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Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards

Technical Report

Based on the work of

Mr. Hoang Viet

Date: 15 September 2014

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Industrial Energy Efficiency (IEE) Project in Vietnam is being jointly implemented by UNIDO and the Ministry of Industry and Trade (MOIT). Project implementation began in mid-July 2011 and is planned to finish by end-March 2015. The Project aims at assisting industries to adopt a systems approach in improving energy efficiency at the system levels and the new ISO 50001 energy management standard. Through adoption of energy management standards, energy management practices will be integrated into the management cycle and realize energy efficiency improvements on a continuous basis.

The project has primarily focused on capacity building of stakeholders that include industrial enterprises, equipment suppliers, distributors, engineering/energy service companies and government planners. Energy efficiency improvements on steam and compressed air systems based on the system optimization approach are expected to lead to higher energy savings (15 to 30% for compressed air systems and 10 to 15% for steam systems). The targeted sectors are: food, textiles, rubber and pulp & paper. The project has also trained national experts in energy management and delivered capacity building to industries for the introduction of ISO 50001. Compliance with this new ISO Standard will provide the requisite incentives for continuous attention to improved end-use efficiency.

It is expected that the project will contribute substantially towards meeting Vietnam's goals of improving energy efficiency in the industry as envisioned in the National Energy Efficiency Program. The expected outcomes of the project are:

Outcome 1: i) A policy instrument (compatible with ISO 50001) in place delivering sustainable improvements in EE in industries; (ii) A cadre of EE professionals within industrial facilities, consultants and suppliers is created to provide services on energy management and optimize industrial systems

Outcome 2: Increased adoption of ISO 50001 energy management standards and system optimization projects by industry

Outcome 3: Increased financial capacity support for industrial EE initiatives

In order to realize the above mentioned outcomes, the project is designed with the three following components:

Component 1: National Program to Build Capacity on Energy Management and System Optimization

Component 2: Implementation of Energy Management and System Optimization Demonstration Project

Component 3: Financial Capacity Development to Support Energy Efficiency Projects in Industry

The below table outlines how the technical project components relate to the planned outputs and expected outcomes:

TABLE - PROJECT COMPONENTS AND EXPECTED OUTPUTS

Project Component	Expected Outputs	Expected Outcomes
1. National Program to Build Capacity on Energy Management and System Optimization	**Output 1.1** Training materials, software and tools developed **Output 1.2** National awareness campaign to promote industrial energy management. **Output 1.3** A peer-to-peer network developed between industrial enterprises **Output 1.4** Trained national experts and factory personnel on energy management. **Output 1.5** Trained national experts, factory personnel and vendors on systems optimization	A policy instrument (compatible with ISO 50001) in place delivering sustainable improvements in EE in industries. A cadre of EE professionals within industrial facilities, consultants and suppliers is created to provide services on energy management and optimize industrial systems.
2. Implementation of Energy Management and System Optimization Demonstration Projects	**Output 2.1** Energy management projects implemented. **Output 2.2** Documented industry demonstration projects. **Output 2.3** Recognition program developed	Increased adoption of ISO 50001 energy management standards and system optimization projects by industry
3. Financial Capacity Development to Support Energy Efficiency Projects in Industry	**Output 3.1** Training materials developed and harmonized project evaluation criteria. **Output 3.2** Industrial enterprises trained to enhance financial capacity to develop bankable projects	Increased financial capacity support for industrial EE initiatives

To achieve **Outcome 2** – "Increased adoption of energy management system (EnMS) and system optimization (SO) projects by industry" as impacts of activities undertaken in Component 1, the project has carried out a number of activities aimed at increasing financial capacity support for industrial EE&EC initiatives (**Outcome 3**), including EnMS and SO projects, such as: provision of training on bankable projects' development for industry personnel & national experts; provision of training on financial analysis of EE&EC projects for national experts and staff of some financial institution involved in EE&EC financing services; and made recommendations on harmonized project evaluation criteria.

In order to realize **Output 3.1** related to harmonized project evaluation criteria, a report to review/assess the existing financial sources supporting energy efficiency investment projects such as the Global Climate Partnership Fund (GCPF), European Investment Bank's Fund, Vietnam Environmental Protection Fund, Loan Guarantee Fund etc., has been comprehensively prepared.

Based on the report's findings, a package of recommendations on harmonized project evaluation criteria such as the lending interest rate, discount rate, equity injection ratio, equity injection schedule, collateral value, loan/collateral ratio and grace period has been compiled.

Thus, this report, and its subsequent recommendations, has been presented to the Government of Vietnam and bank/financial institution's representatives in order to encourage harmonization of financial criteria within financial/banking institutions. It is expected that these will be used as a basis/principle for the MOIT in negotiating and working with international donors and banks in order to achieve positive improvments to evaluation criteria for EE&EC projects in the coming years.

INTRODUCTION

Improving energy efficiency in industry is one of the most cost-effective measures to help supply-constrained developing and emerging countries meet their increasing energy demand and loosen the link between economic growth and environmental degradation, such as climate change.

The final goal of the UNIDO Industrial Energy Efficiency (IEE) Programme is to effect sustained energy management and efficiency practices in industry of developing countries and emerging economies in order to reduce the environmental pressure of economic growth while increasing productivity, helping to generate economic growth, creates jobs and alleviates poverty.

UNIDO pursues such goals through projects aimed to deliver comprehensive capacity building at the institutional level, in the market and within enterprises on energy management and energy system optimization. UNIDO projects also provide technical assistance to strengthen existing institutional, policy and regulatory frameworks through the development of policy programs, legislation and normative instruments that promote and support permanent integration of energy management and efficiency practices in industry corporate culture. Depending on the national context, the implementation of demonstration projects is supported through the provision of energy efficiency investment specific technical assistance.

OBJECTIVES OF THE ASSIGNMENT

The overall objective of this assignment is to review available financial sources supporting energy efficiency investment projects and make recommendations on evaluation criteria harmonization within selected financial institutions. Mr. Hoang Viet is recruited to be the National Financial Consultant who is responsible for implementing the following key tasks:

1. Review the existing financial sources supporting energy efficiency investment projects such as the Vietnam Environmental Protection Fund, Vietinbank, etc.;
2. Develop project evaluation criteria to be used by financial institutions to better rate energy efficiency and systems optimization projects. The criteria will take into account life cycle cost of efficient technologies, best practices, and monetary savings generated by energy efficiency projects as a positive cash flow for the industry. These criteria shall incorporate the existing criteria into a streamlined and harmonized approach. The report shall also include the background, criteria development process, and rationale of criteria set and its explanation;
3. Organize and lead, in coordination with the PMU, a Working Group Meeting, consisting of representatives from relevant government ministries and financial institutions, to provide inputs to the draft recommendations report. Discussions should include potential improvements, the applicability of the recommendations, and the willingness/ability of the FIs to adopt these recommendations.

This assignment has been conducted from 9 July -30 September 2014. This report provides information on the tasks, deliverables as required.

LIST OF ACRONYMS

Acronyms	Meaning
AMC	Asset Management Companies
EE	Energy efficiency
EC	Energy Conservation
EESP	Energy Efficiency Service Providers
EIB	European Investment Bank
ESCO	Energy Service Company
FI	Financial Institution
FTP	Fund Transfer Pricing
GCPF	Global Climate Partnership Fund
GCTF	Green Credit Trust Fund
GEF	Global Environmental Facility
IFC	International Finance Corporation
IRR	Internal Rate of Return
JICA	Japan International Corporation Agency
KPI	Key Performance Index
LGF	Loan Guarantee Fund
M & E	Machineries and Equipments
MOIT	Ministry of Industry and Trade
MOST	Ministry of Science and Technology
NPL	Non Performing Loan
NPV	Net Present Value
PECSME	PROJECT for Promoting Energy Conservation in Small and Medium Enterprises
PBP	Payback Period
RE	Renewable Energy
ROE	Return on Equity
SECO	Swiss State Secretariat for Economic Affairs
SME	Small and Medium Enterprise
UNDP	United Nations Development Programme
VEPF	Vietnam Environment Protection Fund
VNCPC	Vietnam Cleaner Production Center
WACC	Weighted Average Cost of Capital
WB	World Bank

1. REVIEW THE EXISTING FINANCIAL SOURCES SUPPORTING ENERGY EFFICIENCY INVESTMENT PROJECTS

1.1 GLOBAL CLIMATE PARTNERSHIP FUND (GCPF)

(i) Source of fund: GCPF

(ii) Fund manager: Deutsche Bank, Germany.

(iii) Borrower: VietinBank ONLY

(iv) Fund category: International, private, 02 step loan

(v) Fund details:

- Fund amount: USD 25 million
- Tenor: 7 years
- Drawn-down currency: USD
- Lending currency: USD, VND

(vi) Final beneficiaries:

The Borrower shall apply and shall ensure that all amounts borrowed by it under the Facility are applied towards the financing of EE & RE Sub-Loans. However, the Borrower shall not be entitled to apply any amounts borrowed by it under the Facility towards the financing of RE Project Sub-Loans without the prior written consent of the Lender.

(vii) Evaluation criteria:

- **Technical criteria**: (refer to Annex A for more details)

- In general, the fund can be applied to both EE & RE projects and there is no limitation regarding selected industries. Technically, EE projects are categorized into 2 main types: standardized and non-standardized, comprehensive ones which require different energy saving calculation methods/approaches
- For EE projects, a threshold of 20% energy or CO_2 savings is mandatory.
- For RE projects, only small RE projects are accepted.

- **Financial criteria:**

- Total project investment does not exceed USD 10,000,000.
- Maximum GCPF financing amount per project does not exceed USD 3,500,000.
- Other financial criteria are as per VietinBank's current regulations and policy (refer to Annex B for more details). Some basic requirements can be described as below:
  + *Equity injection ratio:* in order to reinforce the project developer's responsibility/obligation, a minimum equity injection is required. This ratio may case-by-case vary due to many factors such as project's risk, market risk, project developer's capacity and creditability, loan tenor, etc. Currently, this minimum ratio is set at **30%** of total project's investment cost.

+ *Collateral requirement:* In principle, VietinBank offer (full) collateral and non–collateral loans which is based on clients' credit ranking and client's credit history and relationship with the bank. Specifically, VietinBank's policy is not to accept non–collateral loans for newly–established clients.

  In addition, VietinBank accept a variety of collateral such as highly liquid (deposit, gold, etc.), valuable paper (share, bond, etc.), third party's guarantee, real estate, land use rights, workshops, machinery & equipment, receivables which are independently evaluated to finally determine collateral value and loan amount accordingly.

+ *Payback period:* VietinBank only request maximum 10 year corporate loan tenor. As a result, payback period is inferred to be less than 10 years.

+ *Financial performance and viability:* VietinBank request minimum ROE ratio (5%) and zero bad debt.

+ *Insurance coverage for asset financed by VietinBank's project loan*: obligatory.

(viii) Performance: (Details are as Annex C)

- Of 28 projects having officially/unofficially applied for loans, 4 projects obtained financing.
- The 4 above-mentioned projects are VietinBank's existing clients with high credit ratings and sound financial reports, as well as positive market potential/reputation.
- *Total disbursement:* approximately USD 11 million with preferential borrowing interest rate (2% lower than current ceiling long – term banking lending interest rate).
- Total undisbursed amount: approximately USD 14 million
- *No bad debt or late repayment*

(ix) Findings/issues:

Findings/ Issues	Difficulties	Rationale
Finding 1: A number of both new and existing clients with huge potential EE & EC investment do not need bank loans.	▪ A number of clients, especially large and financially strong corporations such as CARLSBERG, Vinamilk, SABECO, Hoa phat, Hoang Thach cement have huge and real demand for EE & EC investment but they normally use owner's equity instead of bank	▪ EE & EC market is believed to have a huge potential due to high–energy consuming industries and recent government's energy policy and enforcement. ▪ However, from bank's perspective, EE&EC bank loan volume is limited due to mismatches between clients' real loan demand and bank's capacity and risk-return appetite.

	loan. ▪ Even in the case that clients do not use owner's equity, they request a bank loan at well-below the bank's cost of fund or seek alternative forms of financing, such as private equity offered by investment banking partners.	
Finding 2: A number of existing clients' potentially eligible EE projects are not bankable.	▪ From bank's financial perspective, a number of projects are perceived as high risk.	▪ New business areas such as biomass, wind power, hydro power are considered by banks as high market risk and policy risk. ▪ These areas need governmental support such as taxes, pricing subsidies to be more bankable.
	▪ From bank's balance sheet/collateral financing, a number of potential EE/EC projects do not generate enough cash for repayment obligations. This is mainly due to balance sheets' market, business, financial and policy risk.	▪ In Vietnam, banks are more inclined to apply collateral and/or balance sheet financing instead of pure project financing; EE/EC project is no exception. Admittedly, if banks are not satisfied with overall enterprises' capacity in terms of normal business performance and all possible financial repayment sources, EE/EC cash flow included, banks are inclined to be negligent to EE concepts/purposes. On the contrary, if banks are already satisfied with normal project evaluation criteria and results, they shall make loan approval decision without considering EE savings. ▪ Under the bank's current internal project evaluation guidelines, cash flow from EE, particularly for comprehensive projects, is not counted in the cash projection model. This means that the overall project less feasible and EE cash flow secondary/inferior to normal cash flow.

Finding 3: A number of clients, especially newly-established clients and/or new clients with potentially eligible EE projects face unfavourable financial evaluation.	▪ *<u>Unsatisfactory bank's credit rating which results in:</u>* ✓ Higher/non - preferential borrowing interest rate ✓ Higher **discount rate**	▪ Generally, new/newly-established clients do not have credit history and business prestige, or full & liquid collateral. Consequently, new/newly-established clients normally bear low credit ratings which leads to unsatisfactory borrowing terms and conditions. To the worst extreme, under Vietinbank's internal credit rating system, clients' loan applications with a credit rating lower than B is rejected (See Annex B for more information about Vietinbank's credit rating spectrum). ▪ As for Loan pricing, in principle, the lower the credit rating the higher the applied borrowing interest rate. Under current regulation, only clients with upwards of an AA credit rating benefit from a lower interest rate (up to 1% lower); EE projects rarely reach an AA rating. In addition, once perceived as higher risk, the borrowing interest rate tends to be higher to cover additional risk. ▪ Regarding the **discount rate**, banks are inclined to be more conservative due to the lack of creditability with the bank. This makes projects seems less feasible, which in turn does not facilitate the bank loan approval. ▪ Regarding both loan pricing and **discount rate:** ✓ In practice, a majority of EE project financing is characterized by a medium payback period ranging mainly from 12 to 36 months. In principle, medium term loans are less exposed to interest rate risk than long term ones. ✓ However, banks do not clearly define the **discount rate** and interest rate separately among different tenors, particularly between medium (12-60 months) and long term (> 60 months). ✓ Taking a conservative view, the bank is more inclined to apply a long tenor rate to EE

		projects which is 1-2% higher than that of a medium tenor rate.
	▪ *Stricter Collaterals requirement:* ✓ For newly-established/new clients, a non-collateral basis is impossible. ✓ Availability of highly liquid collateral such as Cash, Deposit, (Bank) Guarantee as well as marketable real estate is limited. ✓ Machinery and equipment's value (M&E) is priced with a high level of conservativeness. ✓ Loan amount to collateral value ratio is unsatisfactory for M&E.	▪ Under the bank's current regulation, even if a bank loan is approved, newly-established clients are obliged to fully/partially arrange collateral. Meanwhile, for new clients it is almost impossible to obtain non–collateral loans because their credit rating needs to be equal or higher than A. ▪ Furthermore, banks always prefer liquid assets such as deposits and real estate due to its marketability. However, clients, particularly SMEs, generally have a shortage of collateral due to the fact that collateral tends to be an individual's assets rather than an enterprises' and in many cases, collateral, if any, is shared amongst many banks already. In many cases, the only collateral is the project's receivables, commodities and/or M&E which are not existent upon loan approval and disbursement. ▪ Collateral value: Due to the stagnant economic situation and a heightened concern for collateral treatment in case of default, M&E is underpriced by banks and (independent) Asset Management Companies (AMC). ▪ Loan Amount to Collateral value ratio: Furthermore, due to bank' conservative view of the economic slowdown and recovery, Loan amount/Collateral value ratio is set very low at a maximum of 50% (credit rating A or above) for top clients, while this ratio may be as low as 20% for BBB credit rating receivers. In other words, newly-established/new client and hardly able to borrow up to 40% of M&E value. ▪ Taking a/m dual effect into account, Loan amount collateralized by M&E is unsatisfactory to a huge number of clients, especially ones with M&E as their only collateral.

	▪ *Unsatisfactory equity injection ratio requirement* ✓ Higher ratio for newly-established clients. ✓ The longer the loan is, the higher the ratio.	▪ In theory, the current minimum equity injection ratio for all types of project financing is 30%; for technical improvement and manufacturing optimization projects, the minimum threshold may be reduced to 15%. ▪ In practice, banks recently tend to be more risk adverse and request a higher equity injection ratio of up to 50% of total investment cost. Furthermore, under current regulations, whether or not EE/EC projects are categorized as technical improvement/manufacturing optimizations is still vague. *Note: Technical improvement/manufacturing optimization projects are currently defined as operating projects which (i) adopt new technical advances, implementation/deployment method/solutions in order to rationalize obstacles, optimize manufacturing capacity, improve product quality, and/or decrease selling price and (ii) have investment cost under 5% of remaining total fixed asset value recognized in latest financial reports but not exceeding VND 10 billion*
Finding 4: There are no EE projects from ESCOs in the bankable list	▪ Difficulties under Findings No.1, 2, 3 can be applied to Finding 4. ▪ In addition, from the bank's perspective, financing ESCOs based on ESCO's cash flow projection seems to be an unprecedented concept	▪ In terms of obtaining a bank loan, a number of ESCOs share similar obstacles with newly-established enterprises. Admittedly, the ESCO business model is that ESCOs mainly provide consulting services to clients, thus ESCOs mainly own intangible assets such as property rights and know-how instead of tangible assets such as real estate, M&E, etc. As a consequence, collateral is a dilemma for ESCOs for obtaining bank loan. Moreover, the fact that most ESCOs have developed from governmental research agencies that do not have much business and banking experience also make ESCOs less attractive in banks' eyes. ▪ On the other hand, it is predicted that a number of ESCOs operating on the EPC (Energy

		Performance Contract) business model is a new concept to banks. Admittedly, it is not currently transparent and convincing for banks to consider/evaluate cash flow projections from EPC as substantial ESCO's normal income and then offer a loan accordingly.
<u>Finding 5:</u> No standardized investment opportunity found and materialized	▪ From banks' perspective, standardized investment with small loan amount and high management cost means minuscule bank profit. ▪ Vietinbank' internal guidelines for project financing evaluation are not separately available for standardized EE projects. This makes financing in favour of standardized EE projects unrecognised and immaterialized. ▪ Banks are not familiar with appraising and marketing EE projects. ▪ Financing a bundle of projects with portfolio/risk-return perspective is unprecedented.	▪ All things equal, the banks tend to provide loans to big projects with the aim of KPI accomplishment regarding revenue/profit. Specifically, an average project's loan size is USD 1 million, whereas an EE loan size may be as low as some USD thousands. Also, high management fees in terms of workload and time used to design, publicize and implement internal guidelines, evaluate projects, both technical and financial criteria, from branch to Head office as well as from banks to GCPF is recognized. ▪ EE concept is secondary to market/business/ revenue/profit/risk concept. ▪ Project bundling seems to be more reasonable for investment banking, whereas VietinBank is a commercial bank.
Finding 6: Stagnant disbursement observed since 2012.	▪ Partially due to the Findings 1 to 5. ▪ Due to the SBV's policy in terms of interest rate reduction, the preferential margin between EE projects and normal ones seems to be insignificant so there is no additional	▪ From 2012 backward, the interest rate rocketed with medium long term interest rates ranging from 18-22 %. Due to cheap sources of funds that international organizations/institutions offered VietinBank, there was a preferential margin (1-2% per annum) that VietinBank could offer sub-borrowers/project developers under VietinBank' international credit programs. In addition, VietinBank also encouraged EE loans

	benefit for EE clients or bank's branches. ▪ Shortage of technically potential projects from VietinBank's current portfolio.	by decreasing FTP (Fund Transfer Pricing) for branches (1-2% per annum). To a large extent, this financial incentive encourages VietinBank branches to support clients to invest in EE projects. ▪ However, in parallel with the SBV's determination to strongly decrease the base interest rate, the margin and incentives mentioned above become almost negligible resulting in number of bankable projects staying stagnant. ▪ The GCPF requests that banks submit independent energy audits for prior technical approval. Due to the lack of technical expertise, banks resort to energy auditors to identify eligible projects from the bank's existing portfolio, as well as from outside source such as the IFC, ESCOs and/or energy auditors. However, despite the IFC' support including site visits to a number of the bank's existing clients, eligibility short lists were limited due to investor's investment reluctance in times of economic difficulty. On the other hand, a number of projects referred to the bank by auditors and/or the IFC are not considered financially eligible.

1.2 EUROPEAN INVESTMENT BANK (EIB)

(i) Source of fund: European Investment Bank (EIB)

(ii) Fund manager: EIB

(iii) Borrower: VietinBank, Vietnam Development Bank, BIDV, Agribank.

(iv) Fund category: International, private, 02 step loan.

(v) Fund details:

- Facility amount: Total facility of EUR 150 million will be shared among 4 banks on a first-come-first-served basis.
- Tenor: 15 years
- Drawn-down currency: USD, EUR
- Lending currency: VND, USD

(vi) Final beneficiaries:

The Projects are to be carried out by public or private sector companies (each a **"Final Beneficiary"**) meeting the required eligibility criteria namely to promote renewable energy, energy efficiency and other climate change mitigation and adaptation measures.

(vii) Evaluation criteria:

- **Technical criteria**: (refer to Annex A for more details)
  - In general, the fund can be applied to both EE & RE projects and there is no finding regarding selected industries. However, they have to be in full compliance with EU legislation.
  - For EE projects, general EE eligibility criteria apply - energy savings of 20% or more, compared to conditions before the project is implemented. Investments which result in an increase in EE of less than 20% are also eligible, provided that the energy savings can justify at least 50% of the investment cost.

- **Financial criteria**:
  - Total project investment does not exceed EUR 25,000,000.
  - EIB financing shall not exceed 50% of total project investment costs, which includes studies and engineering, civil works, equipment and installation, grid connection and balance of plant, technical and price contingencies. If the project benefits from other sources of European Community financing or subsidies, the total of such financing shall not exceed 70% of project investment cost.
  - Other financial criteria are as per VietinBank's current regulation and policy (Refer to Annex B for more details).

(viii) Performance: (Refer to Annex C for more details)

- Of 25 loan applications received, 2 RE investments obtained financing from banks; these 2 projects are refinanced with EIB's preferential interest rate.
- Total disbursement: approximately USD 21 million.
- Total undisbursed amount: approximately USD 200 million
- Total energy/electricity production: 23MW
- *No bad debt and/or late repayment obligation*

(ix) Findings/Issues:

Issues/Findings	Difficulties	Rationale
Finding 1: refer to Finding 1 under GCPF	Refer to Difficulties under GCPF	Refer to Rationale under GCPF
Finding 2: refer to Finding 2 under GCPF	Refer to Difficulties under GCPF	Refer to Rationale under GCPF
Finding 3: refer to Finding 3 under GCPF	Refer to Difficulties under GCPF	Refer to Rationale under GCPF
Finding 4: Only 2 RE projects	▪ New investment in Small Hydro power is not considered a priority issue in Vietnam now. It is recommended by many banks under "lending restriction." ▪ Banks are also cautious and reluctant to invest in biomass, wind power, solar power projects (expensive).	▪ The bank's perspective is that Small Hydro Power is not efficient; water sources for efficient Small Hydro Power with effective payback capacity are running out. Furthermore, the fact that project developers' capacity recently received negative comments from mass media adversely affects bank's view on Small Hydro Power. It is believed that Small Hydro Power Projects have resulted in a noticeable amount of non-performing loans (NPLs) so far. ▪ While wind power is considered to be expensive with little government financial and technical support, solar and biomass seem to be rare for banks. Recently, VNPT applied for a loan for solar panel manufacturing projects but was rejected due to out-of-scope reasons.

Finding 5: No EE projects so far	▪ From the bank's perspective, small loan amounts and high management costs mean minuscule bank profit. ▪ EIB is more inclined to focus on RE projects, not EE ones.	▪ All things equal, the banks tend to provide loans to big projects with the aim of KPI accomplishment regarding revenue/profit target. ▪ The A4 template (Loan Allocation Request) is mainly designed for RE only, and does not fit EE.
Finding 6: No ESCOs in the bankable list of EE projects	Refer to Difficulties under GCPF	Refer to Rationale under GCPF
Finding 7: Stagnant disbursement observed since 2012	▪ Partially due to the Findings 1 to 6. ▪ Refer to Difficulties under GCPF	Refer to Rationale under GCPF

1.3 LOAN GUARANTEE FUND (LGF) UNDER THE PROJECT FOR PROMOTING ENERGY CONSERVATION IN SMALL AND MEDIUM ENTERPRISES IN VIETNAM (PECSME PROGRAM)

(i) Source of Fund: LGF profile as a financial component under PECSME program

- In December 2006, with the witness of UNDP, the MOST and Vietinbank signed the Agreement on the LGF Programme (US$ 1.95 million) for EC&EE projects under the PECSME program.
- LGF programmes for EC projects were developed by using a credit guarantee mechanism to support SMEs and energy service efficiency providers (EESPs) to secure loans from financial and banking institutions to invest in EC projects. These EC & EE projects were aimed to have a significant impact on the reduction of greenhouse gas emissions in five selected priority industrial sectors, including brick, ceramics, paper and pulp, textile and food processing.
- Through credit guarantee mechanism, the LGF guarantees those loans that need higher security or for those EC projects whose investors lack or do not have enough collateral to achieve the following objectives:

  - Overcoming a barrier of lack of collaterals to support SMEs to approach loans from financial institutions to invest in EC projects.

  - Mobilising credit sources for EC projects by risk sharing between guarantors, lending institutions and borrowers.

  (After completion of the PECSME program since 2011, MOST issued Circular no. 06/2011/TT-BKHCN dated 18/05/2011 to transfer LGF under PECSME which is managed by NAFOSTED, and VietinBank is recruited as a service provider to deal with the financial appraisal of LGF applications for EC and EE projects applied by SMEs).

(ii) Fund Manager: VietinBank.

(iii) Source of Guarantee fund: GEF (Global Environment Facility)

(iv) Monitoring Party: Ministry of Science and Technology (MOST) and UNDP

(v) Programme manager /institutions: Vietinbank was selected as an entrust bank for managing and issuing Guarantee Letters for loans to the LGF clients. According to the implementation plan, by the end of 2010, 100% of LGF source should be used for guarantee to EC projects.

(vi) Fund category: International, private, commercial, guarantees

(vii) Fund details:

- **Facility amount**:

  - *UNDP:* US$1.7 million.

- *VietinBank:* facility available of up to US$14,100,000 with a 5-year term to provide credit to SMEs which meet the credit and loan security conditions under the applicable laws of Viet Nam and the requirements of the Project.

- **Guaranteed currency**: VND

- **Guarantee tenor:** equivalent to loan tenor but cannot exceed a payback period for fixed asset reinvestment. Guaratee tenor may be extended in compliance with loan tenor but in any case, does not exceed 1/3 of initial guarantee tenor.

(viii) Final beneficiaries:

Clients of LGF eligible to receive guarantees are SMEs investing in EC projects in five selected industries (i) brick; (ii) ceramics; (iii) textile; (iv) food processing; and (v) pulp and paper.

(ix) Evaluation criteria:

- **<u>Technical criteria</u>**

- The application must be accompanied by an Environmental Assessment report and Feasability Study approved by the MOST or its duly authorized agencies. For EC & EE projects in ceramic and brick manufacturing, only a Feasability Study approved by the MOST or its duly authorized agencies shall be attached to the application.
- The EC & EE project must result in a positive net energy saving, except for EC & EE projects in the brick and ceramic and pottery manufacturing sectors. In brick manufacturing, the EC & EE project must result in a positive net energy saving per unit of production. In the ceramic and pottery manufacturing, the EC & EE project must result in a positive net greenhouse gas emission reduction per unit of production.
- The estimated financial value of the proposed energy savings must reach at least 30% of the total financial benefits of the whole project life except for EC & EE projects in the ceramic and pottery sector.

- **<u>Financial criteria</u>**

- Guaranteed amount up to full Loan amount but not exceeding 70% of total investment cost.
- Equity injection ratio is minimum 15% for manufacturing optimization projects, but otherwise is 30%.
- Total guaranteed amount per project may not exceed VND 3,000,000 and per project developer may not exceed VND 4,500,000. The EC & EE project must not request a Loan Guarantee Commitment (LGC) of less than VND 80 million or more than VND 2 billion.
- Guarantee multiplier is 2.
- Guarantee of Principal repayment obligation only.
- The simple pay-back period of the project shall not exceed four (4) years;
- The project is considered bankable by lending banks except that it merely lacks the required loan collateral;

- Other financial criteria are as per the VietinBank's current regulations and policy (Refer to Annex B for more details).

(x) Performance: By 31/03/2014, the LGF programme has achieved the following results:

- Total EC projects receiving guarantees: 52 projects
- Areas having the above projects: Ha Noi (Bat Trang): 30 projects, Bac Giang: 3 projects, Hai Duong: 4 projects, Phu Tho: 8 projects, Le Chan: 1 project, Da Nang: 1 project, Binh Duong: 3 projects, Dong Nai: 1 project, Sa Dec: 1 project.
- Projects by industries: brick: 11 projects, ceramics: 40 projects, paper: 1 project.
- Projects by financial performance: Efficient: 29 projects, Low Efficiency: 14 projects, Inefficient: 9 projects.
- Projects by repayment obligation: satisfactory full repayment: 26: satisfactory due repayment: 3, late repayment: 14, default: 9.
- Financial institutions participating in lending:
  - *VEPF:* 43 EC projects: low efficiency (14), inefficient project (5), inefficient with late repayment (14), and default (5),
  - *Vietinbank:* 9 projects, 4 of which were inefficient with default
- Total initial loan: VND 43.696 billion (Vietinbank: VND 18.449 billion, VEPF: VND 25.247 billion)
- Total guarantee coverage: VND 28.484 billion (VietinBank: VND 13.010 billion, VEPF: VND 15.474 billion)
- Total outstanding loan: VND 7.120 billion
- Total outstanding guarantee : VND5.099 billion
- Bad loans: negative signals observed and predicted. Details are as follows:

	Bad loans (09/52 projects)		**Guarantee payment for bad loans (09/52 projects)**	
	VietinBank	**VEPF**	**VietinBank**	**VEPF**
	VND 2,561 million 04/09 projects	VND 341 million 05/43 projects	VND 1,981 million 04/09 projects	VND 136 million 05/43 projects
NPL	> 10% (2.561/18.449)	< 1.5 % (341/25.247)		
TOTAL	VND 2,902 million (of 43.696 million)		VND 2,117 million (of 35,700 million)	

(xi) Findings/Issues

Issues/Findings	Difficulties	Rationale
Although being considered successful in terms of EE savings and conservation, 9 default loans (6/9 is ceramic) out of 52 projects, is comparatively high. Some projects have already halted operation. Similarly, 14/17 of outstanding loans/projects observed late repayment and low efficiency with warning signals of NPL/default. 13 of the 14 late repayment projects are from the ceramic sector in Bat Trang village.	Ceramic (in Bat Trang) and brick (mainly in Middle and Southern provinces such as Da Nang and Dong Nai) small shops observed bad times in market thus adversely affecting business performance and repayment capacity and obligation.	• In many cases, financial viability is contradictory to technical feasibility. • However, being collateralized with repayment guarantees, banks tend to be less risk adverse in project evaluation. This also reflects the fact that lender's project finance is strongly based on collateral, whereas project financial evaluation criteria are not as critical as expected.
Vietinbank has not provided many (9/52) direct loans to EC. Instead, VietinBank mainly provides guarantees for VEPF funding projects.	• Ceramic and brick small shops observed bad times in market thus adversely affect business performance and repayment capacity and obligation. As a result, Vietinbank regards these projects as high risks and do no find many bankable projects. • In addition, interest rate is commercial thus make project less bankable (NPV, IRR is lower).	• Similarly, from the bank's perspective, EC concepts are secondary to market/business/ revenue/profit/risk concepts. In this case, market landscape is not highly appreciated despite technically eligible EC feasibility. • However, VietinBank's lending and guarantee decisions are delivered with zero–credit risk mindset/belief which also allows VietinBank to provide guarantees based on VEPF's project evaluation and lending decisions. • Vietinbank is a commercial bank operating on a profit-oriented basis, thus utilizing a commercial (normal) fund to finance EC projects.
NPL for VietinBank is high,	Small brick	In these cases, collateral is a determining

mainly caused by brick bad loans (>10%).	manufacturers observed bad times in the market, thus adversely affecting business performance and repayment capacity and obligation.	factor in financial parties' lending decisions. This also reflects the fact that lender's project finance is strongly based on collateral, whereas project financial evaluation criteria are not as critical as expected.
VEPF is seeing an increasing trend of NPLs (14/15 VEPF existing projects are considered late repayments with low efficiency).	Small ceramic shops in Bat Trang continue to observe bad times in the market, thus adversely affecting business performance and repayment capacity and obligation.	• VEPF is not considered to be professional in terms of project evaluation which leads to incomprehensive assessments of projects, especially a project's marketability and financial performance. • However, VietinBank's lending and guarantee decisions are delivered with zero–credit risk mindset/belief which also allows VietinBank to provide guarantees based on VEPF's project evaluation and lending decisions.

1.4 VIETNAM ENVIRONMENTAL PROTECTION FUND (VEPF)

(i) Source of Fund: State budget and other private sources, if available.

(ii) Fund manager: VEPF (established by Ministry of Natural Resources and Environment)

(iii) Fund categories: public, soft loan with preferential interest rate annually publicized by VEPF.

(iv) Fund details: In addition to its main functions as a financial supporter for environment protection projects, VEPF also supports financing in favour of EE/EC projects.

(v) Final beneficiaries:

Organizations, individual investment projects' implementation of environmental protection activities; investment projects implemented for the prevention, remedy pollution, degradation and environmental issues of national, inter-sectoral and inter-regional or local environmental problems, but have a large sphere of influence.

(vi) Evaluation criteria:

- Technical criteria: N/A, on case-by-case basis at VEPF's discretion
- Financial criteria: N/A, on case-by-case basis at VEPF's discretion

(vii) Performance as of 10/2013[1]

- Total commitment: VND 137,599 million, of which VND 40,799 million allocated to *Clean, environment friendly, and energy conservation/efficiency technology.*
- Total number of projects: 31 projects, of which 23 projects are categorized as *Clean, environment friendly, energy conservation/efficiency technology*. In addition, of 31 projects, 21 projects were already allocated to **brick manufacturing projects.** More noticeably, the highest number of disbursed projects (15/31) was observed in year 2009.
- Total bad debt: VND 8,243 million which account for 12.33% of total outstanding loans.
- Number of projects with late repayment: 04 projects.

No.	Areas	Total loan commitment (VND million)	No. of projects
	Clean, environment friendly, ***energy conservation/efficiency technology*** *and Environmental friendly product manufacturing*	**137,599**	**31**
1	*Clean, environment friendly,* ***energy conservation/efficiency technology***	***40,799***	23
2	*Environmental friendly product manufacturing projects*	***96,800***	8

[1] http://www.vepf.vn/

Investment area	Total loan commitment (Million VND)	Total disbursed amount (Million VND)	Total undisbursed amount (Million VND)	Outstanding amount as of 30/10/2013\ (Million VND)	Bad Debt (Million VND)	Disbursed amount for year (Million VND)	Tentative disbursement for year 2014 (Million VND)	Expected disbursement amount for year - end 2013	Total idle commitment (Million VND)	Undisbursed amount to Total loan commitment Ratio
Clean, environment friendly, energy conservation/efficiency technology and Environmental friendly product manufacturing	**137,599**	**94,549**	**43,050**	**66,966**	**8,243 (12.33 %)**	**11,500**	**500**	**0**	**42,550**	**30.92%**

(viii) Issues/Findings

Issues/Findings	Difficulties	Rationale
Undisbursed amount remained high (up to 30.92% of total loan commitment remained undisbursed; number of disbursed projects peaked in 2009)	Hesitation in investment and borrowing decisions due to economic slowdown, market difficulty.	• Economic slowdown and market contraction accompanied by high inflation and interest have forced 60,000 enterprises to be liquidated, majority of which are SMEs. Survivors are still at high risk – adverse to investment and debt leverage even if being offered at preferential rate. • In addition, VEPF's loan portfolio focuses on high market risk sectors such as real estate/construction materials (brick, ceramic, etc.), whereas EE/EC potential can be observed in many other lower-market risk areas such as building, plastic, etc.
	Small loan size	Average loan size of VND 3 billion is a small amount for project financing.
	• Unfavourable loan/investment cost ratio <= 70%	• For commercial banks, this ratio is 30%. • However, VEPF is not a

	• Collateral restriction: owner's asset, 3rd guarantee.	commercial bank, thus risk appetite should be different too.
Despite being preferentially granted to beneficiaries at a lower than market rate (fixed 5.4% per annum for the year 2013), the NPL ratio remained high (to a great extent, a bad debt of 12.33% is higher than a norm of maximum 3% which is widely accepted among Vietnamese financial institutions) **Number of late repayment projects also remained high (4 projects)**	Economic slowdown and market contraction has adversely affected business performance, repayment capacity and obligation.	The real estate and construction sector nose-dived for the last 4 years, whereas the majority of VEPF's EE/EC financing was allocated to these sectors.
	VEPF's limited evaluation capacity.	VEPF is operating on a non-profit-oriented basis, thus does not fully taking the risk evaluation into account. In addition, it is not market risk oriented, and rather more technically oriented.

1.5 GREEN CREDIT TRUST FUND

(i) Source of Fund: The Swiss State Secretariat for Economic Affairs (SECO).

(ii) Fund amount: USD 5 million:

- Loan guarantee: USD 2 million
- Reimbursement: USD 3 million

(iii) Fund coordinator: VNCPC (Vietnam Cleaner Production Center)

(iv) Fund categories: private, guarantee, subsidy.

(v) Fund objectives:

To promote long-term investments by SMEs in cleaner production technologies with a positive impact on the environment and to contribute to the sustainable development of Vietnam. This is achieved through a reduction of the demand for collateral (50% guarantees) and a partial reimbursement (up to 25%) of the invested capital, based on the environmental impact resulting from the investment. Potential industries for cleaner production are construction materials manufacturing, paper, food processing, steel, leather, and chemical production.

(vi) Final beneficiaries:

- SMEs with less than 1,000 workers and a legal capital of less than USD 5 million in which Vietnamese equity accounts for more than 51%.

(vii) Evaluation criteria:

- Technical criteria: n/a, on a case-by-case basis at GCTF's discretion.
- Financial criteria: internally regulated by banks (ACB, VIB, Techcombank)

(viii) Operational structure:

GCTF operates with the participation of commercial banks: ACB, VIB, Techcombank; Vietnam Cleaner Production Centre (VNCPC); the Swiss State Secretariat for Economic Affairs (SECO)

Guarantee structure

- A guarantee of 50% of the credit value for those companies with inadequate collateral.
- The maximum size of the guarantee will be USD 500,000.
- The maximum percentage of accumulation of the guarantees with other schemes (for example, the National Fund of Guarantees) is 70%.
- If the client invests the credit in technology which is the object of the project, the guarantee will not have any cost.
- If the resources are not invested in technology which is the object of the project, or the credit goes to finance another company with different needs from the project, the guarantee will have a cost per year of 3% on the balance.

- If a borrower does not qualify for the reimbursement after the installation, the guarantee remains valid through to the end of the period as it was defined in the lending agreement between the borrower and the financial intermediary.

Reimbursement structure

- On the other hand, the GCTF reimburses the SME up to 25% of the bank's approved loan if the SME has achieved certain environmental improvements to a maximum of 200,000 USD. Details are as follows:
  - In the case that the environmental improvement is less than 30%, no reimbursement is granted
  - In the case that the environmental improvement ranged from 30 to 49%, reimbursement amounts to 15% of the bank's approved loan facility.
  - In the case that the environmental improvement is more than 50%, reimbursement amounts to 25% of bank's approved loan facility is granted
  - Maximum reimbursement is USD 200,000 or the equivalent VND amount.

(ix) Performance as of 08/2014[2]

- Total number of projects: 9 projects
- Sectors: 3 plastic projects, 4 paper projects, 1 steel project, 1 fabric project.
- Total bad debt: 0
- Number of projects with late repayment: 0 projects.

[2] http://gctf.vn//

	Company	Sector	EE	Technology change	Time	Total investment (USD)	Total bank loan's facility (USD)	LG (%)	Bank Loan Guarantee	RR (%)	PBP (year)	Location
1	Tan Phu Plastic Joint Stock Company	Plastic products	Y	Extruding machines	2008 – 2009	135,363	**N/A**	50	Techcombank	25	4.5	Ho Chi Minh City
3	Tan Phu Plastic Joint Stock Company	Plastic products	Y	Extruding machines	2010 – 2011	283,000	**N/A**	50	ACB	25	3.7	Ho Chi Minh City
4	Bac Ha Paper Limited Company	Kraft paper		Dissolved Air Flotation (DAF)	2011	100,100	**N/A**	50	Techcombank	25	3.24	Bac Giang
10	Bac Ha Limited Company	Kraft paper		Boiler	2014	264,957	244,967	50	ACB	25	2.05	Bac Giang
5	Viet Phap Steel Limited Company	Steel billets		MF induction furnace, casting machine	2010 - 2011	970,100	**N/A**	50	Techcombank	15	4.3	Quang Nam
6	Dao Van Tung Household Enterprise	Plastic products		Plastic thread line	2011 - 2012	161,982	80,991	50	Techcombank	25	2.15	Ha Noi
7	An Viet Fibber Joint Stock Company	Non-woven fabric		Non-woven fabric line	2012	344,786	250,000	50	ACB	25		Long An
8	Bac Giang Import and Export Joint Stock Company	Printing & Tissue Paper		Dissolved Air Flotation (DAF)	2012	144,207	73,695	50	ACB	25	3.21	Bac Giang
9	Bac Giang Import and Export Joint Stock Company	Printing & Tissue Paper		Boiler	2012	374,345	236,967	50	ACB	25	3.6	Bac Giang
2	Nam Hung Limited Company	Brick from clay	N	Husk-fired Brick Kiln	2008							An Giang

Abbreviation:
- EE; Energy Effect
- LGR: Loan Guarantee Ratio
- RR: Reimbursement Ratio
- PBP: Pay back period.

(x) Issues/Findings

- Loans are specifically designed for environmental improvement projects, not EE/EC projects.
- Small Loan size (USD 10,000 - USD 1 million).
- No newly-established clients; all are existing clients' replacement/expansion projects with low credit/market risks

- Guarantee ratio low (50% of approved credit) and 50% other form of collateral
- Reimbursement calculated on approved loan amount, not total investment.
- Equity is mandatory (30% - 50%).

2. RECOMMENDATION ON EXISTING EVALUATION CRITERIA MODIFICATION

2.1 NATURE OF EE PROJECTS IN INDUSTRY

- EE projects are key practical solutions to the twin problems of energy wastage and environmental pollution which plague many industrial companies in Vietnam. The industry of Vietnam uses a large amount of energy to power a diverse range of manufacturing and resource extraction processes. Many industrial processes require large amounts of heat and mechanical power, most of which is delivered as coal, petroleum fuels, natural gas and as electricity.
- Because industrial processes are so diverse, it is impossible to describe the multitude of possible opportunities for energy efficiency in industry. Many depend on the specific technologies and processes in use at each industrial facility. There are, however, a number of processes and energy services that are widely used in many industries.
- A large amount of the fuel used by Vietnam manufacturers is burnt to make steam. The typical industrial facility can reduce this energy usage 15-20% (according to the VNEEP) by insulating steam and condensate return lines, stopping steam leakage, and maintaining steam traps.
- Electric motors usually run at a constant speed, but a variable speed drive allows the motor's energy output to match the required load. This achieves energy savings ranging from 3-50%, depending on how the motor is used.
- Industry uses a large number of pumps and compressors of all shapes and sizes and in a wide variety of applications. The efficiency of pumps and compressors depends on many factors but often improvements can be made by implementing better process control and better maintenance practices. Compressors are commonly used to provide compressed air which is used for sand blasting, painting, and other power tools. According to the IEE Project, optimizing compressed air systems by installing variable speed drives, along with preventive maintenance to detect and fix air leaks, can improve energy efficiency 20-50%.
- As projected by UNIDO, energy efficiency improvements on steam and compressed air systems based on the system optimization approach are expected to lead to higher energy savings (15-30% for compressed air systems and 10-15% for steam systems); energy management style projects savings during the first 2 years are 10-20%.
- It can be expected that the energy efficiency market of Vietnam has huge potential with a payback of less than three years. However, the main difficulty with EE projects is their small size. Development and commercial banks prefer to invest in large projects since the same amount of work is involved in assessing a large project as a small one but the potential for generating income on the smaller project is far more limited in absolute terms.

2.2 SITUATION ANALYSIS

- In general, almost all local banks' EE/EC programs request a technical threshold of 15-20% in terms of CO_2 emission mitigation and/or energy saving. This is due to the obligatory requirement under international EE/EC programs such as EIB, GCPF.
- The most typical risk sharing structure for EE/EC projects is a loan repayment guarantee in which a portion of the bank loan is guaranteed. In addition to the loan repayment guarantee, banks normally request other forms of collateral, such as real estate, machineries and equipments, receivables, etc. In other words, credit risk is shared among project owners (equity), fund donors (loan repayment guarantee) and banks (bank loan).
- Other forms of support are directly delivered to project owners such as a preferential interest rate, project cost reimbursement etc.
- Other financial evaluation criteria are in conformity with commercial banks' internal regulations which in practice do not differentiate between normal projects and EE/EC projects. As a consequence, a number of difficulties are identified as below:

Difficulties	**Required Changes**
From the banks' perspective, EE & EC are not considered a significant market segment or profit opportunity due to small loan market volume and comparatively high risk perception.	Risk sharing/credit enhancement mechanisms which GOVERNMENT should do to help banks lower their risk level and improve credit ratings, thus relaxing loan thresholds. **a) Guarantee fund:** • A national guarantee fund should be considered to fill the large gap between bank's requirements and enterprise/project bankable collateral availability. This is particularly pivotal when Vietnamese banks do not purely base decisions on Project Finance but also considerably on Collateral Finance. • A close collaboration among MOIT, MOF, and COMMERCIAL BANKS should be set up to propose different sets of criteria for eligible guarantees, as well as information exchange mechanism. **b) Collateral buy-back scheme/organization (type, revaluation, list based):** In parallel with the Guarantee Fund, a collateral buyback scheme should be seriously considered. Collateral buyback would allow banks to sell collateral

	at a fair price, which is mainly illiquid M&E to a nominated entity. These schemes greatly support banks and enhance enterprises' ratings and as a result, reduce the cost of borrowing. **c) <u>Co–financing</u>:** • Another risk-sharing mechanism is co-financing among banks and different entities, such as an investment fund, subsidy fund, seed fund, etc. • A clear mechanism regarding collateral ownership sharing, financing proportion, interest rate, etc. should be carefully discussed. **d) <u>2-step cheap loans for commercial banks. (JICA, WB, IFC, etc.)</u>**
From the banks' perspective, a number of EE/EC projects are not bankable due to lack of repayment capacity. This could be explained by objective reasons such as a project's business risk, market risk, financial risk or subjective reasons such as a bank's inexperience/ indifference toward EC/EE investment.	• Regardless of being collateralized with repayment guarantee, thorough and practical market analysis should be the first priority in Project Financing which assures a project's sustainability and ability to meet repayment obligations. A project's sustainability is critical for EE/EC goal materialization; VietinBank's current regulation clearly defines: *As for projects which do not directly generate revenue and repayment capacity, project analyst should resort to entire enterprises' business operation and cashflow projection in the future years.* • EE/EC aspects should be considered as additional cash flow for projects where only a partially guarantee repayment obligation exists.
	Tailor–made cash projection model based on project financing not collateral financing **<u>For standardized projects:</u>** In practice, due to a lack of EE expertise, there are a huge number of potentially standardized projects which are unrecognized by banks. Consequently, banks should cooperate with MOIT to do the following:

	• Identify standardized EE opportunities and design a full set of criteria to justify an EE standardized project. • Bank should organize training courses for EE valuation and should prepare an EE questionnaire for Bank Relationship Managers (RM) to be included in the client/project survey (refer to annex D for more details). • Banks should design a user-friendly cash flow worksheet for a Standardized EE Project only (Refer to annex D for more details). These worksheets must combine both technical and financial calculations into a single template that allows a credit appraisal officer to quickly calculate project efficiency, such as NPV, payback period, etc. **For comprehensive projects:** • A detailed internal guideline should be drafted for EE calculations based on energy savings. • Close cooperation with MOIT and using the services of an independent energy auditor is essential. • A mechanism among banks, MOIT, independent and energy auditors should be set up in terms of auditing fees, auditor's capacity, financial and technical approval process, etc. **For ESCOs:** • For ESCOs with project finance based on EPC cash flow, a detailed internal guideline should be discussed and drafted for ESCO project financing. Otherwise, ESCOs are only able to borrow short-term loans. • In other words, long-term loan can only be obtained on full collateral basis • These guidelines will need an expert's expertise which is currently unprecedented for Vietnamese

	banks. **<u>Investment banking approach:</u>** • It is advisable to develop a pool of EE projects and bundle financing which shall reduce management cost and increase loan amount, efficiency. • ESCOs should play the collecting role based on industry, geography, etc. • Banks shall categorize the project bundle based on periodical risk–return appetite.
A number of current banks' financial evaluation criteria do not reasonably benefit EE/EC projects.	
Lending interest rate: - The lending interest rate is not correctly priced. - The lending interest rate is not competitive in the sense that banks are more willing to offer best rates for strategic and highly profitable clients, not EE project developers.	• With medium term features being taken into consideration, risk–based loan pricing including tenor–based pricing should be adopted. • Banks' cheap funds should be prioritized and allocated to EE projects. • The portfolio approach should be adopted to reduce risk, and thus the cost of borrowing
The discount rate is not correctly determined.	With medium term features being taken into consideration, risk–based loan pricing including tenor–based pricing should be adopted.
Collateral: - Collateral value is not correctly determined. - The loan to collateral ratio is not as reasonable as expected.	• The collateral value should be fairly priced due to a better economic situation and mood. In the case of M&E, the collateral value should reflect origin differences. • The loan to collateral ratio should be adjusted to better reflect M&E's origin and marketability. A list-based origin should be agreed internally between banks and MOIT.
Equity injection (advanced technology should be promoted)	• The equity injection ratio should be reduced. • The equity injection schedule should be extended.
Grace period	Loans within the program are all medium-long term for investment projects in infrastructure and

	technology. Therefore, when granting loans to projects, lending institutions need to apply a specific grace period for clients (at minimum, this period equals time to complete the project and stabilize production). Application of a grace period will help clients relieve the pressure from repaying in the beginning period of the project.

2.3 RECOMMENDATIONS ON EVALUATION CRITERIA MODIFICATION

Existing criteria	Recommended Criteria/ Adjustment	Rationale
Lending interest rate Non-preferential for EE projects (at least equal to the floor interest rate). Currently, banks internally request a normal medium floor rate for VND, approx. 11-12 % per annum; for USD 7.5-8% per annum; for EUR 9-10% per annum.	The lending interest rate should be lower (1-2%) than the periodical existing floor rate internally announced by the banks.	Due to the banks' conservativeness towards EE projects' risk and return, banks need more cheap funds from governmental, local and international institutions. In addition, these cheap funds should be separately allocated to EE projects, not mingled with normal mobilizing funds.
Discount rate Conservative approach is being applied by banks regarding **discount rate** calculation.	After considering overall risk and return, the discount rate should be adjusted to better reflect the medium tenor. In the case that the discount rate is the lending interest rate, medium tenor should be applied.	Tenor adjusted to reflect interest and liquidity risk
Equity injection ratio In general, banks request a minimum equity to total investment cost ratio up to 30%.	For unstandardized EE/EC projects: equity injection ratio of 15% is recommended. For standardized EE/EC projects: equity injection ratio requirement should be omitted.	On the condition of sound business performance, working capital essence, low investment cost and small loan sizes might be taken as risk–mitigation factors to support equity injection reduction/omission.
Equity injection schedule In general, banks are inclined to request full equity injection prior to loan disbursement.	It is recommended that the equity injection should be in parallel with loan disbursement schedules.	As long as the equity injection ratio is affirmed, risk is mutually shared between project owners and banks.
Collateral value	EU, US, JP origin should be	Only if bank, MOIT, expert co -

Due to AMC's conservativeness, collateral value, especially machineries and equipments, is underrated.	fairly priced. Currently, 80% of book value is recommended.	work to issue (detailed) instruction regarding M&E valuation for different origins and technologies
Loan/collateral ratio Conservative	Adjust (Increase) this ratio based on origin, technology, remaining usage, and purpose of loans (EE investment) etc.	On the condition that bankers, MOIT, experts, etc. work to issue detailed instructions.
Grace period Only principal grace period available.	The interest grace period is recommended for small-sized EE projects (less than VND 500 million) with short payback periods (less than 2 years).	Need more banker and expert's elaboration.

ANNEXES:

A. **DETAILED TECHNICAL AND FINANCIAL CRITERIA OF DIFFERENT FUNDS.**
B. **BANKS' EVALUATION APPROACH/CRITERIA FOR PROJECT FINANCING.**
C. **PERFORMANCE OF DIFFERENT FUNDS.**
D. **CASH FLOW PROJECTION/QUESTIONARE TABLE/WORKSHEET**
E. **MINUTES OF GROUP MEETING**

A. DETAILED TECHNICAL AND FINANCIAL CRITERIA OF DIFFERENT FUNDS

1. GCPF

PART A **ENERGY EFFICIENCY: STANDARDISED INVESTMENTS** Loans to residential or small commercial clients usually finance standardised products with known energy demand. Therefore, a simplified standardised analysis can suffice to obtain a close estimate of energy and CO2 savings.	
Criteria	**Eligibility**
Recipients	Residential sector, to a limited extent commercial SMEs
Loan size	< USD 150k
Saving targets	Financial Institutions' (FI) portfolio should lead to a minimum average energy or CO_2 savings of 20% in relative terms
Pre-project evaluation	Loan recipients will fill out self audit questionnaire. Via the technical appraisal tool, anticipated energy/CO_2 savings will be calculated based on standardised measures. These will be determined by appliance and equipment lists determined for each country
Post-project evaluation	Simplified verification through the FI via invoice/receipt data for measures undertaken (e.g. reduction of energy bill pre- and post-installation, proof of instalment via invoice from a contractor or similar, random sample checks). Via technical appraisal tools, calculation of savings based on standardised measures. Updates are regularly provided to GCPF's web based reporting tool (GCPF CET).
Eligible measure	Including, but not limited to: • Building envelope upgrades (e.g. thermal insulation, replacement of doors/ windows), • Lighting systems • Air handling systems

	• Service hot water systems • Heat distribution (e.g. electronic pumps for heating systems), • Decentralised electricity/heat generation (e.g replacement of diesel motors at production sites with solar systems) • Replacement of major appliances

PART B **ENERGY EFFICIENCY: NON-STANDARDISED INVESTMENTS** SME, commercial and large residential projects require less standardised equipment increasing the need for verification input taking into account the specific surroundings of the investment.	
Criteria	**Eligibility**
Recipients	Large home owners, home owner associations SMEs Commercial sector
Loan size	< USD 500k
Saving targets	FI portfolio should lead to a minimum average energy or CO_2 saving of 20% in relative terms
Pre-project evaluation	Energy savings analysis will be performed by online audit forms based on standardised analysis tools. Results will be communicated to the technical appraisal tool which will collect data and calculate anticipated energy/CO_2 savings
Post-project evaluation	Simplified verification through the FI via invoice/receipt data for measures undertaken (e.g. reduction of energy bill pre- and post-installation, proof of instalment via invoice from a contractor or similar, random sample checks). Simplified third party audit verifies results and via technical appraisal tool communicates calculation of savings based on standardised measures. Updates are regularly provided to GCPF's web based reporting tool (GCPF CET).
Eligible measure	Including, but not limited to: • Building envelope upgrades (e.g. thermal insulation, replacement of doors/ windows), • Commercial refrigeration systems • Lighting systems

	• Air handling systems • Service hot water systems • Heat distribution (e.g. electronic pumps for heating systems), • Decentralised electricity/heat generation (e.g replacement of diesel motors at production sites with solar systems)

PART C **ENERGY EFFICIENCY: COMPREHENSIVE INVESTMENTS** Larger more complex investments where the energy saving benefits need to be calculated individually (e.g. transportation sector in large cities, mid to large scale electricity generation); little standardization and capital intensive. Audits will be performed before and after the investment to analyse savings.	
Criteria	**Eligibility**
Recipients	Medium and large businesses Municipalities Owners of large real estate developments/buildings Operators of transportation equipment Leasing companies Public sector entities
Loan size	> USD 150k
Saving targets	Minimum 20% energy savings or CO2 savings per project in relative terms
Pre-project evaluation	Independent investment grade audit performed by certified ESCO analyses potential and validity of project
Post-project evaluation	Auditor verifies results and issues acceptance certificates. Via technical appraisal tool calculations of savings are communicated to GCPF. Updates are regularly provided to GCPF's web based reporting tool (GCPF CET)
Eligible measure	All feasible EE measures

PART D **SMALL-SCALE RENEWABLE ENERGY** Small-scale renewable energy can be used for decentralised energy supply. It requires a pre-project estimate of electricity production, financial savings/revenues compared to current cost structures and regular updates on the production capacities

Criteria	Eligibility
Recipients	SMEs Municipalities Public sector entities
Loan size	> USD 150k
Saving targets	Not applicable; savings will be measured against applicable baseline calculations
Pre-project evaluation	Independent investment grade audit performed by certified ESCO analyses potential and validity of project
Post-project evaluation	Verification via amount of electricity produced/consumed/fed into electricity grid. Via technical appraisal tool calculations of savings are communicated to GCPF. Updates are regularly provided to GCPF's web based reporting tool (GCPF CET)
Eligible measure	All feasible RE measures, including but not limited to moving water (hydro), biomass (including biogas, rice husk, wood waster), solar energy, wind energy and energy derived from municipal solid waste

2. EIB

RENEWABLE ENERGY		
All renewable energy investments should be based on resource modelling (e.g. wind, solar radiation, geothermal etc.), implementation and operation conducted by qualified specialists with proven experience. Where relevant, adequate electricity transmission capacity shall be demonstrated.		
SUB-SECTOR	**CRITERIA APPLIED (*)**	**ECONOMIC CRITERIA[3]**
Solar Energy (PV and thermal)	• For PV schemes > 0.5 MWp: a site specific solar irradiation yield assessment • Proven solutions • For solar water heaters, certified technology/suppliers in line with acceptable standards	• No cost targets for new and innovative technologies, e.g. solar electricity/photovoltaics; solar water heating schemes should demonstrate competitiveness with fossil fuel alternatives.
Hydropower	• Refurbishment/retrofitting of existing hydropower plants and irrigation dams • Small and mini- run-of-river hydropower • Large dams are considered for allocation on a case-by-case basis • Large dams (as defined by the International Commission on Large Dams, having a height of 15 metres or more from the foundation or, if the height is between 5 and 15 metres, having a reservoir capacity of more than 3 million cubic metres) require an independent safety review	• Electricity generation cost base load <= 96 EUR/MWh, based on 5% real discount rate and 20 years economic lifespan. • Costs > 96 EUR/MWh could be acceptable, if competitive with marginal production costs including externalities, e.g. peak load power production.

[3] Off-grid generation (isolated systems) may justify higher economic costs.
(*) For biomass projects, due diligence will include: (i) careful assessment of market risk (ensure suitable contractual provisions for long term supply and off take contracts), ii) analysis of appropriate transportation and distribution channels, iii) compliance with the principles of relevant EU agricultural policy and sustainability criteria as set out in Article 17 of the Directive 2009/08/EC on the promotion of the use of energy from renewable sources, ensuring good local agricultural yields and sufficient feedstock availability. Biomass projects shall not cause the replacement of food crops by crops which are solely used for power production or have a negative effect on local communities and their habits and resources.

RENEWABLE ENERGY		
Biomass (*)	• Biomass: sustainable, preferably from agricultural or forest waste. • Biofuels: projects producing or using biofuels for grid connected electricity production are generally excluded.	• Electricity generation cost <= 96 EUR/MWh, based on 5% real discount rate and 15 years economic lifespan. Treatment of biomass waste for environmental reasons is not subject to these cost limits. • Biomass to produce heat should demonstrate competitiveness with fossil fuel alternatives
Geothermal	• Geothermal resource to be proven by test drilling programme. No drilling risk can be accepted.	• Electricity generation cost <= 96 EUR/MWh, based on 5% real discount rate and 20 years economic lifespan; • Geothermal to produce heat should demonstrate competitiveness with fossil fuel alternatives.
Wind power	• At least one year of on-site wind measurements, close to hub height, with satisfactory correlation to long term wind measurements. • Proven, modular solutions, onshore only.	• Electricity generation cost <=96 EUR/MWh, based on 5% real discount rate and 15 years economic lifespan,

ENERGY EFFICIENCY	
General energy efficiency eligibility criteria - energy savings of 20% or more, compared to conditions before the project is implemented. Investments which result in an increase in energy efficiency of less than 20% can also be eligible, provided that the energy savings can justify at least 50% of the investment cost.	
SUB-SECTOR	**CRITERIA APPLIED (*)**
Energy Savings/ Energy Efficiency in Buildings	• Investment in rehabilitation of existing buildings aiming at increasing the energy efficiency (insulation, boiler replacement and rehabilitation of heat transmission and energy management systems). • New buildings achieving an energy efficiency standard close to the maximum considered in national legislation, in application of Directive 2002/91/EC. Financing of part of the cost of the building to be decided ex-ante on case-by case basis.
High efficiency Co-Generation of Heat and Power	• Primary Energy Savings (PES) to meet criteria for high-efficiency cogeneration according to EU Directive 2004/8/EC methodology, using efficiency reference values given in Council Decision C(2006) 6817. Microgeneration, as defined in the Directive, is eligible. High efficiency co-generation should result in a reduction of relative GHG emissions, based on a “with or without “project comparison. • Cogeneration projects using bagasse or other biomass in sufficient quantities to reduce CO2 intensity below that of the baseline generation alternative will not be subject to the minimum efficiency requirement of the directive as they are considered "renewable energy projects". • Recovery of industrial gases currently wasted to cogenerate is not subject to the minimum efficiency requirement of the directive as they are energy efficiency projects anyway.

ENERGY EFFICIENCY	
Improvement of energy efficiency and reduction of GHC emission on industrial sites.	• Projects would aim at supporting best practice and would include for example: (i) modernisation of critical equipment (e.g. replacement of boilers), (ii) replacement of existing capacity (e.g. process improvements in the chemical sector). The projects should meet the following key requirements: 1) Substantial (at least 20%) increase in energy efficiency and decrease in greenhouse gas emissions compared to conditions before the project is implemented. 2) Emission limit values and energy consumption in line with the requirements of EU Directive concerning integrated pollution prevention and control (the IPPC Directive, Directive 96/61/EC, recently amended by 2008/1/EC) or of future amendment of this legislation. In essence, the IPPC Directive is based on the principle of applying the best available technique, taking into account: the overall technical characteristics of the installation, its geographical location and the local environmental conditions. 3) The industrial projects falling under the framework will not significantly increase production capacity of the industrial facility concerned.

B. BANKS' EVALUATION CRITERIA FOR PROJECT FINANCING.

1. General criteria

Loan Mandatory criteria	Collateral		Non – collateral	
	New client	Client with outstanding loan	New client	Client with outstanding loan
Legal compliance	x	x	x	x
Eligible Creditability (i) no bad debt recognized in any financial institutions; (ii) no debt covered by VietinBank's contingent cash	x	x	x	x
Audited financial reports			x	x

Financial capacity to undertake obligation towards VietinBank during availability period.	Ranking of BB upwards	In failure of BB ranking: schedule of outstanding loan withdrawal and reduction shall be made to finally close credit relationship.	Ranking of A upwards	In failure of A ranking, BB ranking should at least be satisfied; schedule of outstanding loan withdrawal and reduction shall be made or collateral basis shall be considered.
Collateral availability of asset, 3rd guarantee in compliance with current VietinBank's regulation.	x	x		Additional collateral required
Open deposit account with VietinBank	x	x	x	x
Profitable business performance (ROE > 5%), no cumulative loss; except the following: (i) loss with authority's loss certification/ authority's loss compensation decision; (ii) projected loss in case newly-established clients/newly-implemented projects of which the operation period does not exceed 3 years and able to fulfill loss schedule.	x	x	x	x
Minimum current ratio	>= 0.8	>= 0.8	>= 1	>= 1
Minimum Equity injection ratio	30% (15%)	30% (15%)	30% (15%)	30% (15%)
Maximum loan tenor	120 months	120 months	120 months	120 months

- **Rejection of Facility: ineligible legal compliance or creditability**; or B credit ranking downwards.
- **Rejection of non-collateral facility: newly-established corporate, partnership, cooperatives**
- **Current credit rating range from AAA to D (10 ratings):** AAA, AA, A, BBB, BB, B, CCC, CC, C, D
- **Equity injection ratio:** Minimum 15% is mandatory for technical improvement and manufacturing optimization project

Note: technical *improvement/manufacturing optimization projects* are defined as currently operating projects which (i) adopt new technical advance, implementation/deployment method/solution in order to rationalize obstacles, optimize manufacturing capacity improve product quality, decrease selling price and (ii) have investment cost fewer than 5% of remaining total fixed asset value recognized in latest financial reports but not exceeding VND 10 billion.

2. Maximum Loan amount to Collateral ratio

Collateral types	Loan/collateral value
Used transportation vehicles	▪ **Transportation vehicles** used less than 6 months since 1st ownership registration and remaining quality over 80%: max. **60%.** ▪ Other cases: max. **50%.**
Machinery and Equipment	▪ Unused M&E (brand-new 100%) with non-Chinese origin/brand name max. **60%.** ▪ Used M&E: M&E with non-Chinese origin/brand name: max. **40%**
Commodities	▪ Max. 60% applied for transportation vehicles (unused car, motorcycle); rice; fertilizer; precious wood, natural wood. ▪ Outstanding loan collateralized by commodity/total collateralized outstanding loan for 1 client**: max. 50%**
Workshop , construction work, other assets associated with land	▪ Fully materialized asset with ownership registered: max. 60%

3. Basis for calculation of Discount Rate

➢ ***Market, product feature basis:***

	Investment Project types	Discount rate basis
1	Expansion, equipment replacement project	Client's WACC or bank's 1 year lending interest rate
2	New investment project to manufacture/trade products already available in the market.	Client's WACC
		In failure of WACC determination, bank's long term lending interest rate shall be applied.
3	New investment project to manufacture/trade products not available in local market but available in overseas markets.	Client's WACC+ risk premium.
		In failure of WACC determination, bank's long term lending interest rate + risk premium shall be applied.
4	New investment project to manufacture/trade products not available in local market and typical of Vietnam features.	Client's WACC+ risk premium.
		In failure of WACC determination, bank's long term lending interest rate + risk premium shall be applied.

- ***Investment types:***

STT	Investment Project types	Discount rate
1	Investment project in real estate, Build – Operation - Transfer (BOT)	Client's WACC or bank's 1 year lending interest rate
2	Investment project in commercial services	Client's WACC
		In failure of WACC determination, bank's long term lending interest rate shall be applied.
3	Investment project in traditional industries	Client's WACC+ risk premium.
		In failure of WACC determination, bank's long term lending interest rate + risk premium shall be applied.
4	Investment project in new technology	Client's WACC+ risk premium.
		In failure of WACC determination, bank's long term lending interest rate + risk premium shall be applied.

4. Maximum Facility for corporate.

a. For large corporate (registered capital > VND billion 50)

Client ranking	**(Ratio of Facility amount/maximum ownership's equity)**			
	A upwards	**BBB**	**BB**	**B downwards**
With collateral	6	5		Maximum Facility equals current outstanding loan and decreases by schedule
Without collateral	5	4		

b. Maximum facility for SMEs (registered capital < VND billion 50).

Clients rating	**(Ratio of Facility amount/maximum ownership's equity)**			
	A upwards	**BBB**	**BB**	**B downwards**
With collateral	7	6		Maximum Facility equals current outstanding loan and decreases by schedule
Without collateral	5	4		

C. PERFORMANCE OF DIFFERENT FUNDS

1. GCPF

	Client's Name	Project Name	Description including information on asset type	Annual energy savings (KwH)	Annual energy savings (%)	Annual Carbon Savings (tons)	Loan Amount (VND million)	Loan amount (USD 000	Duration (months)	Loan Start date
1	GreenFeed Vietnam	Green Feed Foodstuff processing expansion and upgrade (BEN LUC FACTORY)	Upgrade and expanding grinding system for (I) Castle Feed Grinding lines and (II) Foodstuff for aquatic lines	1,800,500	43.00	973.7	41,000	1,968	60	04/09/ 2012
2	GreenFeed Vietnam	Green Feed Foodstuff processing expansion and upgrade (HUNG YEN FACTORY)	Replacement of Machine and equipments	2,270,000	29.00	1,227.2 0	64,700	3,106	60	02/11/ 2012
3	Quang An 1 Industry JSC	Expansion on plastic Bottle Manufacturi ng lines	Investment on HUSKY PREFORM SYSTEM (CANADA), SIDEL - SBO 10 UNIVERSALE CO PH (FRENCH), etc.	938,048.00	29.00	244.3	60,757	2,916	60.00	10/12/ 2012
4	Hanoi CPC1 Pharmaceu tical Joint Stock Company	GMP – WHO Pharmaceuti cal manufacturi ng Factory	the 1st project in Viet Nam adopting advanced BFS from the US (Blow – Fill-Seal) technology which best		estimat e >>30%		72,905	3,500	60.00	17/01/ 2012 (curre nt outsta nding loan: USD

			simplify production process (no. of process steps is reduced from 16 to 9), considerably reduce energy consumption by cut down sterilization, air-conditioning, air filtering as well as extremely improve product quality.							100.000)
	Total							**11,491**		

2. EUROPEAN INVESTMENT BANK (EIB)

	Client's Name	**Project Name**	**Description including information on asset type**	**Annual energy savings (KwH)**	**Annual energy savings (%)**	**Loan Amount (VND million)**	**Loan amount (USD 000)**	**Duration (months)**	**Loan Start date**
1	Cong Thanh Thermo - Electric Joint stock company	Waste heat recovery plant (for electricity generation)	Waste heat from Clinker manufacturing in Line 2 of Cong Thanh Cement plant will be used as input material to generate power for 2operation of mentioned Clinker	Power consumption with and without Waste heat recovery is respectively 35kWh/ton of clinker and 68kWh/ton of clinker 100 mil kwh per year	48.8%		***10.310***	240	2013

			manufacturing						
2	HongKong Construction JSC	Nam Chim no.2 Small Hydro Power Project		7.5 MW			***10.000***		04/2013
	Total			22.5 MW			***20.310***		

3. Loan Guarantee Fund

	Client	Lender	VietinBank's Branch	Total investment	Total original loan	Guarantee ratio	Total Guarantee	Guarantee Issuing date	Guarantee tenor (month)	Outstanding Loan as of 31/3/2014	Outstanding Loans of 31/3/2014	Vietinbank's assessment				Notes
												Project's Economic efficiency	Due repayment	Late Repayment	Default	
I/ ON – GOING PROJECTS																
1	Đào Văn Phú	VEPF and VietinBank Bac Giang	Bắc Giang	4,131	2,000	59%	1175	19/09/2011	48	361	505	Efficient	Due			
2	Tạo Tuyền Co Ltd	VietinBank Bac Giang	Bắc Giang	16,853	3,500	57%	2000	31/12/2010	48	1,000	571	Efficient	Due			
3	Hùng household	VEPF	Chương Dương	720	500	75%	375	20/10/2008	48	57	43	Low efficiency		Late		
4	Hợp Mùi household	VEPF	Chương Dương	1,000	700	75%	525	5/12/2008	48	81	61	Low efficiency		Late		
5	Hùng Hoà ceramic houusehold	VEPF	Chương Dương	720	500	75%	375	5/12/2008	48	158	119	Low efficiency		Late		
6	Trần Văn Dương	VEPF	Chương Dương	600	400	75%	300	22/06/2009	48	175	131	Low efficiency		Late		
7	Lê Thị Hiền	VEPF	Chương Dương	720	100	75%	75	10/02/2010	48	60	45	Low efficiency		Late		
8	Thanh Bình	VEPF	Chương Dương	720	100	75%	75	10/02/2010	48	30	23	Low efficiency		Late		
9	Thành Hưng	VEPF	Chương Dương	960	670	75%	500	10/02/2010	48	277	208	Low efficiency		Late		
10	Chí Công	VEPF	Chương Dương	720	100	75%	75	10/02/2010	48	359	269	Low efficiency		Late		
11	Trang Hoàng	VEPF	Chương Dương	600	420	75%	315	10/02/2010	48	163	122	Low efficiency		Late		
12	Quang Huy	VEPF	Chương Dương	1,000	700	75%	525	10/02/2010	48	504	378	Low efficiency		Late		
13	Nho Thịnh	VEPF	Chương Dương	900	630	75%	473	27/09/2010	48	532	399	Low efficiency		Late		
14	Lê Minh Ngọc	VEPF	Chương Dương	1,600	1,000	75%	750	27/09/2010	48	841	631	Low efficiency		Late		
15	Hoàng Long Đức Co Ltd	VEPF	Hải Dương	5,600	2,000	85%	1700	18/09/2009	48	351	298	Low efficiency		Late		
16	Quản Văn Bút	VEPF	Phú Thọ	1,016	500	100%	500	02/11/2011	48	160	160	Efficient	Due			
17	Huấn Nhuận ceramic household	VEPF	Chương Dương	720	400	75.00 %	300	22/6/2009	48	178	133,5	Low efficiency		Late		
	TOTAL			**40,020**	**15,120**		**10,713**			**5,465**	**4,096**					
II/ DEFAULTED PROJECTS (LGF PERFORMED GUARANTEE)																
1	Thu Phương CERAMIC	VEPF	Chương Dương	500	350	75%	263	03/09/2008	48	118	89	Inefficient			Default	On – going procedure to request LGF to

	Co Ltd,.															effect repayment guarantee
2	Tuấn Giang Ceramic	VEPF	Chương Dương	720	400	75%	300	5/12/2008	48	156	117	Inefficient			Default	On – going procedure to request LGF to effect repayment guarantee
3	Tân Mai Ceramic Co Ltd	VietinBank Sa Đéc	Sa Đéc	3,155	1,866	83.0%	1,548.8	03/02/2010	48	317	0	Inefficient			Default	On – going procedure to request LGF to effect repayment guarantee
4	Đại Thắng Commercial and Transport Co Ltd(brick)	VietinBank Đà Nẵng	Đà Nẵng	5,892	2,700	75%	2000	Year 2009	56	1,064	798	Low efficiency			Default (low turnover, high receivable and inventories)	On – going procedure to request LGF to effect repayment guarantee
III/ COMPLETED PROJECTS (FULL REPAYMENT COMPLETED)				**10,267**	**5,316**		**4,111**			**1,655**	**1,004**					
1	Huỳnh Hường (1) ceramic household	VEPF	Chương Dương	825	577	75%	433	27/08/2007	48	0	0	Efficient	Due			Fully repaid
2	Huỳnh Hường (2) ceramic household	VEPF	Chương Dương	500	350	75%	263	23/04/2008	48	0	0	X	X			Fully repaid
3	Nguyễn Thị Thuý ceramic household	VEPF	Chương Dương	825	500	75%	375	26/11/2007	48	0	0	X	X			Fully repaid
4	Nguyễn Thị Thuỷ ceramic household	VEPF	Chương Dương	600	420	75%	315	25/01/2008	48	0	0	X	X			Fully repaid
5	Nguyễn Văn Hoà ceramic household	VEPF	Chương Dương	545	300	75%	225	07/01/2009	36	0	0	X	X			Fully repaid
6	Cường Hường ceramic household	VEPF	Chương Dương	600	420	75%	315	23/04/2008	48	0	0	X	X			Fully repaid
7	Nguyễn Hữu Điển ceramic household	VEPF	Chương Dương	600	300	75%	225	03/09/2008	48	0	0	X	X			Fully repaid
8	Hưng Nhung ceramic	VEPF	Chương Dương	400	200	75%	150	03/09/2008	48	0	0	X	X			Fully repaid

	household															
9	Hà Hùng ceramic household	VEPF	Chương Dương	600	400	75%	300	20/10/2008	36	0	0	X	X			Fully repaid
10	Thành Hạnh ceramic household	VEPF	Chương Dương	400	280	75%	210	20/10/2008	36	0	0	X	X			Fully repaid
11	Trần Công Sáu	VietinBank Bắc Giang	Bắc Giang	5,299	1,500	60%	900	13/08/2010	24	0	0	X	X			Fully repaid
12	Đặng Đức Toàn	VEPF	Hải Dương	2,500	1,900	89.47 %	1700	18/02/2009	36	0	0	X	X			Fully repaid
13	Cách Hương ceramic household	VEPF	CChương Dương	720	500	75%	375.0	20/10/2008	48	0	0	X	X			Fully repaid
14	Phan Thanh Giản	VEPF	Phú Thọ	1,238	500	80%	400	14/01/2010	43	0	0	X	X			Fully repaid
15	Trần Văn Khương	VEPF	Phú Thọ	1,238	500	80%	400	25/01/2010	48	0	0	X	X			Fully repaid
16	Trần Quốc Hiến	VEPF	Phú Thọ	1,418	500	80%	400	13/01/2010	48	0	0	X	X			Fully repaid
17	Đào Xuân Mật	VEPF	Phú Thọ	1,098	500	80%	400	09/11/2009	48	0	0	X	X			Fully repaid
18	Trần Kim Hoan	VEPF	Phú Thọ	1,338	500	80%	400.0	09/11/2009	48	0	0	X	X			Fully repaid
19	Trần Duy Hán	VEPF	Phú Thọ	1,238	500	80%	400	25/01//2010	48	0	0	X	X			Fully repaid
20	Bùi Thị Chính	VEPF	Phú Thọ	2,561	1,000	80%	800	14/10/2009	36	0	0	X	X			Fully repaid
21	Phước Nguyên Thành II Tuynel brick private company	VEPF	Bình Dương	1,560	1,000	75%	750	03/08/2009	40	0	0	X	X			Fully repaid
22	DNTN gạch Tuynel Tuấn Anh	VietinBank Bình Dương	Bình Dương	3,252	900	75%	675	27/08/2007	40	0	0	X	X			Fully repaid
23	Thành Đạt Tuynel brick private company	VietinBank Bình Dương	Bình Dương	3,252	1,500	75%	1,125	17/08/2007	40	0	0	X	X			Fully repaid
24	Chu đậu ceramic JSC	VEPF	Hải Dương	1,700	1,000	75.00 %	750	25/11/2008	48	0	0	X	X			Fully repaid
25	Trịnh Văn Minh	VEPF	Hải Dương	2,800	1,250	80.00 %	1000	10/11/2009	36	0	0	X	X			Fully repaid
26	Sử Mai	VEPF	Chương Dương	720	500	75%	375	27/11/2010	48	0	0	X	X			Fully repaid
				37,827	17,797	11	13,660									

IV/ PROJECTS WITH REPAYMENT GUARANTEE EFFECTED BY LGF BUT REPAYEMNT HAS NOT BEEN RECOLLECTED YET																
1	Long Thiện brick household	VietinBank Đồng Nai	Đồng Nai	4681	2,483	80%	1986	2009	60	0	0	Inefficient				Client is out of business
2	Dũng Mai Ceramic household	VEPF	Chương Dương	720	500	75%	375	26/11/2008	36	0	0					Repayment guarantee was effected
3	Nam Hương Co.Ltd	VEPF	Chương Dương	720	400	75%	300	22/06/2009	48	0	0	Inefficent				Repayment guarantee was effected
4	Hải Tuất	VEPF	Chương Dương	600	80	75%	60	10/02/2010	48	0	0	Inefficent				Repayment guarantee was effected
5	Bùi Xuân Tình (brick)	VietinBank Lê Chân	Lê Chân	6,434	2,000	80%	1600	11/08/2010		0	0	Guarantee closed				Repayment guarantee was effected

3. VEPF

STT	Year	Project name	Project owner/developer	Total loan commitment (VND million)
I	**Clean, environment friendly, energy conservation/efficiency technology and Environmental friendly product manufacturing**			**137,599**
I.1	**Clean, environment friendly, energy conservation/efficiency technology**			***40,799***
1	2006	Air Controller Investment (AC3)	Viet Thang Textile Co Ltd.,	2,474
2	2008	Solar energy vase manufacturing workshop	Thanh Thuy JSC	5,000
3	2008	Vertical and environmental friendly Brick Kiln	Khau luông - Đông Khê Cooperatives.	400
4	2009	Husk fired Thermal Cogeneration	Đình Hải Thermal JSC	0
5	2009	Factory for manufacturing - processing -installing energy saving equipment and container	TADICO JSC	4,800
6	2009	Vertical Shaft Brick Kiln (VSBK) at Hồng Phong commune - Hải Dương province	Đặng Đức Toàn household	1,900
7	2009	18m3 Gas used ceramic kiln and attached heat recovery construction	Phước Nguyên Thành II ceramic Co Ltd,.	1,000
8	2009	Vertical Shaft Brick Kiln (VSBK) at Cộng Hòa commune, Nam Sách district, Hải Dương province	Hoàng Long Đức Co.Ltd,.	2,000
9	2009	Vertical Shaft Brick Kiln (VSBK) at Trần Duy Hán household	Trần Duy Hán household	500
10	2009	Vertical Shaft Brick Kiln (VSBK)	Trần Quốc Hiển household	500

11	2009	Vertical Shaft Brick Kiln (VSBK)	Trần Kim Hoan household	500
12	2009	Vertical Shaft Brick Kiln (VSBK)	Trần Văn Khương household	500
13	2009	Vertical Shaft Brick Kiln (VSBK)	Phan Thanh Giản household	500
14	2009	Vertical Shaft Brick Kiln (VSBK)	Bùi Thị Chính household	1,000
15	2009	Vertical Shaft Brick Kiln (VSBK)	Đào Xuân Mật household	500
16	2009	Construction of 5 door Vertical Shaft Brick Kiln (VSBK) with capacity of 10 million of standard bricks per annum	Đặng Đức Nguyên household	800
17	2009	Vertical Shaft Brick Kiln (VSBK) at Thanh Cường commune, Thanh Hà district, Hải Dương province	Trịnh Văn Minh household	1,250
18	2010	Vertical Shaft Brick Kiln (VSBK)	Quản Văn Bút household	500
19	2011	Vertical Shaft Brick Kiln (VSBK) with capacity of 7,2 million brick per annum	Đào Văn Phú household	1,175
20	2012	Conversion of coal boiler into Biomass Boiler	Hoàng Văn Thụ Paper JSC	8,000
21	2012	Condensed fuel pill manufacturing factory for export at Gia Lai province	Lâm Phát JSC	0
22	2013	Vertical Shaft Brick Kiln (VSBK)	Trần Công Lâm household	500

23	2013	Biomass Boiler	Hoàng Văn Thụ Paper JSC.	7,000
I.2	**Environmental friendly product manufacturing**			***96,800***
1	2008	Mobile Toilet	PT Equipment & Environment JSC	2,500
2	2009	Assembly line of consumer good manufacturing with material from used plastic	Quang Tú Co Ltd	4,300
3	2010	Manufacturing factory of Aerated Autoclave Concrete - AAC	Phúc Sơn brick JSC	25,000
4	2010	Factory for adobe construction material with capacity of 150.000m^3 per annum	Construction material development JSC	25,000
5	2011	Manufacturing factory of Aerated Autoclave Concrete – AAC with capacity of 100.000 m3 per annum	UDIC Ninh Bình JSC	15,000
6	2011	Manufacturing factory of Aerated Autoclave Concrete - AAC	Sông Đa Cao Cương JSC	10,000
7	2012	PLA & PHB manufacturing factory	Kim Son Co Ltd,.	5,000
8	2012	Manufacturing factory of Aerated Autoclave Concrete - AAC with capacity of 300.000 m3 per annum	An Thai Co Ltd,	10,000

4. GCTF

	Company	Sector	EE	Technology change	Time	Total investment (USD)	Total bank loan's facility (USD)	LG (%)	Bank Loan Guarantee	RR (%)	PBP (year)	Location
1	Tan Phu Plastic Joint Stock Company	Plastic products	Y	Extruding machines	2008 – 2009	135,363	**N/A**	50	Techcombank	25	4.5	Ho Chi Minh City
3	Tan Phu Plastic Joint Stock Company	Plastic products	Y	Extruding machines	2010 – 2011	283,000	**N/A**	50	ACB	25	3.7	Ho Chi Minh City
4	Bac Ha Paper Limited Company	Kraft paper		Dissolved Air Flotation (DAF)	2011	100,100	**N/A**	50	Techcombank	25	3.24	Bac Giang
10	Bac Ha Limited Company	Kraft paper		Boiler	2014	264,957	244,967	50	ACB	25	2.05	Bac Giang
5	Viet Phap Steel Limited Company	Steel billets		MF induction furnace, casting machine	2010 - 2011	970,100	**N/A**	50	Techcombank	15	4.3	Quang Nam
6	Dao Van Tung Household Enterprise	Plastic products		Plastic thread line	2011-2012	161,982	80,991	50	Techcombank	25	2.15	Ha Noi
7	An Viet Fibber Joint Stock Company	Non-woven fabric		Non-woven fabric line	2012	344,786	250,000	50	ACB	25		Long An
8	Bac Giang Import and Export Joint Stock Company	Printing & Tissue Paper		Dissolved Air Flotation (DAF)	2012	144,207	73,695	50	ACB	25	3.21	Bac Giang
9	Bac Giang Import and Export Joint Stock Company	Printing & Tissue Paper		Boiler	2012	374,345	236,967	50	ACB	25	3.6	Bac Giang
2	Nam Hung Limited Company	Brick from clay	N	Husk-fired Brick Kiln	2008							An Giang
Abbreviation:												

- EE; Energy Effect
- LGR: Loan Guarantee Ratio
- RR: Reimbursement Ratio
- PBP: Pay back period.

D. EE/EC CASH FLOW PROJECTION/QUESTIONARE TABLE/WORKSHEET

LIGHTING		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Annual runtime (hours)		
Lighting type (optional) - *T8 Fluorescent Tubes* - *T12 Fluorescent Tubes* - *T5 Fluorescent Tubes* - *Incandescent/Halogen* - *LEDs* - *Compact Fluorescent* *Etc…*	- Key in	- Key in
Fixture Quantity	- Key in	- Key in
Fixture Wattage (W)	- Key in	- Key in
Lamps per fixture	- Key in	- Key in
Lamps Wattage(W)	- Key in	- Key in
Occupancy sensors - *Yes* - *No*	- Key in	- Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

BUILDING ENVELOPE		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Boiler		
Boiler type - *Non-condensing high-efficiency boiler* - *Condensing boiler with convection heaters* - *Condensing boiler with radiators system* - *Condensing boiler with under-floor or warm water system* - *Good modern boiler design* - *Typical existing boiler* - *Typical existing oversized boiler (atmospheric, cast iron sectional)*	Key in	Key in
Boiler age - *20 to 30 years old* - *10 to 20 years old* - *Installed in the last year* - *5 to 10 years old* - *Less than 5 years old*	Key in	Key in
Boiler fuel type - *Electricity* - *Propane* - *District steam* - *Natural gas* - *Oil*	Key in	Key in
Cooling equipment type (DX = Direct Expansion) - *Air cooled chillers 70 to 250kw* - *Air cooled chillers 40 to 70kw* - *Air cooled chillers up to 40kw* - *DX units* - *DX unit – existing* - *Air cooled chillers – existing* - *No air conditioning*	Key in	Key in
Wall		

Area of component upgrade (m2)	Key in	Key in
Building component type - *External insulated wall* - *External light-insulated wall* - *External insulated wall*	Key in	Key in
Glazing		
Area of component upgrade (m2)		
Building component type - *Double glazing –LowE (12mm gap)* - *Double glazing – clear (12mm gap)* - *Single glazing – clear*	Key in	Key in
Roof	-	-
Area of component upgrade (m2)	Key in	Key in
Building component type - *Pitched insulated roof (300mm of insulation)* - *Un-insulated Pitched roof* - *Un-insulated flat roof* - *Flat roof cavity insulated* - *Flat roof externally insulated*	Key in	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

SPACE HEATING SYSTEM		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Annual runtime (hours)	Key in	Key in
Boiler quantity	Key in	Key in
Boiler size (kw)	Key in	Key in
Boiler type - *Non-condensing high-efficiency boiler* - *Condensing boiler with convection heaters* - *Condensing boiler with radiators system* - *Condensing boiler with under-floor or warm*	Key in	Key in

water system - *Good modern boiler design* - *Typical existing boiler* - *Typical existing oversized boiler (atmospheric, cast iron sectional)*		
Existing Boiler age - *20 to 30 years old* - *10 to 20 years old* - *Installed in the last year* - *5 to 10 years old* - *Less than 5 years old*	Key in	Key in
Boiler fuel type - *Electricity* - *Propane* - *District steam* - *Natural gas* - *Oil*	Key in	Key in
New boiler efficiency (%)	-	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

COOLING SYSTEM		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Annual runtime (hours)	Key in	Key in
quantity	Key in	Key in
Unit size (kw)	Key in	Key in
Cooling unit type (DX – Direct Expansion) - *Air cooled chillers 70 to 250kw* - *Air cooled chillers 40 to 70kw* - *Air cooled chillers up to 40kw* - *DX units* - *DX unit – existing* - *Air cooled chillers – existing*	Key in	Key in

- *No air conditioning*		
Existing Cooling unit age - *20 to 30 years old* - *10 to 20 years old* - *Installed in the last year* - *5 to 10 years old* - *Less than 5 years old*	Key in	Key in
Cooling unit COP after installation	-	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

SOLAR THERMAL PANELS		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Domestic hot water heater fuel type - *Electricity* - *Propane* - *District steam* - *Natural gas* - *Oil*	Key in	Key in
Existing domestic hot water heater type - *Non-condensing high-efficiency boiler* - *Condensing boiler with convection heaters* - *Condensing boiler with radiators system* - *Condensing boiler with under-floor or warm water system* - *Good modern boiler design* - *Typical existing boiler* - *Typical existing oversized boiler (atmospheric, cast iron sectional)*	Key in	Key in
Existing domestic hot water heater age - *20 to 30 years old* - *10 to 20 years old* - *Installed in the last year*	Key in	Key in

- *5 to 10 years old* - *Less than 5 years old*		
Solar panel area (m2)	Key in	Key in
Domestic hot water storage tank capacity (litres)	Key in	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

ELECTRICAL APPLIANCES		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Appliance type - *Small/domestic chest freezer* - *Small/domestic electric oven* - *Small/domestic refrigerator* - *Small/domestic refrigerator-freezer* - *Small/domestic upright freezer*	Key in	Key in
Appliance quantity	Key in	Key in
Existing appliance age - *More than 30 years old* - *23 to 29 years old* - *20 to 22 years old* - *10 to 19 years old* - *3 to 9 years old*	Key in	Key in
New appliance efficiency rating - *EU energy label class C* - *EU energy label class A++* - *EU energy label class A+* - *EU energy label class A* - *EU energy label class B*	-	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

FAN MOTOR REPLACEMENT		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Fan application - *Kitchen exhaust – centrifugal* - *General supply – centrifugal* - *Toilet exhaust – centrifugal* - *Kitchen exhaust - axial* - *General exhaust – centrifugal* - *General exhaust – axial* - *Toilet exhaust – axial* - *General supply – axial*	Key in	Key in
Fan motor quantity	Key in	Key in
Annual runtime (hours)	Key in	Key in
Existing motor age - *More than 20 years old* - *10 to 20 years old* - *5 to 10 years old* - *installed in the last 5 years*	Key in	Key in
Motor size (kw)	Key in	Key in
New motor efficiency (%)		Key in
- *Yes* - *No*	Key in	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)		- **ENERGY SAVINGS** - **CO2 SAVINGS**

PUMP REPLACEMENT		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Pump application - *Chilled water circulation* - *Refrigerant circulation* - *Hot water circulation*	Key in	Key in

Pump motor quantity	Key in	Key in
Annual runtime (hours)	Key in	Key in
Existing motor age - *More than 20 years old* - *10 to 20 years old* - *5 to 10 years old* - *installed in the last 5 years*	Key in	Key in
Motor size (kw)	Key in	Key in
New motor efficiency (%)		Key in
VFD (Variable frequency drive) - *Yes* - *No*	Key in	Key in
ENERGY SAVINGS (KWH) / CO2 SAVINGS (%/TONNES)	-	- **ENERGY SAVINGS** - **CO2 SAVINGS**

NON – STANDARD		
IMPROVEMENT INFORMATION	**BEFORE INSTALLATION**	**AFTER INSTALLATION**
Please Summarize Your Changes	Key in	Key in
Annual Energy Savings (kWh)*:	Key in	Key in
Annual Carbon Savings (Tonnes)	Key in	Key in
Annual Carbon Savings (%)	Key in	Key in
Attachments (please attach Energy Audit & supporting documentation)	Key in	Key in

E. MINUTES OF MEETING

See in Attachment.