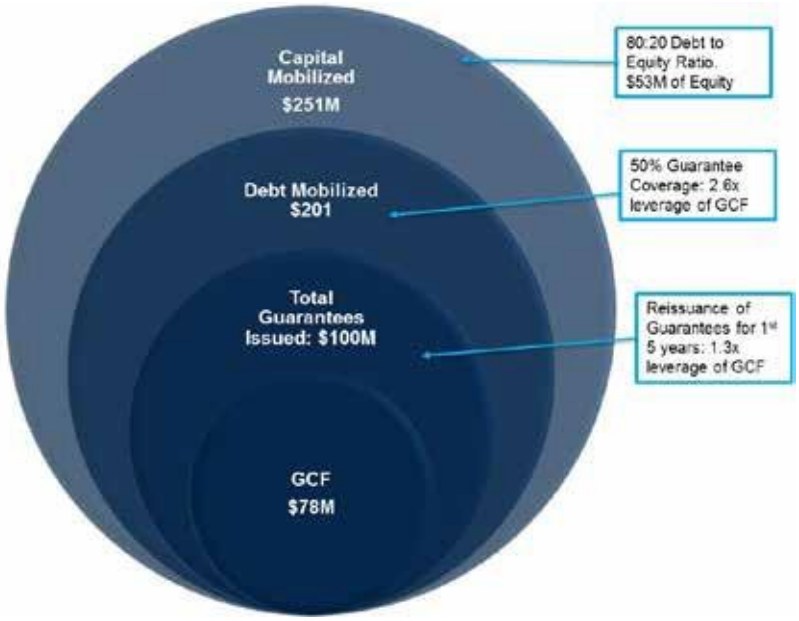


D.1. Value Added for GCF Involvement

The GCF-RSF, to be capitalized by the GCF, is essential for successful scale-up of energy efficiency lending in Vietnam. The provision of partial credit risk guarantees to PFIs will encourage them to extend EE loans from their own resources, beyond the WB-VEEIE credit line, and associated co-financing requirements, provided through the MoF and SBV. EE lending is still considered a high-risk product line by financial institutions in Vietnam. While the TA and capacity building activities seek to enhance PFIs' understanding of EE opportunities with IEs, the GCF-RSF will provide them with the necessary financial risk mitigation to alleviate borrower credit concerns and expand lending for EE.

Based on the initial seed capital of US$3 million grant and US$75 million guarantee, the total sub-guarantee issuance during a 5-year availability period would be US$100 million, assuming reissuance of exposure as covered loans and associated sub-guarantees amortize. Adding the same amount of uncovered PFI lending and 20 percent of equity from IEs would bring the total mobilization of private financing to US$251 million in the base case. The resulting leveraging effect of GCF-RSF financing therefore will be 3.2 times. This is additional to the US$156.3 million of investment mobilized through the WB-VEEIE, as the GCF-RSF does not offer guarantee toWorld Bank-funded EE loans.

Figure 2: Leveraging Effect of IBRD/GCF Guarantee



The IBRD/GCF guarantee represents a targeted solution to mobilize private financing. Sharing credit risk of EE loans offered by PFIs is a key to address existing barriers in the financial sector and to scale up EE investment in the industrial sector. The IBRD/GCF guarantee can be used to mitigate credit risk associated with implementing EE investments using commercial financing. The IBRD/GCF guarantee is therefore uniquely positioned to support the commercial transactions contemplated under the Project and mobilize additional private sector investment at volumes which otherwise would not be possible.

The concessional terms of IBRD/GCF guarantee allow PFIs and other participants in the market to become acquainted with the risks of EE financing at a lower cost. The benefit of concessionality will be passed to end-users, including PFIs, IEs and EE service providers which form the EE market. Without GCF intervention, it would take considerably longer for existing market barriers to be removed, and in the meantime, access to finance for EE investments would remain limited to selected borrowers and more costly than many borrowers could bear. By expediting market development and learning through the concessional risk guarantee, GCF would help unlock the considerable potential for energy saving measures and GHG emission reduction in Vietnam.

The World Bank has experience in structuring similar risk sharing operations using other climate funds, including the Clean Technology Fund (CTF) in India and Philippines and the Global Environment Facility (GEF) in China and Bulgaria. Building on such experience, the design of the Project reflects lessons learned from other countries and is aimed at minimizing risks to the IBRD/GCF guarantee.

D.2. Exit Strategy

The Project has been designed to ensure that experience and exposure gained by PFIs, IEs and EE service providers during the implementation will enable them to sustain a market in EE investments after the 5-year project implementation period. Project monitoring by PFIs and GCF-RSF Program Implementing Entity will continue beyond the implementation period until all loans and associated guarantees have been fully amortized. The PIE will remain under a contract with the MoIT through year 15 when the final guarantee commitments issued in year 5 (with 10-year tenors) are expected to be completely amortized. The project is designed to cover all its costs from sub-guarantee fees during the monitoring period.

After Project close, it is expected that EE lending will continue by PFIs and other financial institutions. Several studies conducted by the MoIT confirmed the large potential for EE investment in the IEs, as well as the interest of commercial banks to develop an EE business line. Sustainability will be achieved through an integrated, two-pronged project approach: (a) operational engagement of the PFIs making available loans for dedicated EE investments and (b) TA for capacity and market development to support EE lending activities and capacity building.

During Project preparation and the early stages of implementation, it is critical to develop a robust pipeline of sub-projects which are technically viable, financially attractive and allows for replicability and scale-up. Local banks will be supported in developing sound EE lending business models through hands-on assistance to identify and develop demonstration projects, building on experiences gained by other local banks. Dissemination of the early experiences of the PFIs throughout the banking and industrial sectors should result in replication of successful initiatives. It is expected that the PFIs will build expertise in EE lending to specific industries and project types, based on their project portfolios and target markets. Through these efforts, the PFIs should be able to build a sufficient knowledge base to target financially sound EE projects, lower transaction costs for evaluation and appraisal, and thereby gain confidence to scale up their EE business line. The overall replication potential is considerable due to the large size of the industrial EE market in Vietnam, especially in energy-intensive manufacturing industries such as steel, cement, textiles, food processing, and pulp and paper.

Based on experience in other countries, risk sharing facilities can be effective at increasing the capacity and interest of PFIs in identifying profitable EE financing opportunities. The proposed approach for a risk sharing facility allows for substantial debt mobilization from PFIs and equity financing from IEs, and enables the capital base to be revolved during the availability period. The project design is based on long-term sustainability with the globally tested expectation that PFIs continue to provide EE financing after such a risk sharing mechanism is completed.

The proposed Project is based on a number of lessons obtained from other similar operations. These include: (a) careful selection of PFIs, IEs and EE projects against well-defined criteria; (b) inclusion of multiple PFIs to encourage competition in financing terms; (c) requirement for dedicated project-implementation staff with PFIs, with appropriate performance incentives; (d) provision of TA to support project pipeline development and capacity building of both PFIs and IEs; and (e) implementation of comprehensive marketing and business development efforts.

In this section, the accredited entity is expected to provide a brief description of the expected performance of the proposed project/programme against each of the Fund's six investment criteria. Activity-specific sub-criteria and indicative assessment factors, which can be found in the Fund's Investment Framework, should be addressed where relevant and applicable. This section should tie into any request for concessionality made in section B.2.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Mitigation / adaptation impact potential

The Project and the IBRD Loan are expected to avoid 12 $MtCO_2eq$ of GHG emissions annually through improved energy efficiency in industrial processes and reduced energy consumption, of electricity and/or heat. Over the lifetime of investment hereby assumed 10 years, the estimated GHG emissions avoided would be 120 $MtCO_2eq$. Total energy saving is estimated 2.36 Mtoe per year, including electricity saving of 4.7 TWh and coal saving of 2.7 million tons. It is equivalent to the saving of 2,100 MW power generation capacity with 95% of capacity factor.

It is important to note that given the nature of the Project to support a number of EE sub-projects through PFIs, the ex-ante estimates of energy saving and GHG emissions avoided would not be accurate and could change upon the composition of EE lending portfolio supported throughout the implementation. The calculation methodology takes into account this uncertainty and deploys somewhat conservative approach. Details are in section E.1.2.

E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

GCF core indicators	*Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (Mitigation only)*	*Annual*	12 $MtCO_2eq$
		Lifetime	120 $MtCO_2eq$

Annex 2-1, the study conducted by MoIT, examined EE investment opportunities in key energy-intensive industries, such as cement, steel, pulp and paper, seafood processing and chemical, activity by activity in each sub-sector. In the minimum investment scenario under the study, annual energy saving potential and GHG emissions avoided were estimated at 2.3 Mtoe and 12 MtCO2eq, respectively, by investing US$340 million in selected EE activities of six different industries. In the maximum scenario, all results were much higher given the investment potential of US$3.6 billion. The expected results of the Project and the supporting IBRD Loan were estimated by extrapolating the results of the minimum investment scenario and reducing them by 15% to take conservative estimates, reflecting the uncertainty subject to the composition of EE investment types in the PFI lending portfolio. Annex 2-1 provides more details on methodologies and assumptions used for each industry.

E.2. Paradigm Shift Potential

Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

Industrial energy efficiency has large potential for further scaling up and replication beyond the scope of the Project. The investment need was estimated at around US$3.6 billion in the key industries, and would be larger for the entire industrial sector. The Project is aimed at realizing only part of the identified potential, leaving bigger opportunities to be materialized.

The Project aims to address major bottlenecks in opening up a sustainable market for industrial energy efficiency that is supported by the local financial sector. Through a combination of interventions under the Project and the complementary IBRD operation, including on-lending (IBRD Loan), risk sharing, technical assistance and capacity building, PFIs are expected to learn from experience and to become active market players that offer EE loans to IEs and ESCOs with little need for support after the Project is closed. International experience demonstrates that dedicated credit lines are effective at increasing the capacity, interest, and confidence of PFIs in mainstreaming the EE financing business line through learning-by-doing and at changing their perceptions so that they recognize that EE investments are actually a profitable business. Risk sharing has been another effective tool in many countries to reduce high risk

perception when the market is premature, and to increase capacity and confidence of PFIs in EE financing. PFIs will play a key role to launch and expand the industrial EE financing market, which has been limited in Vietnam so far, during and after the project implementation.

Other financial institutions that are not selected to be PFIs of the Project would be also able to find business opportunities in industrial energy efficiency from PFIs experience. Through the Project, more transactions would be known and proven to be commercially viable, being recognized as new business opportunities for non-participating banks and non-bank financial institutions. The Project is flexibly designed and will remain open, so financial institutions that do not participate in the Project from the beginning will still be able to join during implementation through the same selection procedures. This will enable further scaling up with a larger base of local financial institutions that are supportive to industrial EE.

IEs and ESCOs are also expected to become more capable of identifying investment opportunities and developing investment pipeline, through technical assistance, capacity building and learning from actual transactions. Through Component 2, workshops will be offered to raise awareness and share good practices of other companies, and energy audit and training of auditors/energy managers will be provided for pipeline development. At the end of the Project, a number of trained auditors will be available in the market, identifying business opportunities and promoting EE investment in the industrial sector. Furthermore, technical assistance to be provided to the MoIT and other government agencies would improve the enabling environment, which would enhance possibilities of market uptake.

After the Project is closed, financing industrial EE is envisaged to be replicated as more PFIs and IEs have capacity, experience and interest. Taking into account the potential growth of EE opportunities in other sectors, e.g. residential, commercial, public, etc., where some of the experienced PFIs might be willing to explore, the opportunities of scaling up would be much larger.

E.2.2. Potential for knowledge and learning

Component 2 on technical assistance and capacity building will particularly contribute to knowledge sharing and learning. Lack of EE awareness and capacity has been one of the major barriers to scaling up EE in the industrial sector. To deal with this, the Project offers workshops and training for (i) PFIs to have sufficient knowledge base to evaluate and extend EE loans and to conduct due diligence; and (ii) IEs/ESCOs to learn EE technologies and investment opportunities that are relevant to their businesses and to identify and develop pipeline through energy audit and adequate safeguard considerations. Campaigns to raise awareness will be also organized and supported, with relevant industry associations. These activities will facilitate knowledge sharing among local stakeholders and EE experts and broaden the potential market base for industrial EE in the country.

MoIT will also benefit from technical assistance and capacity building, focusing on policy and regulatory framework for industrial EE. Lessons learned from Vietnam's previous national EE programs as well as other countries will inform MoIT and other government stakeholders for improving enabling environment. Throughout the process, knowledge and learning will be shared with relevant government departments and officials.

The Program Implementing Entity (PIE), to be selected to operate the Risk Sharing Facility, will also create knowledge and learning opportunities, particularly on the use of risk guarantee instruments, from risk assessment of each applications to risk and exposure management at the portfolio level, and its effectiveness to open up a new line of business, like industrial EE lending, of which the market is less experienced and the perceived risk is high. Experience and learning from the operations of PIE can be transferred to other institutions for replications not only for the same EE market but also for other new markets at the beginning stage.

The Project Management Board (PMB) is responsible for monitoring results of the Project and the IBRD Loan, using the results indicators defined in Section H. All results will be disclosed to public, and will inform potential opportunities for scaling up and replication. Lessons learned from the Project and the IBRD Loan operation will be evaluated after it is closed and shared for public disclosure.

E.2.3. Contribution to the creation of an enabling environment

The Project together with the IBRD Loan has been designed to create an industrial EE market which is commercially driven by local financial institutions, industrial enterprises and ESCOs. Limited access to finance and insufficient capacity, the major barriers of scaling up EE, will be resolved through market-based approaches within the market. The Project and the IBRD Loan are expected to enable initial interventions to demonstrate market potential and to accelerate the development of the market which is still nascent in Vietnam. Experience and market conditions created by the Project and the IBRD Loan will further enable commercially-driven EE financing for potential investors in EE technologies in the industrial sector after the interventions under the two operations are over. A sustainable EE financing market will be developed as a result in the country.

Technical assistance and capacity building offered to the Government will support coordination among institutions, mainstreaming of EE in sector planning and improving policy and regulatory framework for EE, among others. This will help market players to understand and follow clear messages and rules from the Government and to create market demand through incentives provided from relevant EE policies.

Low electricity pricing, another major challenge to expanding the adoption of EE technologies, is being addressed through a series of development policy operations (DPOs) supported by the World Bank. DPOs focus on restructuring the power sector and adopting a cost-reflective tariff system over time through a number of incremental interventions.

Through a combination of the proposed Project, IBRD Loan and other parallel operations, the World Bank is supporting the Government and other relevant stakeholders to eliminate outstanding bottlenecks to unlocking EE potential in the industrial sector. Collective effort for well-coordinated implementation would lead to the creation of enabling

E.2.4. Contribution to regulatory framework and policies

The Project will provide support to MoIT, through technical assistance and capacity building, for preparation for implementation of the National EE target program 2016-2020; strengthening the policy and regulatory framework; development of energy use standards and industrial EE benchmarks; and development of ESCO market. By introducing new policy instruments and strengthening the existing framework, the Government would provide clear incentives for EE investment in the industrial sector to support the market-driven approach to unlock EE potential.

The series of DPOs that the World Bank has been supporting in parallel will also support the Government to address barriers within regulatory framework. With continuous support through the DPOs, the ongoing sector reform is expected to achieve full cost recovery tariffs, which will help address one of the major barriers, low electricity pricing, to promote investments in energy efficiency.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

Environmental and Social Co-Benefits. By reducing demands for electricity generated from coal, oil or natural gas and demands for other primary fuels, this Project and the IBRD Loan will avoid the emission of local pollutants. It is challenging to estimate which and how many local pollutant emissions will be avoided, as the actual set of EE investments supported by the Project and the IBRD Loan is not known in advance. Given the large quantity of GHG emissions avoided, estimated to be 120 MtCO2eq over the lifetime of investments, the reduction of local pollutant emissions associated with the GHG emission reduction is estimated to be enormous. The benefit derives from the increased life expectancy and reduced mortality that comes from a reduction in local toxic pollutants.

Economic Co-Benefit. Investments in energy efficiency in the industrial sector not only contribute to GHG emissions reduction and climate change mitigation but also result in increased productivity, profitability and competitiveness of the firms due to reduced energy cost. The Project will also support growth of a new market of industrial energy efficiency in Vietnam. Therefore, sectors delivering energy efficiency-related goods and services, such as manufacturers of efficient industrial equipment and ESCOs, will find more business opportunities from the expansion of the market. In these sectors, increased employment is expected to bring positive economic co-benefit to the society.

The Project and the IBRD Loan will reduce electricity demand, by about 4.7 TWh every year. Together with coal consumption reduction, the reduced energy consumption would allow to cancel or postpone construction of new coal fired power plants of about 2,100 MW with 95% capacity factor. The economic saving from cancelled or postponed generation units could be redirected to other investment need with urgency.

Gender. The World Bank is conducting a gender analysis as part of social impact assessment. The assessment is conducted to understand the potential impacts at community, organizational, and individual levels once introducing industry EE investments under the proposed project. The specific objectives of the assessment are to: (a) identify and analyze the potential organizational impacts (positive and negative) and adaptation strategies of the concerned enterprises; (b) identify and analyze the potential impacts (positive and negative with particular attention to gender and ethnic minority groups) and adaptation strategies of the employees working in the concerned enterprises; (c) identify and analyze the perception of men and women living in communities in surrounding areas of concerned enterprises, about the potential impacts (positive and negative) caused by the proposed investments; and (d) provide recommendation/suggestion to inform the design of World Bank-funded project, ensuring that impacts (if any) on men and women, respectively, will be addressed. Based on the results of the gender analysis, specific action plans will be established to address identified gender gaps around the industrial sector that the Project will support. For example, the selection criteria of EE lending and/or risk sharing would include preference to sub-projects that improve working conditions for women, or exclude any proposal that may have adverse impact on gender gaps. The details will be further developed during preparation and implementation of the Project.

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

Not applicable

E.4.2. Financial, economic, social and institutional needs

Despite the rapid industrialization and the large potential of energy saving and GHG emission reduction in the industrial sector, EE market in Vietnam is still nascent, due to significant barriers, including limited access to finance, insufficient capacity of financial institutions, industrial enterprises, ESCOs and government entities, among others. Local banking sector is experiencing undercapitalization and suboptimal resource allocation, therefore capital allocation for new lines of business is limited. There have been a number of national initiatives of the Government and support programs implemented by development partners, but they might not be sufficient to push the market forward beyond the early stage. The current environment in Vietnam requires a comprehensive package of multiple interventions that address major bottlenecks at the same time rather than a one-off remedy to a single matter.

The Project and the IBRD Loan will provide on-lending capital, risk sharing and technical assistance and capacity building to all layers of stakeholders, from government to financial institutions, industrial companies and ESCOs to remove existing major barriers altogether. Furthermore, other operations that the World Bank is taking in parallel will also contribute to tackling other issues that the proposed Project and the IBRD Loan would not be able to address, including electricity tariff, carbon monitoring and verification infrastructure, and so on. To deal with growing energy intensity and carbon emission of the industrial sector, the Government and local players are in need of this set of interventions to make a big push to open up the sustainable market of EE financing.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

The Project will contribute to the implementation of 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, which will be achieved through increased investments in technological innovation, natural capital, and economic instruments. One of the important strategic objectives of the Green Growth Strategy is to encourage energy efficiency (EE), with a 2020 target to reduce the intensity of greenhouse gas (GHG) emissions by 8–10 percent as compared to 2010 and reduce emissions from energy activities from 10–20 percent compared to business-as-usual case.

It will also help achieve the pledges of Vietnam, in its Nationally Determined Contribution (NDC) of the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), to reduce 8 percent of the greenhouse gas (GHG) emission by 2030 compared to the business-as-usual scenario and to further aim at 25 percent reduction with support from the international community. One of the measures to achieve the mitigation target is to "improve effectiveness and efficiency of energy use; reducing energy consumption", with a particular focus on manufacturing industries where energy consumption is high.

The Project is aligned with the Vietnam Energy Efficiency Program (VNEEP) for the period 2016-2020, which is a national target program and a comprehensive plan to institute measures for improving EE and conservation in all sectors of the economy in Vietnam. The Project will provide technical assistance to support the implementation of the VNEEP, and the results of the Project will contribute to the achievement of the Plan.

E.5.2. Capacity of accredited entities and executing entities to deliver

The World Bank has been engaged in the energy sector of Vietnam for a long time. The Bank's engagement has been positioned uniquely in providing customized support to address the country's needs, ranging from sector restructuring and transmission and distribution infrastructure to renewable energy and energy efficiency, which includes not only investment support, but also policy support through DPOs, knowledge exchange and technical assistance. In addition, the World Bank has successfully supported other countries, including China and India, for scaled-up energy efficiency applying customized holistic approaches. Therefore, the World Bank is well-positioned to be a strong partner for Vietnam to support the creation and expansion of sustainable EE market.

Ministry of Industry and Trade (MoIT) has a responsibility to manage, oversee and regulate the power sector of Vietnam, through its different arms such as GDE and ERAV. Under the GDE, there is a Project Management Board (PMB) for the ongoing World Bank-financed Clean Production and Energy Efficiency (CPEE) Project. This existing PMB has been effectively conducting project coordination activities under the CPEE project. The same PMB will coordinate the project monitoring and reporting requirements and implement the capacity-building component.

State Bank of Vietnam (SBV) is the central bank and will represent the Socialist Republic of Vietnam in signing the Loan Agreement with the Bank. The MoF will sign subloan agreements with each selected PFI that will be responsible for implementing the credit line component. SBV has experience in channeling financial intermediary loans of the World Bank. Given its role to regulate and supervise the banking sector, SBV is well positioned to advise selection of PFIs and PIEs.

Potential PFIs identified to date include Bank for Investment and Development of Vietnam (BIDV), Bank for Foreign Trade of Vietnam (VCB), Vietnam Technological Commercial JS Bank (Techcombank), Vietnam JS Commercial Bank for Industry and Trade (Vietinbank), Asia Commercial Bank (ACB), Sai Gon Hanoi Commercial Bank (SHB), and Sai Gon Thuong Tin Commercial Bank (Sacombank). The selection criteria of the PFIs have been agreed with the MoIT, MoF, and SBV based on the World Bank's requirements and existing government regulations. Throughout the selection process, MoIT and the World Bank will ensure that the selected ones have sufficient capacity to provide EE loans to IEs and ESCOs and to build their in-house capacity for continued operation after the Project is over.

A professional program implementing entity (PIE), such as a bank or existing guarantee agency will be appointed by the MoIT to manage and operate the Risk Sharing Facility. The need for a professional program manager has been validated in the World Bank's other risk sharing facility operations in the Philippines and India, where dedicated units at commercial financial institutions assumed the program management role. The MoIT, in cooperation with the World Bank and the SBV, will ensure that the selected agency has sufficient capacity to fulfill all required responsibilities over

the implementation period, up to 15 years. The MoIT would be expected to supervise the activities and performance of PIE, and review and revise operating procedures as needed. The selection process would be launched by the MoIT, upon a set of criteria to be predefined in support from the World Bank, before the Project becomes effective.

E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

The Project proposal has been continuously consulted with the Ministry of Planning and Investment (MPI), the NDA, and the MoIT, the line ministry for the energy sector, throughout preparation and development processes. MPI facilitated internal review from different ministries that are relevant to the Project, and issued the no-objection letter with great support. In addition, MoF, SBV and other relevant government entities have been extensively engaged while shaping the project design.

Throughout project preparation, multiple rounds of stakeholder consultation have been held, with government entities, local banks and non-bank financial institutions, industrial associations and companies, ESCOs and development partners to share the project design, take feedback and facilitate discussions among different stakeholders, all of which then inform the modification of the project design. A few more consultations are still being planned before implementation to make sure the project design, particularly the GCF Risk Sharing Facility, will be of help both financial institutions and IEs/ESCOs.

There are several related donors' fund project and the World Bank discussed with other various donors including the government of Israel, Swiss State Secretariat for Economic Affairs (SECO), Danish International Development Agency (DANIDA), GIZ, Nordic Development Fund (NDF), and United Nations Industrial Development Organization (UNIDO) for potential cooperation on the EE agenda, leveraging donors' effort to address EE barriers. The Israeli government has indicated its interest to support specific sectors and industries through targeted EE workshops and studies conducted in parallel to the VEEIE project. Similar targeted activities are being discussed with UNIDO and are closely coordinated with the MoIT. The following parallel operations will potentially contribute to the VEEIE and are being coordinated closely by the Bank team.

International Finance Corporation (IFC) has provided advisory service to Techcombank and VietinBank for EE financing and is providing technical support for industrial zone on resources use efficiency, which contributes to development of project pipeline.

Nordic Development Fund (NDF) support an ongoing €1.5 million grant project that aims at improving Vietnam's readiness to benefit from international climate financing by supporting scaling-up mitigation actions in the cement sector. The project will explore and address gaps in data availability and quality regarding sectoral GHG emissions, technical and institutional capacity, and potential barriers to implementing scaling-up GHG mitigation actions in the cement sector in Vietnam. Special emphasis will be given to exploring opportunities to use new forms of international climate finance, including possible new market-based mechanisms in Vietnam's cement and constructions sector, implying a results-based approach for provision of future support. The project will close in December 2016; however, the NDF is in discussion with the Bank on potential parallel financing with the VEEIEs as a continuation of cement sector support.

United Nations Industrial Development Organization (UNIDO) is currently developing a TA program to promote EE boiler adoption and operating practice in Vietnam. The TA aims to develop the relevant regulatory framework to support boiler standardization, training, and capacity building for government agencies and boiler owners and demonstration of efficient boiler adaptation. This TA will scale up investment in efficient boilers in industrial sector.

Danish International Development Agency (DANIDA) finances US$6.5 million of grant for an ongoing Low Carbon Transition Energy Efficiency (LCEE) project that supports Vietnam's micro, small and medium enterprises (MSMEs) in the brick, ceramic, and food processing sectors adopting EE measures that will contribute to the VNEEP energy-saving targets between 5–10 percent. The project provides green investment fund and guarantee facility for investment in EE technologies. The project can help SMEs access financing facility under the VEEIEs. This project targets smaller-scale lending, about VND 1 billion (equivalent to around US$90,000) in average, to be extended to support MSMEs, at a more favorable term based on grant financing. In contrast, the Project and the IBRD Loan will focus on a different

market segment, consisting of larger industrial enterprises with high energy consumption, targeting EE lending of US$5 million per project in average. The DANIDA also plans to scale up this project with GCF support. Both projects will be executed by the MoIT. The World Bank is in very close coordination with the DANIDA, and will seek possible opportunities for further collaboration between two projects, for example coordinating TA and capacity building activities or sharing the Project Management Board (PMB) for implementation.

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

The Project and the IBRD Loan aim to mobilize a total of US$407.3 million worth investments in industrial energy efficiency, of which US$100 million from the World Bank and the rest US$307.3 million from the private sector, either PFIs or IEs/ESCOs. US$78 million of GCF support in a form of US$75 million guarantee and US$3 million of grant will offer partial credit risk guarantee to leverage US$251 million of private sector financing. As the original goal of the Project is to crowd in private sector financing, it would not be implemented successfully without private participation. GCF's concessionality is offered not in a form of low cost of capital but in a form of risk capital with higher risk appetite. To overcome perceived high risk that PFIs have for energy efficiency based on limited experience and insufficient capacity, the provision of risk capital that is willing to share the risk is critical to start the market and allow PFIs to learn from actual transactions and adjust their perceived risk over time.

Considering the large impact on GHG emissions avoided to be achieved, the effectiveness and efficiency of the Project and the IBRD Loan would be high. As estimated in Section E.6.5, the total investment to avoid one tonne of CO2 equivalent GHG emission is only US$4.1. When it comes to the efficiency of GCF financing, it costs only US 70 cents to reduce one tonne of CO2 equivalent GHG emission. Compared to other typical mitigation projects such as renewable energy or transportation, these figures present much higher efficiency of using scarce climate finance resources, proving that energy efficiency investment could be a low hanging fruit to reduce GHG emissions and to mitigate the threat of climate change.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

By providing US$86.3 million, including US$11.3 million grant and US$75 million guarantee, GCF will mobilize additional US$410.9 million, of which US$101.7 million from the World Bank, US$226 million from PFIs, US$81.3 million from IEs/ESCOs as equity and US$1.9 million from KOICA for parallel implementation of technical assistance and capacity building. The leverage ratio is about 4.8x, as calculated in Section E.6.5.

After the Project is closed, it is expected that PFIs will continue to run EE lending business and mainstream EE investment in their corporate and/or project financing. Therefore, the amount of leveraged financing would become larger taking into account EE investments originated after the Project. In case that there is still market demand for risk sharing to address barriers on PFIs or other financial institutions that have not joined, the Risk Sharing Facility can be extended for a longer period, upon discussion and agreement of GCF to extend the guarantee period or provision of risk capital to the Facility by the government or other development partners. With support of risk sharing mechanism for a longer period, the growth of EE financing market could be accelerated more than the case when the Facility is closed as scheduled.

E.6.3. Financial viability

Investments in industrial EE is financially viable, and yield a high level of return. The financial internal rate of return (FIRR) of equity investors, i.e. industrial enterprises or ESCOs, ranges from 19 percent to 103 percent, depending on the type of transactions and sub-sectors. The FIRR is robust, with small reductions for plausible scenarios of higher interest rates, lower fossil fuel prices, and low rates of electricity tariff increases. From the sensitivity and risk analysis; in most cases, the risk analysis shows that the probability of not meeting the financial hurdle rate is less than 5 percent (and for the largest project examined, wastes heat recovery/cogeneration in the cement industry, less than 1 percent). More details can be found in Section F.1.

The GCF Risk Sharing Facility is also financially sustainable. Based on the proposed terms of IBRD/GCF guarantee and Facility's sub-guarantee, as long as the losses are within the expected loss level, which is 5 percent of the loan portfolio, all expenses would be covered by revenue from sub-guarantee fees. In this case GCF guarantee would not be called. Even at the worst case, there is no risk of becoming insolvent. As the IBRD/GCF guarantee is offered on a one-to-one basis without leveraging, the Facility would be able to meet its payout obligations when the entire loan portfolio goes credit default. Section F.1 provides more details on sensitivity and risk analysis of the Facility.

E.6.4. Application of best practices

International experience demonstrated that dedicated credit lines are effective at increasing the capacity, interest, and confidence of PFIs in mainstreaming the EE financing business line through a learning-by-doing process and at changing their perceptions so that they recognize that EE investments are actually a profitable business. It offers the best prospect for program sustainability. Evidence is accumulating that PFIs continue to provide EE financing after the credit line program is completed.

Based on experience in other countries, risk sharing facilities can also be effective at increasing the capacity and interest of PFIs in identifying profitable EE financing opportunities. The proposed approach for a risk sharing facility allows for substantial debt mobilization from PFIs and equity financing from IEs, and enables the capital base to be revolved during the availability period. The project design is based on long-term sustainability with the globally tested expectation that PFIs continue to provide EE financing after the Facility is closed.

The proposed Project is based on a number of lessons obtained from other similar operations in different countries. When these financial interventions are well combined with proper technical assistance and capacity building for the initial phase, and its implementation arrangement is well prepared and supported, the operation will be able to open up a new market of EE financing in a market-driven sustainable manner.

E.6.5. Key efficiency and effectiveness indicators

GCF core indicators	Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)[14]	
	(a) Total project financing (GCF and IBRD projects)	US$ 497.2 million
	(b) Requested GCF amount	US$ 86.3 million
	(c) Expected lifetime emission reductions overtime	120 million tCO_2eq
	(d) Estimated cost per tCO_2eq (d = a / c)	US$ 4.1 **/ tCO_2eq**
	(e) Estimated GCF cost per tCO_2eq removed (e = b / c)	US$ 0.7 **/ tCO_2eq**
	Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)	

[14] A larger portion of GCF financing will be provided in a form of guarantee. If the guarantee is not fully called, the balance will be returned to GCF, which will further improve the cost efficiency of the Project

	(a) Total co-financing mobilized — US$ 410.9 million (b) - From private sector (PFIs/IEs/ESCOs) — US$ 307.3 million (c) - From public sector (WB/KOICA) — US$ 103.6 million (d) Requested GCF amount — US$ 86.3 million **(e) Expected leverage factor (e = a / d) — 4.8x** All figures above are consistent with the financing table presented in Section B.1. Please refer to Section B.1 for more detailed breakdown of co-financing.
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)	

**** The information can be drawn from the project/programme appraisal document.***

F.1. Economic and Financial Analysis

Energy Efficiency Investment: A financial and economic analysis for a sample of representative EE projects (cogeneration from waste heat recovery [cement industry]), variable speed motors and regenerative burners (steel industry), and energy-efficient pulp washers (pulp and paper industry) shows robust financial and economic returns over a wide range of input assumptions. Annex 7 provides a detailed evaluation.

For the financial analysis the evaluation is from the perspective of the equity investors (that is, IEs) who are recipients of loans provided by the PFIs, calculating both the equity return (financial internal rate of return [FIRR]) and debt service cover ratios. The benefits are based on estimated nominal financial prices of electricity, fuel oil, and coal (the three main energy forms used in Vietnamese industry). In some cases, additional financial savings derive from reductions in operations and maintenance (O&M) costs and other chemical inputs. The results show FIRR ranging from 19 percent to 114 percent, with small reductions for plausible scenarios of higher interest rates, lower fossil fuel prices, and low rates of electricity tariff increases. For example, a 2 percent increase in interest rate from the assumed 8.83 percent to 10.83 percent reduces the FIRR for the paper industry project from 19.1 percent to 18 percent, or if coal prices stayed unchanged at their present (nominal) level (that is, falling real coal prices), the corresponding FIRR falls to 17 percent). Annex 7 provides details on the sensitivity and risk analysis; in most cases, the risk analysis shows that the probability of not meeting the financial hurdle rate is less than 5 percent (and for the largest project examined, wastes heat recovery/cogeneration in the cement industry, less than 1 percent). Table 1 summarizes the main results of the economic and financial analysis.

For the economic analysis, benefits are assessed at international (border) prices. Industry savings in electricity are assumed to result in backing down of thermal generation (coal for baseload savings, combined cycle gas for intermediate and peak loads), based on the results of detailed simulations prepared by the National Load Dispatch Centre for calculation of the avoided cost tariff (ACT) for small renewable energy (RE) producers. The economic returns (ERR and NPV) are calculated with and without consideration of environmental and global externalities: in the case of GHG emissions, using the Bank's recent guidance document for carbon accounting,[15] and valuing avoided GHG emissions at the values recommended in the recent guidance document on the social value of carbon.[16]

Summary of Economic and Financial Analysis Results

		Waste heat recovery	Regenerative burner	Variable Speed Drive (VSD)	High pressure pulp washers
Sector		Cement	Steel	Steel	Paper
Saving:		Electricity	Fuel oil	Electricity	Electricity coal
Baseline FIRR	[ ]	25.6%	65.2%	114.2%	19.1%
Baseline ERR	[ ]	33.4%	40%	124.6%	17.1%
Investment (financial)	VND billion	297	13.7	85.0	75.4
Distributional analysis					
NPV to IEE	VND billion	200	21	325	28
NPV to EVN	VND billion	-31	Not applicable	-112	-1
Avoided Externality benefits					
ERR including GHG emissions	[ ]	70.6%	49.2%	244%	29.8%
Lifetime GHG savings	1000 tons	722	23	553	164

[15] World Bank. 2015. Guidance Note: Greenhouse Gas Accounting for Energy Investment Operations (Transmission & Distribution Projects, Power Generation Projects and Energy Efficiency Projects), Version 2.0, January 2015. World Bank Sustainable Energy Department.
[16] World Bank. 2014. The Social Value of Carbon in Project Appraisal. Guidance Note to the World Bank Group Staff, September.

As in the case of the financial analysis, the economic returns are robust with respect to the general level of international fuel prices, which were at their lowest in early 2015 (and which have already recovered from their lows of US$50/bbl (Brent) in mid-January to US$60/bbl at the beginning of March 2015. Even in the unlikely case that such low prices prevail (unchanged) for the next 15 years, economic returns are substantially above the hurdle rate.

When the benefits of reduced carbon emissions are included in the economic analysis, economic returns are significantly higher, particularly where coal is displaced. In the paper industry example (which reduces the quantity of steam raised in an anthracite-fueled boiler), the baseline economic returns increase from 17 percent to 30 percent. All projects examined result in significant reductions in lifetime GHG emissions; EE therefore makes a significant contribution to reducing the carbon intensity of the economy at no incremental cost (a win-win option) – particularly when compared to options such as high-cost RE alternatives (such as wind) that bring carbon reductions only at significant incremental costs.

The distributional analysis shows that EVN's loss-of-tariff revenue from industrial EE projects does not offset their avoided financial costs in fossil fuel cost savings. This is a common finding, encountered also in the Organization for Economic Co-operation and Development (OECD) countries and explains the widely encountered lack of enthusiasm for EE by power sector utilities. However, as shown in annex 7 in case of the cement industry distributional analysis, this loss is far outweighed by the other benefits to society. Any significant negative impact on EVN is readily mitigated by fully cost-reflective tariffs that are passed to other (industrial) consumers rather than left to erode EVN's margins. Any increase in electricity tariffs experienced by consumers is offset by much larger increases in welfare attributable to a more efficiency industrial sector and further incentivize investments in EE by others.

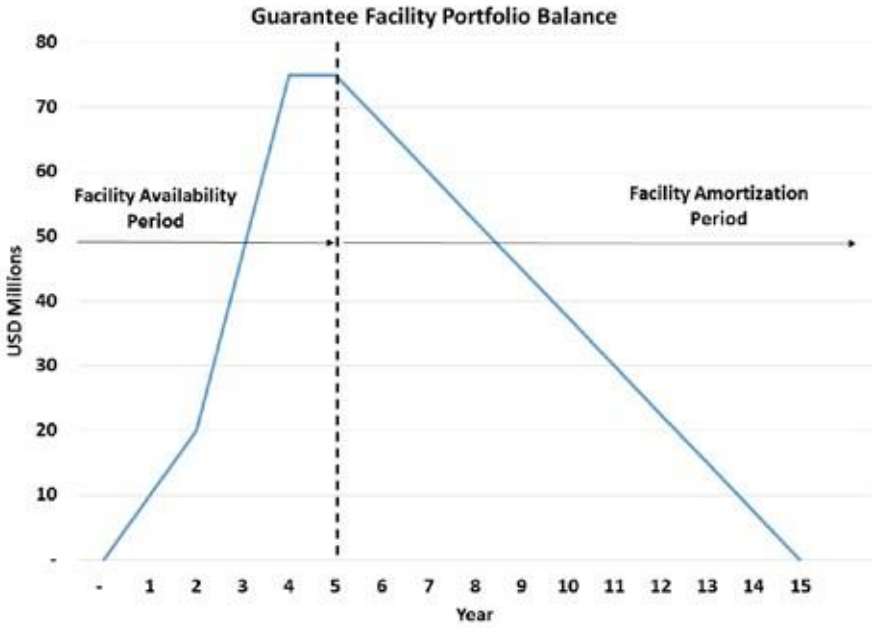
Risk Sharing Facility Financial Analysis[17] : The financial benefits of the risk sharing facility will be two-fold: 1) to mobilize lending to EE investments; and 2) to improve the financial terms available for IE borrowers through credit enhancement of individual EE investments. The table below shows the proposed terms of GCF financing and the sub-guarantees issued by the Risk Sharing Facility. The capital base to meet sub-guarantee payouts consists of a GCF Grant of US$3 million and an IBRD/GCF Guarantee of US$75 million. Risk coverage provided will be flexible in a preliminary range of 20-80% of principal and interest payments[18].

Proposed Risk Sharing Facility terms are as below. There might be some adjustment upon market reactions.

Capital	US$3 million GCF Grant and US$75 million IBRD/GCF Guarantee
Max. guarantee volume	[US$75 million]
Guarantee currency	[USD or VND]
Risk coverage	[Debt service default, scheduled principal and interest payments or accelerated loan balance]
Risk sharing	[Flexible within a range to be agreed and will be based on market needs],
Sub-guarantee fee	[0.25% up-front fee on guaranteed amount 0.50% annual guarantee fee on guaranteed amount]
Sub-guarantee maturity	[5-10 years, to coincide with guaranteed commercial loan]
Facility life	[15 years with a 5-year guarantee issuance period]
Sub-guarantee amortization	[Bullet or amortizing structure depending on underlying loan repayment profile]

[17] The results presented here are preliminary and subject to finalization of the Guarantee Facility structure and terms together with Government stakeholders, PFIs and IE borrowers.
[18] For financial modelling purposes, assumed to be 50% on average.

The facility has a 5-year availability period and a 4-year ramp-up period resulting in $10 million of guarantees issued each year for the first 2 years and $27.5 million each year for the next 2 years. The graph shows the portfolio balance of the Facility over the entire facility term.



During the availability period, the facility will reissue any guarantee exposure that is released as the guaranteed loans are amortized, subject to a maximum guarantee portfolio size of US$75 million. This allows the facility to issue a total of $100m in guarantees while maintaining the maximum guarantee portfolio size of $75m. The reflows assumed in the facility only occur during the availability period and following that GCF exposure will be gradually decreased. After the availability period, the PIE will not issue any new guarantees. As loans amortize between years 6-15, the facility's portfolio exposure reduces and so does GCF's outstanding exposure to the project. The reflows during the 5-year availability period allow the RSF to issue more guarantees and expand the capital mobilizing impact of the $75 million.

The GCF Risk Sharing Facility is structured (a) to limit the likelihood of a call on the IBRD/GCF guarantee so that it is never called as long as actual losses do not vastly exceed the expected losses and (b) to minimize the guarantee fee charged to PFIs and ultimately borne by IEs.

The expected losses are assumed to be 5% of the RSF guaranteed portfolio[19] which are more conservative than the baseline of 2.8% reported by the State Bank of Vietnam. This is in line with the assumption that on average the loans for energy efficiency investments could be riskier than the portfolio of PFIs. PFIs would also in many cases expect to require the sub-borrowers to provide collateral as additional security for the loans. If loans default, the PFIs can initiate recovery proceedings through the courts or by selling the defaulted loan to other financial institutions. As for the underlying asset class, the EE projects are expected to use proven and tested technologies with strong expected economic and financial returns.

This 5% probability of default is calculated on a guarantee portfolio level assuming individual guarantee coverage of 50% of the total loan outstanding. On a portfolio level, the facility is therefore taking risk for half of the expected losses

[19] The assumed probability of default on the PFI loans being guaranteed is 5%. The likelihood of a call on the guarantees is therefore also 5%. The loss rate is applied on the amortizing balance of the underlying covered loans which means that if a straight-line amortization was assumed, the average loss rate over the life of the Facility would be half of that, i.e. 2.5%.

with the other half assumed by PFIs. On an individual loan level, the coverage cannot be only 5% or less given that defaults usually happen for the whole loan or a large part of it. It is on the guarantee portfolio level that the losses are expected to average out to 5%. To be able to derive adequate pricing benefit and risk mitigation from the guarantee, banks expect the guarantee coverage to be meaningful, which is why 50% has been used as a starting point for the project.

For example, a USD 10 million loan with a 5-year tenor would have a guarantee of USD 5 million. If the portfolio level loss rate of 5% was applied for an individual loan (for the sake of illustration) which did not amortize but was rather repaid in bullet payment at the end of the loan life, the expected losses on the guaranteed portion would also be 5%, i.e. USD 0.25 million of the guaranteed amount of USD 5 million. However, given that the loss rate is applied on an amortizing balance of the loan, the relevant balance therefore becomes the average balance of the loan over the loan life, which is USD 5 million. Applying the 5% to that average balance would result in USD 0.25 million being defaulted on the total loan amount, out of which half, or USD 0.125 million, would be the expected guarantee call amount. Additional examples are provided in Annex 7.

If expected losses do materialize, the first losses are absorbed by the Facility itself before GCF capital is put at risk. The PIE will be a professional entity with a self-sustaining cash flow, reporting directly to MOIT with the mandate to manage the program. It will have cash inflow from risk-based guarantee fees which accumulate in a first loss reserve in the Facility, to be used before a call can be made on the IBRD/GCF Guarantee. The reserve consists of two components:

1) The guarantee fee paid by the PFIs to the PIE to cover all the expected costs of running the facility including losses of 5% of the guarantee portfolio, administrative costs of the PIE and the IBRD/GCF Guarantee fee.

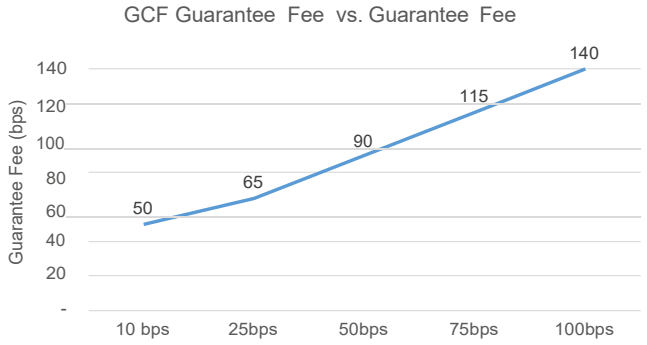
2) 25% of any losses is expected to be recovered through seizing collateral or the Vietnamese judicial system with a one-year lag (to account for processing times).

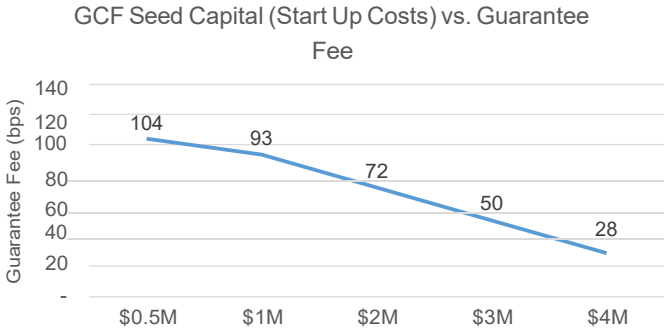
BASE CASE		
Key Outputs (15yr totals, unless otherwise stated)	**VND M**	**USD M**
Guarantee Facility Fee	**0.50%**	
Front End Fee	**0.25%**	
Total Amount of Guarantees Issued	2,238,790	**100**
Total Number of Guarantees Issued	*# Guarantees*	**100**
Total Debt Mobilization	4,477,579	**201**
Total Investment Mobilization	5,596,974	**251**
Losses		**5%**
GCF Payout	-	**-**
RSF Cash Inflows and Outflows		
Revenues		
GCF Seed Grant	66,885.00	*3.00*
Guarantee Fee Revenues	76,940.97	*3.45*
Front End Fee	5,596.97	*0.25*
Recurring Fee	71,344.00	*3.20*
Interest on Facility Balance	54,692.15	*2.45*
Expected Loss Recovery (via Legal proceedings)	10,427.56	*0.47*
Total Revenues	208,945.68	*9.37*
Costs		
Administrative Costs	(82,086.37)	*(3.68)*
Losses	(41,988.92)	*(1.88)*
GCF Guarantee Fee	(14,268.80)	*(0.64)*
Total Costs	(138,344.09)	*(6.21)*
RSF Net Cash Flow	70,601.60	*3.17*

The financial analysis indicates that these two sources of cash are sufficient to sustain the level of losses without a call on the IBRD/GCF guarantee. Based on sensitivity analysis, the RSF as currently designed can sustain losses of up to 15% before the IBRD/GCF Guarantee is called at all. The table below shows the key results of the financial analysis. Assuming that PFIs are charged a 0.50% annual guarantee fee and a 0.25% upfront fee, the Facility can cover its administrative expenses and guarantee payouts of up to 12 percent across the portfolio before the IBRD/GCF Guarantee is called. If guarantee payouts remain at the expected level of 5% across the portfolio over Facility life, the base case cash flows will result in a surplus of US$3.17 million at the end of year 15. The assumptions behind the results above are detailed in Annex 7 and are shown in the attached financial model.

The financial sustainability of the risk sharing facility depends mainly on the guarantee fee schedule and guarantee payouts that materialize. The risk sharing facility receives most of its revenue from guarantee fees (approximately 37%) and the GCF seed grant (approximately 32%). In terms of outflows, the administrative costs and the IBRD/GCF guarantee fee represent approximately 60% and 10% of total costs respectively.

The guarantee fee schedule required for financial sustainability is sensitive to changes in the underlying assumptions, particularly the GCF grant amount and the level of the IBRD/GCF Guarantee Fee (see graph below). As can be seen from the below chart, the level of the GCF Guarantee Fee has a considerable impact on the required cost recovery guarantee fee. The higher the GCF Fee, the higher the required guarantee fee charged to PFIs and therefore to the IEs. A lower IBRD/GCF Guarantee Fee would allow the guarantee fee to be kept at an attractive level to maximize take-up of the Risk Sharing Facility by the market. It is suggested for the annual guarantee fee to be 0.50%, to pay for the IBRD/GCF Guarantee fee indicated in the term sheet (Annex 5), to allow the Facility to build a sufficient loss reserve (together with part of the US$3 million GCF Grant) to meet guarantee payouts in the base case, and lower the likelihood of a call on the IBRD/GCF Guarantee. A higher fee level would be expected to limit the mobilization of commercial financing through the Facility. The graph below shows the impact of the IBRD/GCF Guarantee fee and the GCF Grant on the guarantee fee assuming the same cash reserve levels.





It is expected that the partial guarantee will not only incentivize lending to EE projects but also reduce the financing costs. The table below shows the potential impact of a 50% guarantee on the interest rate margin due to a lower risk premium. The resulting theoretical interest expense saving is close to $30 million to the IEs over the life of the facility, representing an 8% reduction in total financing costs (principal and interest payments).

Interest rate margin without Guarantee	4%
Potential Reduction in Risk Premium with Guarantee	2%
Guarantee Fee charged to PFIs on guaranteed amount	0.50%
Guarantee Fee charged to IEs on total loan amount	0.25%
Interest rate margin with Guarantee	2.25%
Potential Savings to IEs (over Facility Term)	$28.74 M

GCF is uniquely positioned to offer such a Risk Sharing Facility to PFIs and IEs. The concessional nature of the IBRD/GCF guarantee charge and the availability of the seed grant allows for the guarantee fee charged to PFIs and ultimately IEs to be very low, thereby resulting in a net benefit to the IEs. GCF contribution is critical to allow the IEs to access lower cost of financing and improve financial viability for their EE investments.

F.2. Technical Evaluation

EE technologies vary by industrial subsectors but typical energy-saving measures include:

- **Energy systems.** Upgrading boilers and switching fuels, using cogeneration facilities and electric-driven systems, including compressed air systems, electric chillers, machinery and lighting.
- **Process technology.** Upgrading and replacing equipment, machinery, and facilities.
- **Waste heat and waste use.** Use of waste heat (of hot/warm gases, liquids and solids) and burning combustible waste (gases, liquids, solids).
- **Use of RE** to decrease fuel and/or electricity consumption may also be considered.

Energy intensive industrial sectors include cement, steel, textile, pulp and paper, food processing, bricks, and ceramics. Potential EE measures for cement industry include using roller mill for grilling raw material, improving furnace fans, installation of variable speed drivers, using waste fuel and waste heat recovery. The cement industry is one of the energy-intensive sectors, producing a huge volume of heat exhaust at a temperature up to 350oC. Therefore, the key measure to improve EE is the utilization of heat exhaust for power generation. This is a well-tested solution achieving multiple purposes, including utilizing heat waste without consuming more fuel for power generation at a sizeable capacity scale, reducing emissions of GHG CO2, reducing heat and dust emissions into the environment, and increasing efficiency of equipment production line. More detailed project pipeline information is presented in Annex 2.

EE technologies for steel and iron industries would include waste heat recovery, construction of closed production lines, replacement of low-performance air compressor, and installation of inverter for motors to operate at low or fluctuating load. Waste heat recovery uses the heat from flue gas (exhaust heat from electric arc furnaces, furnaces, kilns, and so on) to preliminarily heat up the steel scraps before putting into the electric arc furnace for reducing the time in the furnace, saving energy, and improving capacity. It could help heat the steel bars before entering the kiln to save oil for furnaces. Furthermore, it also helps heat up the oil instead of the drying resistors to reduce electricity consumption.

Project information provided by the Vietnam Paper Corporation include the investment of new efficient boilers for cogeneration (heat and electricity), replacement of motors, switching to biomass fuel technology, and chemical waste recovery for heating. Technical details of subprojects submitted by the corporation are presented in Annex 2.

An OM will detail eligible criteria and industry specialists and energy audit experts will be included in the subproject due diligence teams. They will ensure that the subprojects are in compliance with Vietnamese industrial and technical policies and regulations, fully satisfy the technical eligibility criteria, and are technically feasible. TA to build capacity for project technical due diligence will also be provided to the PFIs during project implementation. This will ensure that the design of the subprojects will be technically sound.

F.3. Environmental, Social Assessment, including Gender Considerations

Social Assessment: The project is expected to have overall positive social benefits because it promotes EE and thus reduces GHG emissions and other pollutants into the atmosphere. It will also have positive impacts from the perspective of consumers and of workers who are employed by the participating IEs. Through EE investments, the company's energy cost will be reduced per unit of output with positive impacts on final prices of consumer products and services. This will also make IEs more competitive and ensure job security and potential expansion of the workforce.

The EE subprojects to be financed under the proposed loan will be within the existing premises of industrial facilities. However, to anticipate the potential need of land acquisition required for subprojects identified in implementation cycle, Operational Policy 4.12 is triggered and Resettlement Policy Frameworks (RPF) was prepared. Among others, it lays

down the principles and objectives, eligibility criteria of displaced persons, modes of compensation and rehabilitation, participation features and grievance procedures, review and clearance process of subproject's resettlement plan. OP 4.10 Indigenous People is also triggered to maximize the project benefits in ethnic minority community. Ethnic Minority Planning Framework (EMPF) was prepared, setting out guidelines to: (a) ensure that the ethnic minority peoples receive social and economic benefits that are culturally appropriate; (b) avoid potentially adverse effects on the ethnic minority communities; and (c) when such adverse impacts cannot be avoided, minimize, mitigate, or compensate for such effects. The IEs must be able to demonstrate that it has obtained broad community support for the subproject through a process of free, prior, and informed consultations with the affected ethnic minority communities. Any non-social safeguard impacts (for example, gender and employment) will be addressed in the project Environmental and Social Management Framework (ESMF) developed under the framework of OP 4.01. The subloan agreement between the PFIs and the IEs will specify that participating IEs must fully comply with the existing national labor laws, including those related to children and women and will include appropriate mitigation measures.

Gender. The World Bank is conducting a gender analysis as part of social impact assessment. The assessment is conducted to understand the potential impacts at community, organizational, and individual levels once introducing industry EE investments under the proposed project. The specific objectives of the assessment are to (a) identify and analyze the potential organizational impacts (positive and negative) and adaptation strategies of the concerned enterprises; (b) identify and analyze the potential impacts (positive and negative with particular attention to gender and ethnic minority groups) and adaptation strategies of the employees working in the concerned enterprises; (c) identify and analyze the perception of men and women living in communities in surrounding areas of concerned enterprises, about the potential impacts (positive and negative) caused by the proposed investments; and (d) provide recommendation/suggestion to inform the design of Bank-funded project, ensuring that impacts (if any) on men and women, respectively, will be addressed. The social risk for the project is rated as Low.

Environmental Assessment: OP/BP 4.01 Environmental Assessment is triggered due to the potential adverse environmental and social impacts associated with the financed subprojects under component 1 and the IBRD Loan and certain technical assistance activities under component 2.

Under Component 1, the Project (and the IBRD Loan) will support financing for various subprojects under energy intensive industries such as cement, iron and steel, and pulp and paper, public and private; using these potential energy saving measures: (a) adoption of energy saving industrial technologies (e.g., efficient industrial boilers, kilns, and heat exchange systems); (b) recovery and utilization of wastes and waste heat; (c) installation of highly efficient mechanical and electrical equipment (e.g. motors, pumps, heating and ventilation equipment); and (d) industrial system optimization to reduce energy use.

On the positive side, the project will bring about important benefits to industries and the environment by contributing to the reduction of GHGs and pollutants, increase energy savings, and encourage the promotion of environmentally good industry practices. On the negative side, the project will cause potential environmental impacts during the construction and operation of subprojects. These impacts include noise, dust, labor safety, and disposal of old parts and equipment which may hazardous waste and in rare cases, the oil extracted from transformers which may contain PCBs. The possible impacts during the operation of new equipment and facilities may include worker and health safety issues, air pollution, generation of solid waste, wastewater, and disposal of hazardous substances from such polluting industries such as cement, steel, textile, pulp and paper, food processing, etc., even though less and lower toxicity than those generated from the old technologies and equipment. It is anticipated that most of subprojects will be category B, with typical impacts which are assessed as localized varying from small to moderate scale, and which can be mitigated via good management practices and readily designed mitigation measures. In addition, the TA under component 2 includes the development of technical pre-feasibility studies which provide support for the food processing industry under Canadian Externally Finance Outputs, from which environmental and social aspects need to be considered.

As the subprojects are not identified prior to appraisal, an ESMF has been prepared by the Client to guide the environmental assessment process and ensure compliance of the financed subproject with the World Bank's safeguard policies and national environmental regulations. The ESMF is in accordance with the national regulations on environmental assessment and Bank's safeguards policies and requirements on public consultation and information

disclosure. The ESMF also refer to the Interim Guidelines on the Application of safeguard Policies for TA activities in Bank-financed Projects and TA activities should be screened against the Interim Guidelines. The ESMF also include the procedures for conducting environment and social audit/due diligence of existing facilities that will be supported/retrofitted by the project. The Project Management Board (PMB) under MOIT, PFIs and IEs are the key actors responsible for safeguard implementation of the project. More details on environmental assessment, ESMF content, public consultation and information disclosure are described in Annex 6.

A primary requirement of the ESMF is that the sub-borrowers provide the PFI an Information Package that includes the sub-borrower EIA approval letter or certificate, the EIA document and documentation that consultation and disclosure were performed in accordance with Vietnamese and Bank requirements. All PFIs will contract with Vietnamese environmental consultants for any technical reviews or activities that are their responsibility, given the likely absence of any local environmental concerns. An audit/due diligence of existing facilities that will be supported/retrofitted by the project will be done by PFIs officer/consultant to determine the eligibility of the subproject. The environmental risk for the project is rated as Moderate.

Public Consultation and Information Disclosure. During the ESMF, EMPF and RPF preparation, consultation workshop was conducted on October 9, 2015 with the aim to collect feedbacks/comments on the frameworks developed under the project. The workshop was attended by various participants coming from NGO, central government, research institute. Comments received in the workshop have been incorporated in the final version of the framework. All safeguard frameworks have been disclosed at the subproject sites, MOIT's website, and in the InfoShop, on November 23, 2015. All subprojects' safeguard instruments are also required to follow the Bank policy on access to information in public consultation and disclosure of information.

- RPF: http://documents.worldbank.org/curated/en/412041468319734189/pdf/SFG1560-RP-P151086-RPF-Box393258B-PUBLIC-Disclosed-11-23-2015.pdf
- EMPF: http://documents.worldbank.org/curated/en/426401468174909664/pdf/SFG1531-IPP-P151086-EMPF-Box393258B-PUBLIC-Disclosed-11-23-2015.pdf
- ESMF: http://documents.worldbank.org/curated/en/958671468135015942/pdf/SFG1550-EA-P151086-ESMF-Box393258B-PUBLIC-Disclosed-11-23-2015.pdf

Physical Cultural Resources OP/BP 4.11 is triggered. The project would not involve significant excavations, demolition, moving of earth, flooding, or other environmental changes. It is not expected that the project will affect any known PCR. However, there is a possibility that the some unknown PCR may be revealed during the subproject implementation as they include excavation activities. Therefore, the policy is triggered and a chance finds procedure has been prepared and included in the ESMF, and will be incorporated in site-specific subproject safeguards instruments, bidding, and contractual documents during implementation.

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

F.4. Financial Management and Procurement

Financial Management: The financial management (FM) assessment was completed and concluded that the project has adequate FM arrangements acceptable to the Bank. The overall arrangements in place for implementing the Project and the IBRD Loan provide reasonable assurance that the proceeds will be used for the purposes intended. The MoIT and most PFIs have adequate FM staff capacity and experience of implementing other similar Bank-funded investment

projects, with satisfactory performance. Additional training would be provided to the PFIs' FM staff on Bank FM requirements and disbursement procedures. All PFIs are required to have annual financial statements prepared in accordance with relevant acceptable standard and audited by an audit firm acceptable to the Bank as a condition of project participation. Two PFIs who are participating in the ongoing REDP, VCB, and BIDV satisfy this requirement. Other PFIs that may be included in the Project are being well informed during the project preparation process. The FM risk is assessed as Substantial. Further details of the FM assessment and proposed arrangements are in Annex 7.

The World Bank will carry out a financial management assessment on the Program Implementation Entity to ensure that its financial management arrangements are acceptable to the Bank and that the sub-guarantees issued will be used for intended purposes. Capacity building and training will be provided to the PIE's staff as necessary.

Procurement[20]: A Procurement Capacity and Risk Assessment (PCRA) of the major project implementing agencies (IAs), including the MoIT and two potential IEs—Hoang Thach Cement Factory and Chinfon Cement Factory—was undertaken. It was found that:

a) the MoIT and the two IEs have adequate institutional and organizational capacity in place; the MoIT, however, has no specific organizational arrangements and staffing for implementation of their respective procurement under the project at this stage;

b) the MoIT has some knowledge and experience of Bank procurement as a result of its implementation of several ongoing Bank-financed projects, including CPEE; however, new staff being assigned to implement the project may not be familiar with the Bank procurement procedures;

c) the two IEs are experienced and proficient in using the procurement procedures under national public procurement law and regulations or established private sector/commercial practices; they, however, are unfamiliar with the Bank procurement procedures such as International Competitive Bidding (ICB) and Quality- and Cost-Based Selection (QCBS) methods which may be applicable to their subprojects.

Based on the above findings and considering the specific nature of procurement work required for the project, the procurement risk for the proposed project is rated as Substantial. More detailed findings of the PCRA, the proposed procurement arrangements, and measures to address the identified risks are presented in Annex 7. A Procurement Plan for the first 18 months of project implementation, acceptable to the Bank, shall be prepared by the PMBs.

[20] The procurement plan applies mainly to the IBRD Loan and Component 2, which include WB-financed procurement. The Project involves procurement to the extent of the GCF seed grant of US$3 million.

G.1. Risk Assessment Summary

Overall Risk Rating and Explanation of Key Risks

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Substantial
OVERALL	**Substantial**

The overall project risk assessment is Substantial, recognizing the institutional constraints and challenges of EE investments in Vietnam as well as the dependence on the macroeconomic and fiscal stability to achieve the PDO.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1

Description	Risk category	Level of impact	Probability of risk occurring
Political and Governance: There is a risk of social instability from slower growth, and from reduced access to land of poorer Vietnamese in the wake of rapid urbanization.	Other	Low (<5% of project value)	Medium

Mitigation Measure(s)

Enhanced TA for addressing social safeguards issues, in particular, those related to land management and involuntary resettlement. The safeguard frameworks have been prepared and will be applied during project implementation.

Selected Risk Factor 2

Description	Risk category	Level of impact	Probability of risk occurring
Macroeconomic: Unfavorable macroeconomic developments (interest rate volatility, FOREX risk, low oil prices, and so on) may lessen the incentives for EE projects and slowdown investment pipeline.	Financial	Low (<5% of project value)	High

Mitigation Measure(s)

The project will provide TA to IEs and PFIs on FOREX management and interest rate swaps. The sensitivity analysis provided in the economic/financial analysis shows that the expected economic/financial returns are robust with respect to these risks. The risk sharing facility will build up confidence for PFIs and IEs in EE investments. An associated Carbon Finance Program will provide additional revenues to IEs that make EE investments more attractive.

Selected Risk Factor 3

Description	Risk category	Level of impact	Probability of risk occurring
Sector Strategies and Policies: Weak government commitment and capacity to promote industrial energy conservation. Despite the government's EE target, the current policies, financial incentives, and the government's institutional capacity are limited to achieve these targets.	Technical and operational	Low (<5% of project value)	High
Mitigation Measure(s)			
The project, together with the IBRD Loan and the ongoing CPEE project, will provide TA and capacity building to the MoIT to strengthen EE policies and institutional capacity.			
Selected Risk Factor 4			
Description	Risk category	Level of impact	Probability of risk occurring
Technical Design of Project or Program: Project implementation may depend substantially on technical and financial capacity of PFIs.	Technical and operational	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
PFIs selected according to eligible criteria i.e. PFIs need to demonstrate strong financial capacity and experiences in EE lending. In addition, TA will provide capacity building to PFIs and IEs on identification of EE subprojects, technical appraisal and project monitoring.			
Selected Risk Factor 5			
Description	Risk category	Level of impact	Probability of risk occurring
Institutional Capacity for Implementation and Sustainability: Inadequate support to PFIs and IEs in identification, appraisal and monitoring EE investment may lead to low performance of the project, pipeline development, quality of investment, and project sustainability.	Technical and operational	Medium (5.1-20% of project value)	High
Mitigation Measure(s)			
Comprehensive capacity building program provided by TA component including technical capacity for identification, appraisal and monitoring. A parallel carbon finance program is under development to provide complementary resources for TA and establishment of MRV system to ensure the impact and sustainability.			
Selected Risk Factor 6			
Description	Risk category	Level of impact	Probability of risk occurring
Fiduciary: A Financial Management assessment identified the following key risks: (a) low FM capacity of the investment owners which may lead to misreporting of transactions or ineligible expenditures; (b) delays in approving and processing payments at all levels, including the PFIs branches and head office, the MoIT PMB, and the MoF due to lack of experience, knowledge, or responsibility; and (c) lack of capacity of the PFIs in financial	Financial	Medium (5.1-20% of project value)	Medium

reporting in accordance with international standards, which will limit their opportunity to participate in the project. **Procurement risk:** During project preparation, an assessment of the major project IAs, including the MoIT and two potential IEs (Hoang Thach Cement Factory and Chinfon Cement Factory) was undertaken. It was found that (a) the MoIT and the two IEs have adequate institutional and organizational capacity in place; the MoIT however has no specific organizational arrangements and staffing for implementation of their respective procurement under the project at this point; (b) the MoIT has some knowledge and experience of Bank procurement as a result of its implementation of several ongoing Bank-financed projects, including CPEE; however, new staff being assigned to implement the project may not be familiar with the Bank procurement procedures; and (c) the two IEs are experienced and proficient in using the procurement procedures under national public procurement law and regulations or established private sector/commercial practices; they, however, are unfamiliar with the Bank procurement procedures such as ICB and QCBS methods which may be applicable to their subprojects.			
Mitigation Measure(s)			
Mitigation measures for FM: this will be mitigated by (a) the appointment of a qualified project chief accountant by all IAs, to be approved by the Bank; (b) detailed OM with established formal process of approving payments at all levels and all IAs; (c) separating the MoIT PMB from the lending cycle to PFIs and investment owners to minimize the bureaucratic procedures; and (d) training on the Bank FM requirements to the PMB, PFIs, and investment owners. Mitigation measures for procurement. To mitigate the identified procurement-related risks and strengthen procurement implementation capacities, the following key actions have been agreed with the borrower and will be implemented throughout project preparation and implementation. Mitigation measures include: (a) Appoint procurement officer or hire a procurement specialist with adequate qualifications and experience; (b) Prepare and adopt a project OM, including a chapter on procurement, which is incorporated by reference in the subloan agreements with private developers; (c) Procurement training for project management unit staff, including initial procurement training at project launch and in-depth procurement trainings during project implementation.			
Selected Risk Factor 7			
Description	Risk category	Level of impact	Probability of risk occurring
Environment and Social: Sub-projects involve small construction for installation or replacement of energy efficient technologies and equipment. It is anticipated that the Project would mostly include category B subprojects. In any case, all subprojects will be screened carefully case by case, to determine the appropriate category and environmental safeguard instruments to manage the potential impacts.	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
During the preparation stage, the MOIT has prepared ESMF/RPF/EMPF frameworks to guide and set out the requirements to ensure the safeguard compliance of the Project during implementation period. The frameworks are in compliance with the Bank's safeguard policies and national legislations on environmental protection. It will be adopted by MOIT and integrated in the Project Operation Manual. The frameworks lay out procedures which includes			

(i) screening mechanism to exclude ineligible subprojects, (ii) identification of environmental and social impacts associated with the EE project and the mitigation measures; (iii) procedures for preparation and approval/clearance of EA documents per GoV regulations and Bank safeguard policies; (iii) monitoring, institutional arrangement and financial sources for ESMF implementation and (iv) public consultation and information disclosure requirements in accordance to the Bank safeguard policies.

During subproject implementation, the IEs will have the overall responsibility to carry out mitigation measures as set out in subproject EMPs. The IEs will carry out internal monitoring to ensure the contractors' implementation of mitigation measures. The PFIs, PMB and WB and local authorities will carry out external monitoring on IEs safeguard implementation on periodical basis.

Selected Risk Factor 8

Description	Risk category	Level of impact	Probability of risk occurring
Stakeholders: Low interests and weak stakeholders will lead to slow subproject pipeline development. This is the most common issue facing credit lines, such as the Renewable Development Project. Further stakeholder risk exists with the PFIs in terms of their risk management and EE sector exposure. The guarantee payouts required from the Risk Sharing Facility will ultimately depend on the PFIs' ability to carry out adequate due diligence of covered sub-projects.	Technical and operational	Medium (5.1-20% of project value)	High

Mitigation Measure(s)

The project will (a) provide TA and capacity building to the PFIs for business development; (b) link with the government's voluntary agreements with key IEs; and (c) link with the ongoing IFC's EE financing advisory services to the PFIs, and other donors' programs.

Other Potential Risks in the Horizon

** Please expand this sub-section when needed to address all potential material and relevant risks.*

H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's Performance Measurement Framework under the Results Management Framework.

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level[21]						
Paradigm shift objectives						
Shift to low-emission sustainable development pathways	The Project is developed to scale up energy efficiency (EE) in the high-energy intensive industrial sector aiming to unlock the huge potential for energy savings. With financial and technical support from the World Bank and the GCF, the Project and the IBRD supporting project will mobilize approximately US$ 407.3 million of EE investments, supporting over 100 industrial companies to reduce energy consumption and generate about 120 MtCO2eq of GHG emission reductions over the lifetime of the investments. Furthermore, the Project will contribute to a paradigm shift in the nascent EE market. It will open up a new market of EE financing in a market-driven sustainable manner. PFIs and other financial institutions are expected to continue to finance EE investments after the Project is over, building on lessons from experience during the project implementation and the enabling environment created for local financial institutions and industrial enterprises to scale up investments in energy efficiency					
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Base line**	**Target[22]**		**Assumptions**
				Mid-term (End 2020)	Final (Mid 2023)	
Fund-level impacts						
M3.0 Reduced emissions from buildings, cities, industries and appliances	Tonnes of carbon dioxide equivalent (tCO2eq) reduced over lifetime	MoIT M&E Reports	0	48 million	120 million	See Section E.1.2
M3.0 Reduced emissions from buildings, cities, industries and appliances	Volume of finance leveraged (US$ million)	MoIT M&E Reports	0	160	411	See Section E.6.5

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level						
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Base line**	**Target**		**Assumptions**
				Mid-term (End 2020)	Final (Mid 2023)	
Project/programme outcomes	**Outcomes that contribute to Fund-level impacts**					
M7.0 Lower energy intensity of buildings,	Energy intensity/ improved efficiency of	MoIT M&E Reports	0	1,800	4,700	Lifetime energy savings directly attributable to the project, converted to

[21] Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement): http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf

[22] Note that the targets represent combined targets for the Projects and the supporting IBRD Loan project.

cities, industries and appliances	buildings, cities, industries and appliances (GWh/year)					GWh. The baseline value is 0. Projected savings calculated against baseline.
Project/programme outputs	**Outputs that contribute to outcomes**					
1. Bankable EE projects developed	Number of projects	MoIT M&E Reports	0	60	160	Subprojects supported by financing facility or/and TA component.
2. Industrial entities adopting improved EE technologies	Number of IEs	MoIT M&E Reports	0	40	100	Number of IEs adopting improved EE technologies through Project and IBRD support.
3. Leveraged volume of financing for EE projects by PFIs and IEs	Volume of financing (US$ million)	MoIT M&E Reports	0	120	307.3	Volume of financing leveraged from PFIs and IEs by WB lending and IBRD/GCF guarantee
4. PFIs capacity to underwrite EE loans increased	Number of loan officers trained	MoIT M&E Reports	0	40	50	Number of loan officers of PFIs who participated in training workshops offered by the Project or IBRD Loan project.
5. IEs/ESCOs capacity strengthened	Number of IEs/ESCOs reached through workshops	MoIT M&E Reports	0	160	200	Number of IEs and ESCOs which joined workshops or training offered by the Project or IBRD Loan project.
6. Application of EMS in industrial sector increased	Number of IEs certified for ISO 50 001/EMS	MoIT M&E Reports	45	70	90	Number of IEs certified for ISO 50 001/EMS to be increased through TA activities of the Project or the IBRD Loan project.

Activities	**Description**	**Inputs**	**Description**
Output 1. Bankable EE projects developed			
1.1 Energy audits services provided	MOIT provide technical support to IEs on energy audits	TA Budget component 2	
1.2 Support preparation of FS provided	MOIT provide technical support to IEs to prepare bankable FS	TA Budget component 2	
1.3 Technical advisory provided	MOIT provide consultant pool to advice on EE technologies	TA Budget component 2	
Output 2. Industrial entities adopting improved EE technologies			
2.1 . WB-VEEIE subloans extended to IEs/ESCOs	PFIs start extending subloans to IEs/ESCOs under IBRD on-lending	IBRD US$100 million on-lent to PFIs	

2.2 GCF-RSF sub-guarantees provided to PFIs	The PIE starts providing sub-guarantees to PFIs' underlying EE subloans	GCF US$75 million guarantee and US$3 million grant	
Output 3. Leveraged volume of financing for EE projects by PFIs and IEs[23]			
3.1. PFIs selected	Selecting additional PFIs for Component 1	WB coordinates with MoIT and SBV	
3.2. PIE selected	Selecting the PIE to operate GCF-RSF	WB coordinates with MoIT and SBV	
3.3. GCF-RSF OM finalized	Finalize the Operations Manual of GCF-RSF, incorporating inputs from the selected PIE	WB to review OM and provide technical inputs	
3.4. WB-VEEIE subloans extended to IEs/ESCOs	PFIs start extending subloans to IEs/ESCOs under IBRD on-lending	IBRD US$100 million on-lent to PFIs	
3.5. GCF-RSF sub-guarantees provided to PFIs	The PIE starts providing sub-guarantees to PFIs' underlying EE subloans	GCF US$75 million guarantee and US$3 million grant	
Output 4. PFIs capacity to underwrite EE loans increased			
4.1. Capacity building for EE lending business startup	Business startup, including creation, organization, staffing, and initial business plan of the EE lending business unit (or team); Capacity building and training, including support for the development of necessary financial instruments, risk management tools, procedures and the creation of an adequate knowledge base to evaluate and extend EE loans;	TA budget under Component 2	
4.2. PFI staff training	Marketing and development of an EE subproject pipeline; support to due diligence of eligible EE subloans, including	TA budget under Component 2	

[23] Output 3 will be achieved through activities 1.1-1.5

	financial, technical, social, and environmental assessments		
Output 5. IEs/ESCOs capacity strengthened			
5.1. Capacity building for pipeline development	Support to identify EE projects and prepare relevant energy audits, technical design, and EE project preparation; Capacity building on safeguards	TA budget under Component 2	
5.2. Communication campaign	Raise awareness through a communication campaign organized jointly with relevant industry associations	TA budget under Component 2	
Output 6. Application of EMS in industrial sector increased			
6.1. Training and capacity building on application of EMS and ISO 50,001 certification	The adoption of Energy Management Systems and ISO 50,001 Certification can be the most effective practice for industrial eco-systems to generate energy efficiency and GHG reduction projects on a sustaining basis.	TA budget under Component 2	

H.2. Arrangements for Monitoring, Reporting and Evaluation

Project implementation involves (a) monitoring of performance indicators in Section H; (b) periodic progress reports; (c) midterm review of implementation progress. The PMB will be responsible for overall monitoring and evaluation (M&E), including collection of project performance information and reporting on project impacts and results. For activities implemented by the PFIs, each PFI will be responsible for collecting information with the assistance of the PMB and reporting to the Bank and the PMB. It is noted that the end targets of the project are best estimates as it is not known upfront what type of subprojects will be financed and the targets may be revised at mid-term review as necessary. By end of the project, the Bank will conduct jointly with the MoIT an implementation completion assessment and prepare an implementation completion report (ICR) which will review the performance of the project, assess effectiveness and efficiency of project implementation, the achievement of development objective, and provide relevant lessons learned.

I. Supporting Documents for Funding Proposal

- ☒ Annex 1. NDA No-objection Letter
- ☒ Annex 2. Feasibility Study
- ☒ Annex 2-1. Study on energy saving potential and GHG emission reduction
- ☒ Annex 3. Integrated Financial Model that provides sensitivity analysis of critical elements (xls format)
- ☒ Annex 4. Confirmation letter for co-financing commitment from KOICA
- ☒ Annex 5. Project/Programme Confirmation/Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) – *see the Accreditation Master Agreement, Annex I*
- ☒ Annex 6. Environmental and Social Management Framework
- ☒ Annex 6-1. Resettlement Policy Framework (RPF)
- ☒ Annex 6-2. Ethnic Minority Planning Framework (EMPF)
- ☒ Annex 7. Appraisal Report
- ☒ Annex 8. Timetable of project implementation
- ☒ Annex 9. Social Impact Assessment Report, including Gender Impact Assessment
- ☒ Annex 9-1. Gender Analysis and Action Plan
- ☒ Annex 10. TA Component Budget Estimation
- ☒ Annex 11. Key Elements of the Risk Management Framework
- ☒ Annex 12. Budget Breakdown
- ☒ Annex 13. Draft Procurement Plan
- ☐ Evaluation Report of the baseline project (If applicable)
- ☐ Map indicating the location of the project/programme