

**VIETNAM ENERGY EFFICIENCY FOR
INDUSTRIAL ENTERPRISES PROJECT**

**SOCIAL IMPACT ASSESSMENT
REPORT**

Hanoi, 6/2016

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I. INTRODUCTION

1. Project background

The World Bank and the Government of Vietnam (GoV) is preparing Vietnam Energy Efficiency Financing for Industrial Enterprises (VEEIEs) Project.¹ The proposed Project Development Objective is to improve energy efficiency of selected energy end-users in key energy-consuming sectors, thereby supporting GoV to achieve its energy efficiency targets. The proposed project is part of the World Bank's long term engagement to support Vietnam to increase energy savings and improve demand side energy efficiency. The project has two components: (a) energy efficiency investment lending, supporting energy conservation investments in industrial firms through the selected participating financial institutions (PFIs); and (b) technical assistance and capacity building, providing technical assistance and capacity building to the Ministry of Industry and Trade (MOIT), PFIs, and selected energy users and service providers for improving energy efficiency.

Project Beneficiaries

The Project's primary beneficiaries include industrial enterprises and participating financial institutions. Enterprises participating in the Project will benefit reduced energy consumption and production costs through adopting improved technologies and optimization of production. Overall, they can increase their competitiveness in the domestic and international markets. Whereas, participating financial institutions will benefit from introducing new loan products for industrial sectors, which contribute to improving their technical capacity for investment appraisal and monitoring of energy efficiency. In addition, participating government agencies will also receive support as regards capacity building in the development of the regulatory framework, relevant EE standards, and guidelines.

2. The objectives of Social Impact Assessment

2.1. The objectives

This social impact assessment (SIA) is undertaken as part of the Project's preparation process. The overall objective of the SIA is to identify the potential social impacts/issues of the proposed energy efficiency subproject at community, organizational and individual level. To obtain the overall objective, the assessment goes to address the following specific objectives:

- To identify and analyze the potential organizational impacts (positive and negative) and adaptation strategies of the concerned firm.
- To 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 firms.
- To identify and analyze the perception of men and women living in communities in surrounding areas of concerned firms, about the potential impacts (positive and negative) caused by the proposed investments.
- To provide recommendation/suggestion to inform the design of Bank funded project, ensuring that impacts (if any) on men and women respectively will be

¹ In this report the VEEIEs Project is referred to as the Project.

addressed.

2.2. The scope of work

The SIA includes the following activities:

- Develop a complete assessment proposal (including for example, methodology, sample size, data collection tools, and analysis strategy).
- Conduct a desk review of relevant documents (for example, project-related documents, similar studies/reports, and employment records of implicated industries and institutions divided by gender and ethnicity).
- Identify potential stakeholders/target groups for the assessment (for example, policymakers, enterprise leaders, employees, and surrounding communities).
- Develop data collection tools (quantitative or qualitative) appropriate to different target groups (for example, enterprise leaders, employees, community members, and policymakers) and conduct data collection in the selected enterprises.
- Analyze data, draft, and finalize the report.

The SIA was conducted from July to December 2015 in Hanoi, Phu Tho province and Quang Binh province. This report presents major findings of the assessment and comprises five sections. Section II presents detailed methodology deployed for the SIA including the key research questions and methods. Section III gives an overview on Vietnam's socio-economic development, energy resources and energy sector in Vietnam. Findings of the SIA are presented in Section IV. This section contains four parts. This Section covers results on the potential social impacts of energy efficiency subprojects. It also discusses the capacity of different stakeholders when it comes to the integration of social impact assessment into the Project's implementation. Recommendations for adaptation and mitigation measures are also given in this section before the Conclusion which is presented in Section V.

II. METHODOLOGY

1. Key research questions

The assessment of social impacts/issues is referred to as the processes of analyzing, monitoring and managing the intended and unintended consequences, both positive and negative, of planned interventions, in this case, the Project (Frank Vanclay, 2003). The SIA aims to find the answer to the following questions:

- What are the potential impacts (positive and negative) of the Project on participating firms?
- What are the potential impacts (positive and negative) of the Project on employees working at participating firms?
- What are the potential impacts (positive and negative) of the Project on local communities? What are different impacts (positive and negative) for women and men?
- How do different stakeholders (participating firms, their employees and local communities) mitigate negative or promote positive impacts potentially stemming from the Project?

To address the abovementioned questions the SIA aims to propose recommendations for the supervision and management of the Project's impacts. These recommendations will mainly focus on measures which are appropriate for the Project's major stakeholders, notably the World Bank, commercial banks and participating firms.

2. Research methods

The SIA mainly adopts qualitative method which is conducted through implementation of multiple methods including desk study, in-depth interview, and observation.

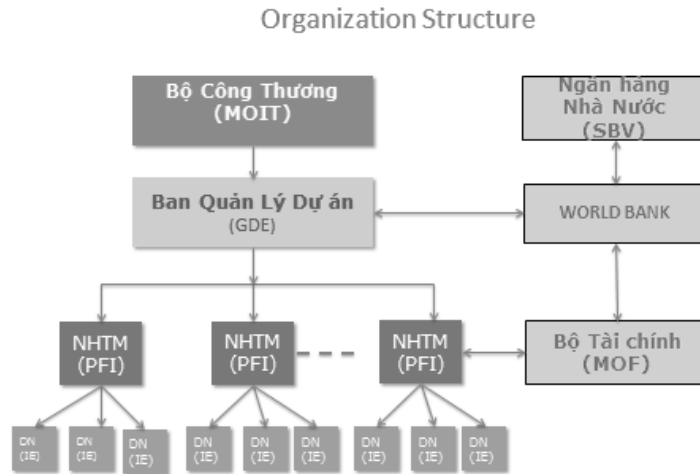
2.1. Desk study

A desk study is undertaken in the first stage through review of studies and assessments on relevant topics as well as available project documents. Findings from the desk study enable the identification and adoption of appropriate findings and methodologies on social impact assessment. Mixed methods using both qualitative and quantitative study with emphasis on participatory approach play an essential role in assessing social impacts. To manage project's impacts, it is important to draw upon lessons on minimizing negative impacts and promote positive impacts resulted from the project. Meanwhile, the supervisory approach requires the development of a criteria set which can serve for the supervision of inputs, process and outcomes of project's participating parties, particularly of participating firms (African Development Bank, 2003).

A desk study of available project document helps to build good understanding of the project's financing mechanism, process and procedures, update of preparation activities, and eligibility criteria. Project documents are very helpful for gaining an overview on the project design and for the identification of relevant stakeholders to conduct the in-depth study. The organizational structure below illustrates the roles of different stakeholders participating in the Project. To access to World Bank's loans, firms need to satisfy certain requirements set by participating commercial banks in

Vietnam. Such requirements are strictly based on regulations of the Ministry of Finance, the Project Management Unit as well as comply with the World Bank, Ministry of Industry and Trade and the State Bank of Vietnam.

Figure 1. Project’s stakeholder mapping



Source: World Bank, 2015.

Invisible hand, i.e market, is not reflected in this diagram. However, commercial banks and firms always operate on market principles of which economic profit has the most important role to play. Therefore, in theory, commercial banks and firms will be willing to implement social requirements such as environmental protection and gender equality given that such requirements are either compulsory or economically beneficial. Like market factors, community elements including their complex social structures are also invisible in this diagram. Communities are directly affected by both positive and negative impacts caused by participating firms. Through participating firms, communities also bear indirect impacts of the Project and other participating stakeholders. Findings from the desk study of available information suggest a conflict of interest. On one hand, firms constantly underscore their efforts in ensuring the benefits of communities and residents. Formal organizations and agencies also reiterate their compliance with relevant requirements and regulations. On the other hand, communities very often show their concerns over inadequate actions from firms. And in many instance, firms and local organizations themselves do not take sufficient efforts in protecting the environment and interests of the people.

In next stages when participating firms are identified, the team also collects and reviews firms’ documents on their activities, organization structure and more importantly on plans for future energy efficiency subprojects with World Bank’s loan. Field work contributes to understanding of the role of invisible hand towards participating firms and commercial banks as well as of both positive and negative impacts on different Project’s stakeholders including the people and local agencies within the Project’s effect.

2.2. In-depth interviews²

In-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents. The objectives of in-depth interviews are to explore their perspectives on particular ideas, program, or situations. By using in-depth interviews researchers might ask participants, staff, and others associated with the targeted project about their experiences and expectations related to the project, their thoughts on respective project's operations, processes, and outcomes, and about any changes they perceive in themselves as a result of their involvement in the program (Boyce and Neale 2006). In the context of this assessment, in-depth interviews aim to identify the perceived impacts the Project might create on different stakeholders (firms, their employees, and local communities). Four groups of informants for in-depth interviews are targeted including:

- (1) Leaders/managing staffs of participating firms who possess sound knowledge of their organization's activities, structure and particularly of the World Bank's project;
- (2) Workers who are directly or indirectly assigned to energy unit;
- (3) Local authorities and community representatives who live and work in the neighborhood of the participating firms; and
- (4) Leaders/managing staffs of participating banks (PBs).

Interviews with participating firms' leaders/managing staff as well as workers include two parts. The first part uses a structured questionnaire with questions on the firm's history, activities, and organization; and worker's education background, skill level, and experience working for the firm. The second part includes open-ended questions focus on the following areas:

- For firm:
 - Activities of the firm in general and energy unit in particular(current energy consumption, human resource, efficiency, etc)
 - Benefit package to employees in general and those in energy unit in particular
 - Energy efficiency subproject which is supposed to be financed by World Bank's loans: schedule, cost, site, human resource plan
 - Potential impacts of the energy efficiency subproject on the firm, its employees (men and women) and local communities
- For worker:
 - Job satisfaction and benefit package
 - Knowledge on the firm's energy efficiency subproject
 - Potential impacts of the energy efficiency subproject on the firm, individual worker, him/her-self and local communities

² The number of conducted interviews and detailed in-depth interviews guidelines are displayed in Annex.

The structured questionnaires are sent out to firm's leaders and workers prior to the assessment team's visit so that by the time of the interview, the team has already gained a general overview of the respondents.

Interviews with local authorities/community representatives focus on the following points:

- Assessment on the impacts of firm's activities on local communities and people
- Assessment on firm's social responsibility
- Knowledge on firm's energy consumption and energy efficiency subproject(s)
- Assessment on the impacts of firm's energy efficiency subproject(s)

Interviews with leaders/managing staffs of PBs focus on the following points:

- Discussion on the advantages and disadvantages of PBs when participating in the Project
- Assessment on the potential social impacts of the Projects on borrowing firms, their employees and local communities
- Discussion on the integration of social impact assessment in the process of appraisal and screening

2.3. Observation

Observation is a powerful approach that enables researchers to change their position as a complete outsider to complete insider (Jorgensen 1989 as cited in (Creswell 2012). In addition to in-depth interviews, this analysis also uses findings from the team's observations at study sites. The team visited firms and their employees observing their normal working activities right at the production areas including the control and energy units. This site visit helps the team familiarize with peculiar manufacturing activities and gain general technical understanding of the energy efficiency subproject that each firm is planning to implement. Besides, the team also observes the life at local communities to identify the existing effects resulting from firm's activities as well as to anticipate any potential impacts which can be brought about by the future energy efficiency subprojects. Observation results at participating firms and communities in their neighborhood make important contribution to the assessment as they provide the team with insights which are neither found in desk research nor articulate through the in-depth interviews.

During observation process, the team also takes pictures of firms' operating sites, workplace and common areas of workers so as to provide further information and more accurate sense on working environment as well as interaction amongst people in such environment. In addition, pictures of communities' lives such as roads, houses, and rivers can also help gain better understanding of positive and negative impacts resulting from firms' activities on local communities and residents. Based on such information, potential impacts of the Project can also be anticipated.

3. Sampling method and sample size

3.1. Sample of concerned enterprises

The selection of enterprises and PBs for the study applies convenience sampling. From the list of PBs and firms who have submitted their interest in the Project, the

team chooses three firms in two provinces of Quang Binh and Phu Tho who operate in cement, and pulp and paper industry. The three selected firms include Viet Tri Paper Corporation (VIPC), Vietnam Paper Corporation (VINAPACO) and Vietnam Construction Materials Co., Ltd (VCM).

3.2. Sample of workers

Prior to firm visit, the assessment team informs participating firms on the SIA and requests them to arrange for the interviews of the firm's representatives as well as workers. The request clearly sets out criteria for selecting 10 respondents who directly work at the energy units including both males and females, of different ages and seniority, of diverse working positions and ethnicities where applicable. At each firm, workers are invited to private places to ensure the privacy and reliability of interviews. To maximize the variation of the sample, interviews cover both male managing and non-managing posts. We also interview both workers who directly work at energy sites and those who work at head controlling office.

3.3. Sample of commercial banks

As identified by the Project, some potential participating financial institutions 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). Participating financial institutions are responsible for appraisal and evaluation of subprojects, and will supervise and monitor all subloans. The team chooses three commercial banks out of the the list provided by World Bank to conduct the SIA as follows:

- JSC Bank for Foreign Trade of Vietnam (Vietcombank)
- VietinBank
- Saigon Hanoi Bank (SHB)

3.4. Sample of local communities

As for the selection of local community representatives, the assessment uses the popular approach of maximum variation for this qualitative study. This approach is employed to represent diverse case and fully describe multiple perspectives about the cases. Through maximizing differences, the sampling strategy increases the likelihood that findings will demonstrate differences or diverse perspectives (Creswell 2012). Some criteria are determined in advance to select participants in the localities. At each site, the in-depth interviews are undertaken on different individuals, which ensures the diversity of poverty status, gender, and occupations so as to capture different settings and wide-ranging perspectives.

III. REVIEW OF ENERGY RESOURCES, SOCIO-ECONOMIC DEVELOPMENT AND ENERGY SECTOR IN VIETNAM

1. The situation of energy resources

Coal. Vietnam has large coal reserve which was estimated at 6.14 billion tones in 2005 (Table 1)

Table 1. Coal reserve divided by class and category

Category	Identified reserve (TK-TD)	Division of identified reserves by class (1,000 tons)				
		A+B+C	A+B	C 1	C 2	P
Total	6 140 683	5 629 252	356 789	2 264 480	3 007 983	511 431
Quang Ninh coal mine	4 121 745	4 121 745	301 335	1 508 643	2 311 767	0
Local mines-TKV	165 110	165 110	55 454	919 01	17 755	0
1 Local coal reserve	37 434	18 478	0	102 38	8 240	18 956
Red river mines	1 580 956	1 088 481	0	524 871	563 610	492 475
anthracite + others	5 905 245	5 393 814	356 789	2 135 653	2 901 372	511 431
2 Peat	235 438	235 438	0	128 827	106 611	0

Source: MPI and UNDP (2008)

Table 2 illustrates that the capacity of exploiting and utilizing coal as energy has increased from 2015 to 2030.

Table 2. Coal exploiting capacity until 2030

Year	2015	2020	2025	2030
Output (million tons)	55-58	60-65	66-70	Over 75

Source: MPI and UNDP (2008)

Oil and gas. Vietnam is rich in oil and gas reserves. The total reserve of oil that can be exploited in Vietnam is estimated at 3.8 to 4.2 billion tons of oil equivalent (TOE), among which identified reserve is approximately 60% (Table 3). Capacity of exploiting crude oil in Vietnam is forecast to decline during 2015-2025 (Table 4) and possibly at fast rate if global oil price continues to decrease or maintain the current level.

Table 3. Total identified and unidentified reserves of oil and gas

Category	Total (TOE)
Total reserve and potential of oil and gas	3,8 - 4,2
Among which	
- Identified	1,05 - 1,14
- Unidentified	2,75 - 3,06

Source: MPI and UNDP (2008)

Table 4. Master plan for crude oil exploitation until 2020

Year	2015	2020	2025
Medium scenario (106 tons)	20.0	20.7	21.7
Of which, locally (106 tons)	17.0	16.3	16.2

Source: MPI and UNDP (2008)

Gas. Vietnam has the potential for gas exploitation. The amount of exploited gas has risen from 10.7 billion cubed meters to 19.0 billion cubed meters during 2011-2015.

Hydropower. Vietnam has economic and technical potential for hydropower development estimated at around 75-80 billion kWh with equivalent capacity of 18000-20000MW.

Solar energy. There is an estimated number of 1,400 to 3,000 sun hours a year in Vietnam with the total solar energy of around 230-250 lcal/cm²/day and increasing from the North to the South. It can be said that Vietnam has huge potential for solar energy. However, the utilization of this energy source is only limited to generating electricity, boiling water and drying at relatively small scale.

Biomass energy. Vietnam can achieve 170 million tons of biomass with 2,000 MW electricity depending on market prices. However, like solar energy, biomass is now mostly manufactured at small scale.

Wind power: As Vietnam is located in the tropical region of South East Asia with long coastal line of 3,000 km and water surface which is triple the land area, the country's potential for wind power is very large and estimated at 1,785 MW to 8,700 MW. Nevertheless, the use of this energy source remains at early stage in several areas such as Ca Mau and Ninh Thuan province.

2. Economic growth and demand for energy

According to the General Statistics Office of Vietnam, the total population of the country is estimated at 91.7 million, an increase of 974,900 people which is equivalent to 1.07 % from 2014. Urban population is estimated 31.45 million accounting for 34.3 % while the corresponding figure for rural areas is 60.25 million accounting for 65.7 % of the total population.

GDP per capita is reported at US\$2,109 (45.7 million VND) in 2015 which has risen by US\$57 from 2014. Economic shift has occurred at relatively slow pace whereby agricultural share has decreased while contributions of industry and service sector have increased. Agriculture-aquaculture and forestry sector accounts for 17.0% of the national GDP in 2015 while the shares of industry and construction sector and service sector are respectively at 33.3% and 39.7%.

Vietnam has made impressive achievements on poverty reduction. The poverty rates have continuously on the decline. In 2010, the national poverty rate was recorded at 14.2% and has decreased to below 5% in 2015 according to the revised poverty line for 2011-2015 period. Despite significant poverty reduction progress, poverty incidence remains very high in remote districts and communes where ethnic minorities mostly reside. Many areas still face high poverty rates of over 50%. Income of ethnic minority households is only one sixth of the national average.

Vietnam has rapidly shifted to market-oriented economy. The country has attained high GDP growth rates of around 7% annually during 2011-2015. GDP is forecast to continue its rising trend of an average of 7-8% until 2030 (Table 5).

Table 5. GDP growth forecast until 2030

Sector	2011-2015		2016-2020			2021-2030			
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Scenario									
GDP growth rate (%)	7.0	7.5	8.0	7.0	8.0	8.4	7.2	7.8	8.6
Agriculture-aquaculture and forestry (%)	2.7	3.0	3.0	2.0	2.2	2.2	2.0	2.2	2.2
Industry and construction (%)	7.5	8.4	9.0	7.5	8.6	9.3	7.4	8.1	9.1
Service (%)	8.0	8.2	8.7	8.0	9.0	9.3	8.0	8.6	9.2

Source: MPI and UNDP (2008)

Economic growth requires increased demands for energy exploitation and consumption. It is forecast that electricity consumption will increase from 15.2% to 32.1% from 2010 to 2030. The consumption of gas will rise from 1% to 1.5% while that of oil will go up from 33.7% to 40.6% during the same period. Coal consumption, on the other hand, will slightly decrease from 20.1% to 18.2% while the consumption of non-commercial energy will be reduced from 28.9% to 7.5%. Among economic sectors, industry is the sector which consumes the largest amount of electricity. This sector's electricity consumption is estimated at 52.5% and 38.6% of the whole economy while generates only 32.5% of the total GDP. Cement, building materials and steel are among those who consume the most energy and it is forecast that the rising trend of consumption will persist.

Vietnam's electricity master plan estimates demand for energy in final forms at medium scenario is presented in Table 6 below.

Table 6. Demand for energy in final forms, 2015-2030; Unit: TOE

Year	2015	2020	2025	2030
Coal	13.6	18	23.6	29.9
Electricity	14.6	24.9	37.1	52.9
Oil products	23.5	34.4	483	66.9
Gas	1.0	1.4	1.9	2.6
Non-commercial energy	14.5	14.0	13.3	12.4
Total	67.2	92.8	124.1	164.9
Equivalent to primary source total	91.7	148.8	195.9	256.7

Source: MPI and UNDP (2008)

The electricity master plan also states that given their forecast demand and taking into account primary sources, Vietnam is short of over 2 million TOE in 2015. The shortage will dramatically rise to 52.5 million TOE in 2020 and 143 million TOE in 2030. According to estimates by the International Energy Agency, Vietnam uses 27.400 BTU (8,0 TWh) to produce US\$1 GDP, which almost doubles South Korea, 3.5 times higher than France, and triples America who is known for heavily consuming energy. Since the end of the twentieth century, global energy use intensity has fallen by an annual rate of 0.5%. The declining trend has been

widespread for countries in Asia and the Pacific. As a result of technological innovations, reduction of energy use intensity is more notable for industrialized countries. The annual reduction rates of energy use were recorded at 0.6%, 1.0% and 2.2% in South Korea, France and America respectively from 1995 to 2005. Not following the global trend, energy use intensity in Vietnam has not decreased but kept rising. Vietnam's energy use intensity per US\$1 as estimated by Vietnam's electricity master plan grew from to 1.2 kWh in 2012 and will rise to 1.5 kWh in 2020 and 1.7 kWh/USD to 2 kWh/USD in 2030, which will approximately double the average of other countries.

3. Legislative framework for energy efficiency

Socio-economic Development Strategy 2011-2020 and Socio-economic Development Plan 2011-2015 places strong emphasis on the need to protect natural resources and the environment and to mainstream this in development planning. Vietnam's growing contribution to greenhouse gas emission has also led the government of Vietnam to be more assertive in developing adaptation and mitigation strategies.

Using clean and renewable energy is the most effective and sustainable way to minimize the negative environmental and social impacts. The government of Vietnam has promulgated various institutions and policies on energy use. Most notably, in 2010, the Law on Economical and Efficient Use of Energy 50/2010/QH12 was introduced and has taken effect from 2011. A revised Law on several provisions of Electricity Law 24/2012/QH13 has been issued in 2015 that requests for support for the generation of electricity from renewable energy sources. Decision 1208/QĐ-TTg approved by the Prime Minister in 2011 sets up the objective of connecting 2,000 MW biomass electricity to national grid during 2011-2023. The Prime Minister has also issued Decision No. 1855/QĐ-TTg placing an objective of the proportion of renewable energy sources of 3%, 5% and 11% respectively in 2010, 2020 and 2050. The Ministry of Industry and Trade has approved the General mapping of renewable energy development for Vietnam until 2020 with a vision to 2030.

In 2010, the Prime Minister has signed the approval of "Development scheme for environmental services until 2020" in Decision 249/QĐ-TTg which allows firms to utilized environmental services to minimize harmful impacts on communities. The field work in Quang Binh shows that a firm has been introduced various environmental protection measures and outsource to a private company to oversee environmental services within the firm. However, the firm's activities still produce negative impacts on the water supply, air quality and rural roads of the communities in the neighborhood. Though the local residents have not conveyed their discontent strongly and explicitly, when the pollution situation gets worse, higher pressure and potential protest will probably arise.

IV. SOCIAL IMPACT/ISSUES³ ASSESSMENT FINDINGS

1. Overview of typical proposed investments and studied enterprises

Proposed investment

The Project directly links to Pillar Sustainability - Pillar 2 in the World Bank Country Partnership Strategy for 2012–2016 which assists the government of Vietnam and other stakeholders to respond to the risks associated with the environment and natural resource degradation (World Bank, 2011). It provides support to two outcomes in the Country Partnership Strategy which fall under Pillar 1 and Pillar 2: (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 will also contribute to the Bank's 'twin goals' of eliminating extreme poverty and promoting shared prosperity through the generation of positive poverty reduction by comparatively lowering energy bills for consumers, reduction of air pollution and CO₂ emissions, and mitigation of climate change impacts.

Besides, the Project will create contributions to the government's objectives as set out in 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; and Vietnam Power Development Plan VII period 2010–2020, vision to 2030 (World Bank, 2015).

³ In this report "Social issues" mean: (i) the potential organizational impacts (positive and negative) and adaptation strategies of the concerned firm; (ii) 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 firms; (iii) the perception of men and women living in communities in surrounding areas of concerned firms, about the potential impacts (positive and negative) caused by the proposed investments. In broader sense, "social issues" are any issues that are not relating to physical, technical, economic and financial issues. There may be two kinds of social issues. First, *social issues within the firms* are problems relating to employment and occupational changes, working conditions, occupation and skills training, incentives and bonus, creating job and income increase opportunities, improving life quality of workers, recreation regime, occupational diseases, regular disease prevention and treatment, pregnancy policy for female workers, the care of female workers with infants, gender equality, democracy, providing opportunities for workers, especially for females to involve in leadership and management; minority employees, employment and social policies, social security for female workers and minority workers, social justice and equity, social insurance, health insurance, pension, social welfares for workers, labor security and safety, regular and case-by-case protection and support. Social issues within the firms are also relating to the worker's job satisfaction, organizational commitment and work attitudes. Second, *social issues in a community* are relations of firms with local authorities, social and mass organizations in the localities and local households, participation in social activities, social support in the localities, paying attention to recruiting local workers, involvement in poverty reduction and life quality improvement activities, programs for local people including firms' employees; providing basic social services in the locality like support to poor students, poor people, poor families, assistance to policy people, families, disables; contribution to environment protection, clean water, housing; contribution to ensuring gender equity, prevention of family violence and other social evils and transport accidents. Especially relating to ensuring socio-eco-environmental protection, to ensure the social cohesion, agreement and solidarity among different minority groups, developing mutual understanding relations, inclusive and sustainable development. The local people's perception, attitudes and behavior relating to the firms may be social issues to be considered.

Project components

Component 1: Energy Efficiency Investment Lending. This component consists of an energy efficiency lending program of US\$312 million over five years. PFIs will co-finance project activities, financing 20 percent of the loan to IEs; and (c) sub-borrowers (that is, IEs) will contribute 20 percent of investments as equity financing.

Component 2: Technical Assistance and Capacity Building for Improving Energy Efficiency. This TA and capacity-building component of US\$3 million will assist (a) the MoIT and relevant government agencies to implement voluntary agreements with relevant industries, improve incentives for industry to carry out energy efficiency investments, and develop mandatory energy efficiency standards and benchmarks in the energy-intensive responsible industries; (b) PFIs to improve their knowledge, experience, and expertise in identifying, appraising, and implementing energy efficiency lending projects in the industrial sector and business development to generate deal flows; and (c) IEs and energy efficiency service providers to develop bankable projects.

Overview of studied enterprises

Three enterprises operated are selected for the SIA including Viet Tri Paper Corporation (VIPC), Vietnam Paper Corporation (VINAPACO) and Vietnam Construction Materials Co., Ltd (VCM). All of the selected firms are from energy intensive industrial sectors, i.e cement, and pulp and paper. The cement industry is one of the energy-intensive consumption sectors, producing a huge volume of heat exhaust. The government has issued decision no.1488/QD-TTg approving the cement sector master plan for the period 2011 to 2020, vision to 2030, for which all new production lines with a capacity above 2,500 tons clinker per day must install waste heat recovery systems. According to the cement association, more than 40 factories will need to install a waste heat recovery system for power generation. For pulp and paper industry, efficient energy projects will aim to finance the installments of new efficient boilers for cogeneration (heat and electricity), replacement of motors, switching to biomass fuel technology, and chemical waste recovery for heating. The general information on three studied enterprises selected for the SIA is presented in the Table 7.

Table 7. Overview of studied firms

Firm	<i>Viet Tri Paper Corporation</i> VIPC	<i>Vietnam Paper Corporation</i> VINAPACO	<i>Vietnam Construction Materials Co., Ltd</i> VCM
Office (factory) location	Viet Tri City - Phu Tho Province Vietnam Chamber of Commerce and Industry	Phu Ninh district - Phu Tho Province Vietnam Chamber of Commerce and Industry	Tuyen Hoa district - Quang Binh province
Membership	Vietnam Paper Association print paper; Kraftline;	Vietnam Paper Association print paper; whitening paper pulp;	Vietnam Cement Association clinker; cement
Key product(s)	Duplect	tissue paper	
Total staff	598	1,025	336
<i>Total female staff</i>	231	425	32
<i>Female managing staff</i>	2	16	3
Staff with formal labour contract	598	1,428	336
<i>Female staff with formal labour contract</i>	231	420	32

2. Potential social impacts of the Project

2.1. Transform technology

Access to VEEIEs Project's loans enables participating firms to transform their existing technology towards more efficient energy use as well as increase their chance of using cleaner and more environment-friendly source of energy. Results from working with three firms during the assessment all suggest technological transformation as one of the foremost impacts the Project will bring about. Of the three studied firms, VIPC has already adopted energy efficiency technology which yields positive results and creates strong evidence for the firm to continue with their greater plan financed by World Bank's loan.

Since 2010, VIPC has transformed the steam furnace from using coal to timber wastes (e.g sawdust, wood chips, barks, branches and trees, etc disposed from households, firms and factories). Their two steam furnaces have been renovated to two new furnaces with capacity of 15 tons per hour each. Besides, VIPC has also built up a new furnace with capacity of 20 tons per hour using loan from the World Bank.

VINAPACO is now developing four plans of technology transformation towards saving energy and using clean energy. Due to their inherent production characteristics which use timber inputs, VINAPACO needs notably higher capacity steam furnace than that of VIPC. For instance, one VINAPACO's furnace has a capacity that is three times higher than VIPC's. Therefore, VINAPACO will keep using coal to burn their furnaces, which means that they will not be able to use clean materials such as biomass (like timber waste). Their technology transformation plan mainly deals with furnace burning technology and furnace's exhaust management in a manner that is more pleasant with the surrounding and working environment.

VCM intends to borrow money from the Project to finance their emission gathering subproject which will tentatively be operated in the second quarter of 2017. With additional funding the firm will be also able to implement another project on processing waste into energy used for production process. Both projects require the deployment of new modern technology with higher level of automation and more environment-friendly characteristics.

2.2. Reduce production cost

Technology transformation is believed to result in reduction in input material costs, energy consumption as well as energy loss. Therefore, while obtaining energy efficiency, firms can also benefit from reduced production and management costs.

VIPC has already shifted to use timber materials and timber wastes which widely prevail with much lower costs than that of coal. As a result, the firm record that they can notably cut down on their production costs. For the remaining firms, significant reduction in production costs is also foreseen. Currently, VINAPACO has to pay 1 million VNDs to manufacture 1 ton of paper. With the new energy saving project, the firm estimate that they can reduce the unit cost to 950,000 VNDs per ton. Meanwhile, at VCM, the firm predicts a decrease by 40 to 50 percent of electricity consumption (which can be equivalent up to 7.5 MW) once the energy efficiency subproject is underway. This will not only lead to reduction in their production costs but also lesson their dependence on the current electricity supply.

Box 1. Significant reduction of input costs

The new furnace system saves a lot of money. The coal-input burning system cost us 6 billion VND to produce 7,000 tons of paper every month. With the new one, we only have to pay .5 to 3.8 billion VNDs, a substantial decrease by roughly 40 percent. Besides, this new system needs less electricity and also less labour for operation. We can control the input supply now and do not need to depend on imports. We can take advantage of locally available materials. (*VIPC leader representatives*)

2.3. Improve working condition and physical well-being of workers

As highlighted by previous research, energy efficiency projects result in reducing the atmospheric emission of damaging substances such as sulphur oxides, nitrogen oxides, smoke and airborne suspended particulate matter. Therefore, the introduction of energy efficient technologies and practices can improve the health and life expectancy of factory workers, particularly by reducing the risks of upper respiratory illnesses and asthma attacks (UNIDO, 2011; and Dasgupta, Lucas and Wheeler, 1998). It is also found the improved situation of indoor environment, comfort and safety due to the application of high energy efficient technologies (Mills and Rosenfeld, 1996).

The installment of energy efficient technology will contribute to decrease energy consumption and increase the utilization of clean energy sources, which results in improvement in the working conditions for staff at participating firms. Observation at three site sites reveal that all firms have paid notable attention to ensuring labour safety and building a worker-friendly environment. For instance, at VIPC and VCM, there are large greenery areas which helps manage noise in manufacturing and air pollution both for firms' workers and nearby residential areas. Due to technology transformation towards energy savings and clean energy use, the working conditions at borrowing firms will be improved through workers' decreased exposure to toxic input materials as well as reduced production exhaust.

Specifically, at VIPC, as the firm shifts to use timber wastes instead of coal in their new furnace system which requires significantly higher level of automation, the volume of physical labour will be decreased. Emission from furnace's burning system is less harmful since exhaust in carbon monoxide or sulfur as well as solid waste is eliminated. Both VIPC's leaders and workers when interviewed express their optimism that the working condition will be certainly enhanced while workers' health is better protected due to mitigated occupational diseases such as skin- and respiratory-related ones.

At VINAPACO, the firm's management team believes that their existing steam furnace is able to meet Vietnam's standards and requirements on environment. Work safety and hygiene conditions are always guaranteed at furnace sites. The workers at these areas are fully granted benefits regarding exposure to heavy and intoxicated labour.

Interviewed workers generally show their satisfaction with their job, compensation package as well as working condition at their firms. Regarding working conditions, what most respondents reveal correspond with results of firms' interviews as well as our team's observation. That all three firms always pay significant attention to guaranteeing a worker-friendly environment is widely recognized and appreciated by

their workers. Additionally, staff who are directly exposed to production units report the receipt of benefits and compensation for intoxicated work as stipulated in existing Labour Law. No case of occupational diseases is identified among those who are interviewed.

Box 2. Better working and safety condition

Previously, my work was harder and more dangerous. Now, due to higher automation (around 80%), it is getting easier. In the past, the level of automation was only 60% and the working place was more dusty and harmful. Now the environment is cleaner because the firm has installed dust filter system. The pollution level must be reduced almost 90%. The new furnace is the most effective and cleanest. *(Male, 50 years old, worker at VIPC)*

My health is obviously improved when the firm changed to this current system that no longer uses coal. I used to have many problems with my throat. But now I no longer endure that. *(Male, 37 years old, worker at VIPC)*

Now respiratory symptoms are decreased. It is because the exhaust is decreased. We feel more comfortable and confident now when operating the new furnace system. *(Male, 40 years old, worker at VIPC)*

I think the working condition will be better and the pollution level will be reduced. *(Female, 38 years old, staff at VINAPACO)*

2.4. Improve air quality and better protect the environment

There have found significant and positive benefits of energy efficiency measures from reduced air pollution and emissions. Such energy efficiency measures which are aimed at reducing emissions will reduce health risks associated with air pollution for the local population (Cambridge Econometrics, 2015).

Access to the Project's loans in adopting energy efficient technology allows firms to reduce their energy use and/or promote their utilization of clean and renewable energy sources. Such transformation will not only contribute to reducing production costs and reliance on exhaustible sources of energy for implementing firms but also create positive impacts on enhancing the environment. The technological transformation towards energy efficiency and energy conservation will bring about considerable benefits through reduction in air pollution and Carbon Dioxide emissions, which in the end, contributes to lessening the impacts of climate change.

At VIPC, the replace of coal with timber wastes as inputs for the new furnace system will reduce the emission of harmful exhausts or solid wastes. As such, the operation of the new furnace system will contribute to enhancing the air quality of not only the firm site but also its neighborhood. Observation and interviews with people who live close to VIPC show no complaint of the firm's exhaust, any unpleasant odor or waste. Likewise, at VINAPACO the implementation of the new energy efficiency plan will enable the enterprise to better satisfy related environment requirements and conditions. Especially reduce the amount of pollution at the furnace units as well as neighboring areas.

Box 3. More environment-friendly technology

The new furnace system has significantly less emission and exhaust. The old one that used coal often released strong and unpleasant odour and dust into the

atmosphere. *(Male, 37 years old, worker at VIPC)*

The air now is becoming clear. There is not as much dust as before. *(Male, 40 years old, worker at VIPC)*

When the energy efficiency subproject is implemented, there will be many environmental benefits. Carbon Monoxide (CO) and sulfur will be diminished. *(Male, 29 years old, worker at VCM)*

2.5. Change organizational structure

New technology is entirely automatically operated, which reduces heavy labour and possibly, the number of workers. As confirmed by studied firms, there will be no job cut. In case when higher level of automation is obtained after the implementation of energy efficiency subproject resulting in decreased labour, workers will be relocated to other relevant units. As in the case of VINAPACO, with the Project's loan the firm will likely reduce the number of workers at the steam furnace as the automation level at that unit is increased. Redundant workers will be relocated to other departments within the corporation since these workers are rich in skills, experience and familiarity with the working conditions. Those who stay at current posts will receive training to supplement their skills and knowledge. New workers who need to be recruited to replace retired or relocated workers receive on-job training.

It is shown throughout the SIA that the number of existing workers whose jobs are significantly affected by the subproject will be not substantial. No remarkable change is predicted with regard to the studied firms' organizational structure, especially to the management body at the sites where the subproject directly affects.

Box 4. Minor change in current employment and organizational structure within participating enterprises

There are currently 7 workers running the furnace. In the past, 10 people were responsible for the old system. After the new one was built, 3 have been relocated to other units. The organization structure does not see any notable change. We still keep one head and one deputy head. *(VIPC leader representatives)*

There will not be any job cut. There will some relocation of workers occurring.

(VINAPACO leader representatives)

I anticipate that our workload will increase when the project is implemented. But the organization structure might stay the same *(Male, worker at VCM)*

2.6. Develop workers' skills and potentially raise workers' income

Previous studies find evidence showing workers in energy efficiency firms tend to receive better organized training. It is reported on greater demand for additional qualification requirements as well as for training among employees working with 'green businesses'. And skill development is found to have a positive relationship with job quality, higher income, better health, better career prospects and higher overall satisfaction (Cambridge Econometrics et al, 2011; Eurofound (2013))

The implementation of energy efficiency subprojects is widely believed to create opportunities for both existing and newly-recruited staff to improve their skills and capacity through training. While the higher level of automation is required, the necessity for skilled human resources to manage new technology is strongly

emphasized among all studied firms. Leaders of firms selected for the SIA have already built up their initial training plan including training course and on-the-job training for those who will take charge of operating the new system. Trainers for these courses are tentatively senior staff of the firms. Depending on the nature of the new energy efficient technology, firms will recruit external trainers to bring in new skills for their workers. For workers who need to relocate to other divisions, training opportunities are also available to equip them with the skills required for the new positions.

The direct impact of the Project on workers is not apparent. However, as firms save up their production costs, it is presumably that they will be able to allocate more funds to workers' salary and welfare. Raising the workers' income has been brought about by VIPC. Accordingly, with the loan from VEEIEs Project to finance a new furnace with higher capacity, VIPC forecast a 40-percent-reduction in their input cost. The enterprise believes that as they further reduce their production cost, VIPC will have greater financial resource to raise workers' income.

Box 5. Increased training opportunities

Workers received on-job-training when the firm shifted to operate the new furnace. Head of the unit and technical staff were in charge of the training. I had many experience with the old system so I easily adapted. *(Male, 40 years old, worker at VIPC)*

New workers will need 3 to 4 months of training when new technology is applied.

(VINAPACO leader representatives)

For new staff who have high school diploma, we will allow them to participate in 9-month training. For those we have vocational training degree, 3 month training is needed. *(VCM leader representative)*

I think we will have more training so as to have the capacity to run new technology. I will have exposure to new innovations. *(Male, worker at VCM)*

2.7. Create new employment and income opportunities

Most existing studies suggest a positive impact of investment in energy efficiency on employment. The findings indicate a tendency that energy efficiency sector employ more people per output unit than the others (Cambridge Econometrics, 2015). It is widely seen that energy efficiency measures create more jobs than new energy generation (Quirion, 2013 as cited in Cambridge Econometrics, 2015). Investment in energy efficiency is found to generate jobs in labour-intensive industries, such as construction (ACEEE, 2011). There is also evidence on the impact of energy efficiency subprojects and higher income. Such projects are found to improve firms' and industries' productivity, which translates into higher profit margins that can be redistributed as increased wages to employees and also invested in output expansion benefiting both supplier and consumer (UNIDO, 2011).

The SIA reveals that the energy efficiency subproject can contribute to creating more jobs, both in the short-run and long-run and increasing income sources for different actors. The employment and income impacts can be far-fetched stretching from local areas to remote regions. In the case of VIPC, the firm's technology transformation has created spill over impacts that are income and job creation for people in the mountainous areas including ethnic minorities. This is achieved through VIPC's

purchase of timber wastes from material sellers and collectors in local areas and six neighboring provinces. The use of clean inputs as well as the collection of furnace's exhaust for making fertilizers contributes to protecting the environment. Environmental protection is also obtained through the collection of timber wastes.

As for VCM's prediction, 35 to 40 more employees will be recruited for their subproject on emission gathering and treatment financed by World Bank's loan. Among these new workers, approximately 30 percent are female. As the firm's policy and commitment with local authorities, priority will be given to workers from the local labor force. Besides, there will be another supplementing water supply project which requires an additional of 12 new workers. Prior to the project operation, VCM will also need to hire 150 temporary workers for the project preparation, installment and construction.

Box 6. More employment and income opportunities

People in six Northern mountain provinces can collect timber and related byproducts and sell to our firm. Now we have created a wide trading network in multiple locations including Ha Giang, Yen Bai and Lao Cai. People who sell the timber to us via intermediaries are mostly ethnic minorities.

Our future plan is to build a brand new furnace instead of maintaining three different ones now. We will be able to double the current outputs. When this plan is realized, we will need 100 new laborers.

(VIP leader representatives)

We have heard about the energy efficiency subproject of VCM. We strongly support them as they plan to recruit local workers. *(Male, 51 years old, authority of Van Hoa Commune)*

We estimate that we need 35 to 40 more workers. Temporarily, we need 150 people for the construction period, for around 16 months. There will be a supporting work of improving the water supply system which needs 12 workers. Most of them will be selected among local workforce. We have committed to the locality that preference will be giving to local workers. *(VCM leader representatives)*

2.8. Impact on land acquisition

The energy efficiency subprojects are to be implemented on the existing premises of the three studied firms. No further land acquisition is required for the subproject's introduction and operation. Nevertheless, the initial construction stage of building new structures, for instance, a new furnace system and installment of energy efficiency equipment might have temporary impacts on part of the rural roads of the neighboring communities. In certain stages, the construction possibly affects the traffic flow, causes noise and releases increased dust. Therefore, it is necessary that participating firms anticipate the temporary relocation of households who live in close proximity and provide adequate support.

Box 7. No permanent land acquisition

The subproject will be built within our current area. We will not reclaim more land. No relocation or resettlement of the communities will take place. We do not need more land for the energy efficiency subproject. *(VCM leader representatives)*

2.9. Gender impacts

One of the most important objectives of the SIA is to to examine the positive and negative impacts with particular attention to gender as well as to learn about the perception of women and men on the potential impacts of the Project. During the field visits to three surveyed firms who are cement and paper manufacturers, the assessment team found the proportion of female staff is very low, for instance, at VCM, females account for less than 10% of the total staff. No female workers are assigned to work directly at energy-related units and very few hold positions where hard labor is required. Therefore, the energy efficiency subproject will not create direct impacts on female workers at these firms. However, since most of cleaning staff are females who have frequent contact with manufacturing and energy consumption units, this group will also benefit from improvement in working conditions at their firms as the risks associated with occupational diseases are likely to be diminished.

Energy efficiency subprojects when implemented can contribute to improving the surrounding environment and air quality through reducing the release of harmful emission. Such improvement will result in positive effects on communities living and working close to firms, especially women. Observation and interviews with men and women who reside in the neighborhood of studied firms reveal that women are more likely to be affected by firms' activities. They show a stronger tendency to stay at home or work on farms rather than have wage jobs far-away from their locality. In many interviews, women expressed their complaint over the exhaust from firms which adds up to their household chores and fuel up health risks. Therefore, that air pollution is decreased and the environment is better protected as a result of energy efficiency subprojects can positively address the concerns and receive strong support from women in the communities.

Box 8. Expectations for reduced emissions and pollution

We are deeply concerned of the firm [VCM]'s exhaust. It causes a lot of difficulties for our daily life. Villagers used to grow vegetables in our own garden but since VCM operates, we do not dare to eat our own vegetables. It is only for animals.

My wife has to clean house three or four times every day but it is still very dusty. Everyday trucks carry products from the firm to the ships in the river. They carry a lot of dust. No serious health problem is so far identified but I am very worried about the future if the firm does not take any measure to improve the pollution situation.
(Male, 62 years old, resident living close to VCM)

3. Capacity in mainstreaming social aspects in the Project's preparation and implementation

3.1. Readiness to participate in the VEEIEs Project

The Project is designed and introduced in a favorable and enabling context when the State Bank of Vietnam (SBV) has recently issued *Directive 03/CT-NHNN* on promoting "green credits" and environmental and social risk management in granting credit since March 2015. The Direction clearly sets out credit allocation activities of the banking sector needs to take into account the importance of preserving the environment, promoting the efficient use of natural resource and energy; improving environment quality and human health; and ensuring sustainable development.

Positive impacts not only economically but also socially and environmentally created by the implementation of the energy efficiency subprojects on participating firms are strongly underscored among studied firms as well as PBs. The wide acknowledgement of future benefits can be regarded as a catalyst that encourages enterprises to access to the PBs' loans and apply technological innovations. Surveyed PBs suppose that firms have more lending sources for financing technology transformation plans to promote product quality, efficiency and reputation. PBs grow their strong belief in multifaceted advantages that the Project can contribute to borrowing firms, employees as well as the society. As Vietnam is deeply integrating into the world economy, it is widely agreed among PBs that technology transformation towards saving energy and using clean energy is an increasingly popular demand of firms which is compatible with the global trend for socio-economic development and industrial growth. PBs believe in positive impacts from firms' access to the Project's loans on the environment and society such as energy saving which leads to saving production costs; natural resource protection; toxic emission reduction; working environment and health improvement for employees; and enabling and friendly condition establishment for the firms.

All PBs when interviewed are still keen on collaborating with the World Bank. Three surveyed PBs all show their firm support, willingness and tenacity to participate with World Bank in the Project. In their opinion, having access to more borrowing sources would enable them to offer more lending products and therefore, contribute to borrowing firms' growth and socio-economic development in general. PBs agree with the incorporation of social impact assessment into technology transformation projects towards saving energy and using clean energy. With previous relevant experience, they also express their willingness in implementing social impact assessment criteria in the process of advising, screening, doing appraisal, evaluating and monitoring borrowing firms.

Box 9. Favorable conditions for energy efficiency subprojects

At present, commercial banks are paying more attention to project with positive environmental and social impacts. The State Bank has required commercial banks to offer 'green credit' lending programs.

(Vietcombank representatives)

3.2. Challenges for social aspect mainstreaming

There is an obvious trend showing that firms have not prioritized social aspects over economic and financial benefits. During interviews with firms' leaders, the assessment team found that the decision to borrow money primarily stem from economic analysis of the management. While the leadership body is quite aware of potential impacts that the Project's implementation can contribute to the wellbeing of their workers and local communities, such aspects have not received notable weights during the firms' decision-making process. This finding is fortified through interviews with PBs' representatives. They believe that firms, especially Vietnamese ones, have not paid rigorous attention to technology transformation towards saving energy and using clean energy. The consideration of social aspects remains largely missing. The foremost concern of firms when borrowing loans to finance their production plans is that related to economic and financial aspect, which is how to ensure the efficient utilization of the loans and make a profit. Only when firms believe in certain economic outcomes of the loans will they borrow money from the banks.

Meanwhile, non-economic aspects, environmental or social impacts for instance, have not become priorities of firms at every investment decision, especially among Vietnamese and/or small and medium-size firms (SMEs).

Box 10. Consideration of social aspects among enterprises

Factors related to social aspects remain largely neglected. If such factors are required in the lending process, it might create barriers for potential enterprises. *(Male, Vietcombank representative)*

Enterprises might not be appealed to the VEEIEs Project. They might not want to borrow money. They only care about cost-effectiveness. Most corporations' leaders focus their attention on financial aspects of energy efficiency subprojects, for instance, the loan's interest rate and potential reduction in their future production cost. Social aspects are quite missing on firms' priorities.

(Female, SHB representative)

We, commercial banks, pay the greatest attention to financial aspect, i.e how to make profit. So do enterprises. There are an increasing number of enterprises in Vietnam are now investing in energy efficiency technology. However, the percentage remains small. Only large-scaled enterprises with big capital can do that. It is very difficult for small and medium sized enterprises to implement energy efficiency subprojects.

(Female, Vietinbank representative)

Surveyed firms as well as PBs widely report that the Project still lacks an appealing incentive framework to promote target firms' participation. Surveyed PBs suppose that the current loan package does not introduce effective provisions to incentivize firms meanwhile firms might encounter considerable financial risks when borrowing World Bank's money. World Bank's lending interest is anticipated to be equivalent to market rate. PBs express their concerns of World Bank's loans in foreign currency, which very likely incurs a significant risk. They will, in this way or another, shift the high risk to borrowing firms. Furthermore, borrowing firms will also need to follow additional procedures as set out by the World Bank. Meanwhile, both PBs and firms anticipate further requirements will be imposed on participating firms, especially with regard to the consideration of social aspects, which possibly places greater burden for borrowers. Therefore, without notable preferences to attract firms, the loan package will not create enough incentives for firms to access the Project to finance their technology transformation towards environment-friendly production. As for firms, the loan package, as perceived by interviewed PBs, does not offer notable incentives for introducing the lending programs. PBs show their concerns of potential financial risks when participating in the Project.

A strong regulatory framework on mainstreaming social aspects is missing. There has recently promulgated several legal documents for monitoring the implementation of social impact assessment's requirements. However, further efforts on enforcement are required. While SBV have issued the Direction 03/CT-NHNN on promoting "green credits" since 2015, commercial banks are still in need of specific guidance and a state's legal framework to fulfill requirements related to the screening, appraisal and monitoring social impacts of borrowing firms. Any international donors' standards when implemented in Vietnam shall comply with the national context as

well as Vietnamese Government's legislation. In such manner, PBs will not have their own authority to impose requirements or criteria on social aspects for borrowing firms. Introduction of irrelevant requirements will create barriers for firms' loan access and directly affect the attracting factors of the loan package among potential firms.

While surveyed PBs express their readiness to implement social impact assessment criteria in their respective process, the development of a set of criteria for the assessment poses significant concerns. The loan package targets firms of different sectors and industries with distinction in capacity, scale, characteristics, organizational structure as well as activities. As social impacts resulted from each sector and firm are dissimilar, the introduction of an identical set of criteria with limited flexibility for PBs when doing screening and appraisal of borrowing documents, or when assessing the social impacts of all sectors and firms will become rigid, unfeasible and ineffective.

4. Proposed adaption and mitigation measures

4.1. For participating enterprises:

Promote internal communication and community outreach

Overall, interviews workers in studied firms all suggest their optimism that energy efficiency projects when implemented at their firms will bring about better employment, higher income, improved working conditions as well as more training opportunities. There is no concern over job loss reported during the site visits. While support level towards the energy efficiency subproject appears very high among workers in all surveyed firms, the level of information on the nature and timing for implementation which has already been internally communicated varies from firm to firm. Workers at VIPC and VINAPACO seem to have little knowledge of the new furnace plans at their corporation. Information on the plan's scale, content, and timing for project implementation is relatively missing. Meanwhile, at VCM most interviewed workers are better informed of the firm's energy efficiency subproject in terms of the project's features, schedule and expected outcomes. The human resource plan, however, remains largely unknown to workers in all three firms.

Box 11. Lack of information on energy efficiency subproject

I do not know about my firm's expansion plan. Neither about the building of a new furnace or installment of new technology and equipment. *(Male, 50 years, worker at VIPC)*

I take charge of the research unit of the steam furnace system. There are mostly women working in my unit. I hear that there will be a new steam furnace but do not know about detailed information. *(Female, 38 years old, staff at VINAPACO)*

I never see any representative of VCM come meet with villagers. *(Male, 44 years old, resident living close to VCM)*

They [VCM] rarely interact with us. Last year they came to give some presents to the elders and children on some occasions.

(Female, 59 years old, resident living close to VCM)

I heard from others about that our enterprise is investing in an energy efficiency subproject. This is told among the leaders. I have not seen any official announcement.

(Male, 28 years old, worker at VCM)

The SIA reveals a general situation at studied firms that internal communication remains rather limited. Employees including workers who work directly at energy units show a lack of information with regard to the coming project. This situation requires further communication activities among participating firms to provide sufficient information to their workers on: (i) energy efficiency plan; (ii) change in employment and organizational structures; (iii) opportunity/requirements for capacity and skill training; and (iv) potential impacts of the project. A well-designed and timely communication plan will help mobilize the workers' support, ensure the project's progress and success. It will also contribute to preparing workers with information on any negative impacts based on which they can develop their own coping measures.

The SIA reveals that communication targeting local communities is largely missing. Local communities' knowledge on firms' energy efficiency subprojects is quite limited which is explained by their lack of information provided from the firm's end. This is not unpredicted as the future subprojects of energy savings will not require any community's land purchase nor directly address their prevailing concerns. However, as in the case of VCM where the energy efficiency subproject will also require a water sub-project which is believed by the firm's leaders to solve water pipeline issue with the local community, communication activity is also needed to provide information to the neighborhood so as to seek their support.

Apart from communication activities within participating enterprises, those target local communities also play a crucial role in ensuring the progress and achievement of energy efficiency subprojects. Firms need to provide relevant information on the project to the public in a timely, accurate and transparent manner. Any positive as well as negative impacts that can result from the project's implementation should be openly communicated to promote the trust, support and understanding of the local authorities and communities. Two-way communication channels should also be promoted to gather feedback from the communities so that any complaints arising from the project's implementation are promptly and effectively addressed.

Training for employees to enhance their adaptation

The SIA shows that while firms all intend to provide training to their staff to operate the new energy efficiency subprojects, they have not developed a clear and structured plan. As the technological transformation process will require updated skills and knowledge, it is necessary that participating firms conduct further analysis and invest in develop appropriate training program to their staff in order to maximize the benefits as well as mitigate adverse effects of the energy efficiency subprojects. The training need assessment should be carried out separately for newly-recruited and existing staff to identify the skills that are needed to implement energy efficiency subprojects. In case staff relocation is required due to labor reduction after energy efficiency system is in place, firms also need to pay attention to deliver training to enable this group to adapt to new positions.

4.2. For World Bank:

Create, disseminate and implement a criteria set and requirements on SIA

It is necessary that World Bank build up guiding provisions in official documents and consider the integration into the Project's Operational Manual on the implementation of social assessment criteria. These criteria will allow for the facilitation of PBs' review and assessment that supports the recently issued Directive No. 03/CT-NHNN of the State Bank of Vietnam. Besides, the set of criteria will also create the foundation for participating enterprises to monitor their response to possible positive and negative social impacts on the firms' performance, their workers, and neighboring communities. The incorporation of such criteria and requirements for participating firms is conducive to firms' more active engagement with local authorities and communities in the preparation and implementation of energy efficiency subproject.

The criteria set and requirements on SIA should be incorporated into the Manual on selection criteria for subproject that will be used by PBs which clearly specify the

roles and responsibilities of involved stakeholders. The Project is recommended to establish certain provisions for borrowing documents that require firms to demonstrate, for instance, their employment plan, proof of broad community support for the subproject, action plan the World Bank's loans can help them address prevailing concerns of local communities regarding firms' activities, and mitigation measures for any negative impacts resulting from the subproject's implementation.

Requirements on PBs to incorporate SIA as part of the appraisal and screening; and develop a criteria framework for social impact assessment with quantifiable indicators that are relevant in local context and with firms' capacity are also needed. Surveyed PBs all show their support in integrating criteria of social impact assessment into the process of screening, appraisal and evaluating loan effectiveness of borrowing firms. However, PB representatives also proposed that World Bank should develop indicators which are not only drawn upon international good practices but also relevant in the Vietnamese context and consistent with existing government's regulatory and policy framework. The criteria should not complicate the borrowing procedure. Due to distinction in different sectors and industries, criteria should be developed in a flexible manner and based on a framework proposed by the World Bank. The criteria should include specific indicators and quantifiable in order to facilitate borrowing firms in completing their reports as well as PBs in the process of screening, appraisal and monitoring. It is necessary that detailed guidelines on the application and integration of such criteria be arranged into the Project's Operational Manual and disseminated to PBs through official training at appropriate events and workshop. Implementing enterprises also need to be selected for dissemination and training activities to enable participating stakeholders to build up and strengthen their respective institutional and capacity arrangements for the Project.

Coordinate among stakeholders

It is important that the Bank collaborate with PBs to implement and promote communication programs on the benefits of technology transformation towards energy savings and clean energy use. Most firms, especially SMEs, still remain hesitant in accessing the loan package as they do not firmly believe in the benefits they can obtain from technology transformation. Thus, communication programs will have a crucial role to provide firms with sufficient information on the Project as well as to enhance their awareness of the importance on environment-friendly production, and of economic benefits resulted from saved energy and input materials. Communication programs should highlight that the objectives of technology transformation towards energy savings and clean energy use are to raise firm's productivity, promote product quality and most importantly, enhance firm's branding and reputation in a context of increasingly fierce competition. Financial benefits should be underscored in communication programs alongside environmental and social benefits. It is recommended that World Bank develop and implement communication programs in close collaboration with PBs, for instance, holding seminars, workshops and learning events on the Project for PBs, potential firms and other relevant agencies. Notably, the Ministry of Industry and Trade and the State Bank of Vietnam should also be involved to provide most recent updates on the government's policies and directions. Through such activities, related stakeholders including PBs can meet with each other to strengthen mutual understanding and experience sharing.

Introduce further incentives for participating entities

It is necessary that the Project create added values to the loan package. The Project should consider offering additional benefits for firms to encourage their participation in technology transformation towards energy saving so as to increase positive environmental and social impacts. Such benefits might come under such forms as preferential interest over part of the loan or staff training; assistance in borrowing document preparation, in appraisal procedure or auditing; consultancy or technical assistance; and training in undertaking community and internal consultation and social impact assessment. It is also suggested that the Project provide support for certain types of firms, for instance, those with female leaders. The content and form of increased values should be based on thorough studies on firms' capacity, needs and expectations through regular and continuous communication.

V. CONCLUSION

VEEIEs Project is expected to bring about positive economic and social benefits. Introduced at a good timing when global and national attention is increasingly paid to green growth, the Project will contribute to enhancing the awareness of participating financial institutions of this regard as well as to building their capacity in adjusting their business in a way that harmonizes with the society and environment.

The implementation of the energy efficiency subproject at participating enterprises in intensively industrial sectors will promote the use of renewable sources of energy, reduce energy consumption as well as better control the emissions as well as pollutants into the atmosphere. Economically, the Project will contribute to diminish firms' dependence on exhaustible energy sources, encourage energy savings and reduce production costs. From the perspective of workers and communities, the Project will be beneficial in terms of employment and income creation, training opportunities as well as working condition and welfare improvement. Energy efficiency subproject also represents opportunities improvement in air quality, living environment and health status of local communities. The Project's loans will provide participating enterprises with a scope to deliver improvements in competitiveness both in local and international markets.

The Project, however, still faces several major challenges that require to be addressed. Notably, the awareness of enterprises towards social issues remains quite limited, resulting in undue attention to incorporate social aspects in their operation plan and activities. Concerns of participating financial institutions over the Project's implementation mechanism should also be paid sufficient attention, especially over the social aspect mainstreaming in the process of reviewing, appraisal and monitoring subprojects. Last but not least, the hesitance of both enterprises and commercial banks in terms of an appropriate incentive framework also needs to be taken into account.

To overcome the challenges, it is strongly recommended that the Project implement a criteria set of assessing social impact to incorporate into the screening, appraisal and monitoring stages. The criteria set should be measurable, relevant to the Vietnamese context and integrated into the Operation Manual. The Project should also consider the introduction of further incentives to both financial institutions and participating enterprises to add more values to the loan package. For industrial enterprises, support to promote communication activities both internally and with local communities is necessary. Training to workers based on their need assessment as well as new skills required for transformation towards energy efficiency is also of very crucial role.

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ANNEX

A. Overview of in-depth interviews

Table A. The summary of interviewed informants

Respondent	Number of interviews
<i>Firm representatives</i>	3
<i>Workers</i>	15
<i>PBs</i>	3
<i>Local people</i>	14

B. IN-DEPTH INTERVIEW GUIDELINES

1. Firm interviews

PART I. GENERAL INFORMATION

A. ENTERPRISE

- Name:
- Address:
- Phone:
- Fax:
- Email:
- Has Enterprise become a member of the Chamber of Commerce and Industry of Vietnam (VCCI) not? Yes No
- Has Enterprise become a member of any other association?
 - If Yes, please write the name of the association:

B. RESPONDENT

- Name:
- Position:
- Working time in business:

PART II. OVERVIEW OF ENTERPRISE ACTIVITIES

- Year of establishment (Years of formal business registration):
- Time of operation:
- Type of enterprise:

Private enterprise	
Joint Venture enterprise	
Limited liability company	
Jont stock company	
Jont stock company (minority state capital)	

Jont stock company (majority state capital (<100%))	
Other	

- Enterprise operates mainly in the public sector:
Please list **three** main product or service that the enterprise of production or supply (based on percentage of revenue):
5. Please complete list of the situation of the enterprise personnel (as at July 07, 2015) attached to this questionnaire.
6. Please provide an organizational chart of the enterprise or provide a photocopy of an organizational chart which clearly some details about the number of people, the percentage of women in the leader position and each committee / sector.

PART III. HUMAN RESOURCE INFORMATION

STATISTICS OF HUMAN RESOURCE (By JULY, 2015)

Please provide information about the number of officers / employees of the enterprises on the questions from 1 to 7

1 Total number of officers/ employees	Male <input type="text"/>	Female <input type="text"/>	
2 Total number of leaders/ managers	Female <input type="text"/>		
3 Total number of ethnic minorities	Female <input type="text"/>		
4 Full-time (from 40 hours/week or more)	Male <input type="text"/>	Female <input type="text"/>	
5 Having signed formal labor contract in writing	Male <input type="text"/>	Female <input type="text"/>	
6 Education	Total	Male	Female
Post graduated	<input type="text"/>	<input type="text"/>	<input type="text"/>
University / College	<input type="text"/>	<input type="text"/>	<input type="text"/>
High School	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>	<input type="text"/>
7 Technical Expertise	Total	Male	Female
High level	<input type="text"/>	<input type="text"/>	<input type="text"/>
Medium level	<input type="text"/>	<input type="text"/>	<input type="text"/>
Primary level	<input type="text"/>	<input type="text"/>	<input type="text"/>
Simple level	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>	<input type="text"/>

2. Worker interview

Part 1. Questionnaire for workers

A. GENERAL INFORMATION OF RESPONDENT

- 1 Name:
- 2 Sex:
- 3 Year of birth:
- 4 Country:
- 5 Ethnic:
- 6 Phone:
- 7 Graduated Post-graduate
(Mark X) University/College
 High School
 Other

- 8 Technical Expertise: High level
(Mark X) Medium level
 Primary level
 Simple level
 Other

B. INFORMATION ON THE JOB

- 1 Year started working at the enterprise:
- 2 Current position:
- 3 Year started working in current position:
- 4 Previous job positions in enterprise (if any):

Part 2. Interview guidelines

A. GENERAL INFORMATION

- 1. Full Name:
- 2. Sex:
- 3. Date of Birth:
- 4. Ethnicity:
- 5. Education:
- 6. Technical Expertise:
- 7. Marital status:

8. Other information:

B. INFORMATION ON THE JOB

1. Time started to work in enterprise:
2. Previous work:
3. Time began to work in energy department:
4. Attending training courses on the use of energy
5. Position:
6. The remuneration policy, including: Salary, bonuses and other incentives
7. Health issues in relation to current job:

C. ASSESSMENT OF WORKING CONDITIONS

1. Working conditions: light, heat, air, sanitation, noise, etc.
2. The work protection regime / labor insurance
3. The training and capacity development
4. Assess the level of satisfaction with current job:
5. Assess the level of satisfaction with working conditions:

D. RECOMMENDATIONS ON ENERGY TECHNOLOGY INNOVATION PROJECT IN THE ENTERPRISE

1. Opinion on the status of the enterprise's energy technology and use: level of savings, of cleanliness.
2. Information, knowledge, and attitudes about the project /plans saving energy technology innovation and use of clean energy in the enterprise:
3. The possible/potential positive and negative impacts of the enterprise's project/plans. Possible response to these impacts.
4. The initiatives and recommendations of the enterprise's energy project/plans and/or related issues.

C. OTHER RECOMMENDATIONS

1. Plan or intention of work/job: any changes?
2. The suggestions and recommendations
3. Any questions?

THANK YOU VERY MUCH FOR YOUR CO-OPERATION!

3. Local authority/local community interview

1. Have you heard about any energy efficiency subproject in your locality?
2. Have you seen any firm in your locality that uses **inefficient** energy technology and causes environmental pollution?
 - a. If yes, which firm is that? What do you think about the environmental impacts of that/those firm(s)?
3. Do you think that firms in your locality should transform their technology towards energy savings and clean energy use? Why?
4. How such firms impact local communities, for instance, recruit more local workers or contribute to local communities?
5. How does your locality collaborate with these firms?
6. What is your recommendations for promoting firms' social responsibility regarding environmental protection? And for promoting firms' contribution to local socio-economic development?
7. Which positive aspects of firms should be promoted?
8. Which negative aspects of firms should be managed?
9. What are the advantages and disadvantages as well as experience of local agencies (authorities and mass organizations) in collaborating with local firms to promote local socio-economic development?
10. If local firms borrow money from banks to implement energy efficiency subprojects, what will be the impacts on local people (on such aspects as employment, labour, income, health, gender equality, environment and society)?
11. Do you have further opinions on the abovementioned issues or any other issues? Please specify.

Thank you very much for your cooperation!

4. Participating bank (PB) interview

1. In general, what are the advantages and disadvantages in implementing the VEEIEs Project (the Project) to lend Vietnamese firms in transforming their technology towards energy savings and clean energy use?
2. Please specify advantages and disadvantages for Participating Banks (PBs).
3. Please specify advantages and disadvantages for Vietnamese firms.
4. What will be the social impacts (positive and negative) of the technology transformation towards energy savings and clean energy use at participating firms on: firm, employees, working conditions, and external environment outside the participating firm?
5. Which requirements/conditions should be set for the Project's loans to ensure borrowing firms' efficiency concerning social impacts?
6. From PB's viewpoint, which requirements/conditions should be set for the Project's loans in each of the following aspects:
 - Worker allocation
 - Workers' welfare after implementing the energy efficiency subproject
 - Change in the health of workers and their family (spouse and children)
 - Workers' participation in firm's decision-making process: role of unions
 - Firm's social responsibility
 - The status of complaint and grievance towards participating firms prior to and after the implementation of energy efficiency subproject
7. Do you have further opinions on the abovementioned issues or any other issues? Please specify.

Thank you very much for your cooperation!

C. Review of media on people's protest and firms' response

Box A. Rising protests against industrial plants' pollution

Media has recently reported many cases of complaints and protests of the people towards negative impacts resulting from firms' activities.

Vietnamnet in April 2015 broadcast a demonstration of many people on National Highway 1A at Tuy Phong district, Binh Thuan province to express their anger over polluted emission from Vinh Tan 2 firm, a thermal power plant in the area. The demonstration caused traffic jam for many hours on the highway. In response to the people's action, EVN 3, investor of the plant had to admit their pollution act and will cease the transportation of the plant's waste for 10 days to improve the situation. Vinh Tan 2 when operated on trial generated 1.4 billion kWh. EVN3 emphasized that they used coals from local mines in Quang Ninh and adopted traditional thermal power technology with advanced emission and waste treatment. However, in reality, their emission still caused pollution for neighboring communities and environment. Only when the people became aggressive did the firm start to find a

solution, which incurs higher costs and seriously deteriorates their reputation. Source:
(Source: *Le Huan*, 2015)