



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Promotion of Non-fired Brick (NFB) Production and Utilization		
Country(ies):	Viet Nam	GEF Project ID: ²	4801
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4546
Other Executing Partner(s):	Ministry of Science and Technology (MOST)	Submission Date:	4 th January 2012
		Resubmission Date:	11 th April 2012
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Name of parent program (if applicable):	n/a	Agency Fee (\$):	280,000
➤ For SFM/REDD+ <input type="checkbox"/>			

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-2 (select)	2.1 Appropriate policy, legal and regulatory frameworks adopted and enforced	2.1 Energy efficiency policy and regulation in place	GEFTF	520,000	1,180,000
CCM-2 (select)	2.2 Sustainable financing and delivery mechanisms established and operational	2.2 Investment mobilized	GEFTF	2,150,000	34,300,000
CCM-2 (select)	2.3 GHG emissions avoided	2.3 Energy savings achieved	GEFTF	0	0
Sub-Total				2,670,000	35,480,000
Project Management Cost ⁴			(select)	130,000	600,000
Total Project Cost				2,800,000	36,080,000

B. PROJECT FRAMEWORK

Project Objective: Displacement of fossil fuel use and reduction of the usage of good quality soil for brick making through the increased production, sale and utilization of non-fired bricks in Viet Nam

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
1. Policy support for non-fired brick (NFB) technology development	TA	Promulgation of, and compliance with, favorable policies that promote manufacturing and usage of NFBs	1.1 Established legal framework mandating the replacement of clay-fired bricks with NFBs. 1.2 Formulated policy incentives to encourage NFB production and usage in building construction 1.3 Developed policy on the use of good quality agricultural soil for brick making	GEFTF	270,000	500,000

¹ It is very important to consult the PIF preparation guidelines when completing this template.

² Project ID number will be assigned by GEFSEC.

³ Refer to the reference attached on the [Focal Area Results Framework](#) when filling up the table in item A.

⁴ GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

			<p>1.4 Integrated mandatory use of NFBs in building codes</p> <p>1.5 Regulations and guidelines for building design and construction using NFBs</p> <p>1.6 Guidelines on adoption and enforcement of existing emission standards in building brick manufacturing</p> <p>1.7 Capacity and skills of relevant officials enhanced for M&E and quality control/inspection.</p>			
2. Technical capacity building on NFB technology application and operation	TA	<p>Improved technical capacity of the local service providers on NFB technology</p> <p>Increased design, installation, operation and maintenance of NFB plants by local service providers</p> <p>Selected NFB producers are capable of producing bricks that meet the required product quality standard</p>	<p>2.1 Established strategic partnership in NFB technology transfer between local service providers and international technology suppliers</p> <p>2.2 Completed training on the provision of engineering and consultancy services for local interested NFB service providers</p> <p>2.3 Completed technical assistance to improve local capacity in the local manufacture of NFB technology equipment and components</p> <p>2.4 Documented technical guidelines on NFB project development for interested local engineering service providers</p> <p>2.5 Completed training for brick producers on NFB technology operation and management</p> <p>2.6 Completed and approved quality and energy performance standards for locally manufactured NFBs</p> <p>2.7 Completed training on evaluation and certification of NFB "quality assurance" for Provincial Standards, Metrology and Quality Agencies</p>	GEFTF	400,000	680,000
3. Sustainable financing support for NFB technology application	TA	Improved/enhanced availability of financial sources for investment projects on NFB	3.1 Documented assessment of the financial source viability and capital investment for NFB	GEFTF	500,000	800,000

		technology application	technology projects 3.2 Completed training courses/seminars for banks/financial institutions on the appraisal of NFB technology projects 3.3 Arranged financial scheme for NFB projects 3.4 Developed and established financial scheme for assisting NFB application projects			
4. NFB technology application investment and replication	TA	Boosted confidence in the financial feasibility, economic and environmental benefits of NFB production among financial institutions, brick manufacturers, and regulatory bodies Increased overall market share of NFBs	4.1 Completed feasibility studies and engineering designs of three NFB production lines 4.2 Completed project evaluation reports 4.3 Completed reports on the investment programme results 4.4 Completed and documented technical assistance for implementation of 50 NFB replication projects with a combined total production capacity of up to 0.75 billion bricks per year	GEFTF	500,000	800,000
	Inv	Increased number of NFB production units Increased overall market share of NFBs	4.5 Completed three production lines for different types of NFB technologies	GEFTF	1,000,000	32,700,000
Sub-Total					2,670,000	35,480,000
Project Management Cost ⁵				GEFTF	130,000	600,000
Total Project Costs					2,800,000	36,080,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	MOST, MOC and MONRE	Grant	950,000
GEF Agency	UNDP	In-kind	550,000
Local Government	ECCs, TTCs and STAMEQ in provinces	Grant	200,000
Others	VEPF	Soft Loan	3,000,000
Others	VIFOSTED	Guarantee	800,000
Private Sector	VIGLACERA, VIETINBANK and brick producers	Hard Loan	30,500,000
Others	CERATEC, VIBCA, VFCEA, VAA	In-kind	80,000
Total Cofinancing			36,080,000

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹: N.A.

⁵ Same as footnote #3.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1. The GEF focal area/LDCF/SCCF strategies /NPIF Initiative:

The proposed project fits into the GEF-5 climate change strategic objective 2 - Promote market transformation for energy efficiency in industry and the building sector, and will contribute to the reduction of greenhouse gas emissions through the transformation of the building brick market towards the increased application of non-fired bricks (NFBs) in building construction. This will be achieved through the promotion and facilitation of local manufacturing of bricks using NFB technology and utilization of NFBs in building construction. Moreover, the application of NFB technology will also contribute to the improvement of energy efficiency in Viet Nam's brick making industry, with the co-benefit of reducing GHG emissions from that sector. It will also lead to (albeit indirectly) the reduction in the energy consumption of, and GHG emissions from, the buildings sector on account of new buildings that will be constructed (and possibly existing buildings that will be retrofitted) with NFBs.

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

The proposed project is consistent with the second priority identified in the GEF National Portfolio Formulation Exercise (NPFE) and is in line with the major national policies and programmes on energy conservation and energy efficiency (EC&EE) and environment friendly technologies, including the application of low carbon technologies. Among these are:

- Decree No. 102/2004/ND-CP on Energy Conservation and Energy Efficiency dated September 3, 2003;
- Circular No. 01/2004/TT-BCN issued July 2, 2004 – Guidelines of energy conservation and energy efficiency in production enterprises;
- Decision No. 79/2006/QD-TTg issued on 14 April 2006– Approval of the National Targeted Programme on Energy Conservation and Energy Efficiency;
- Decision No. 80/2006/QD-TTg issued on 14 April 2006 – Approval of the Electricity Saving period 2006-2010;
- Law on Technology Transfer approved by the National Assembly on 29 November 2006;
- The Law on Environmental Protection, Article 84, point 3 on Management of GHG's and ozone layer-depleting gases: the State encourages production, business and service establishments to minimize GHG emissions;
- The National Target Programme on Energy Efficiency and Conservation;
- Decision No. 122/QD-TTg issued on 29 August 2008 – Approval of the Master Plan on Construction Material Development up to Year 2020;
- Decision No. 567/QD-TTg issued on 28 April 2010 - Approval of the Non-Fired Brick Development Programme up to 2020; and
- Law on EC&EE approved by the National Assembly on 17 June 2010.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

As a key segment of the construction material industry, the building brick⁶ industry is growing strongly in Viet Nam alongside rapid urbanization. The overall demand for building bricks have increased by 10-12% annually over the last five years and is expected grow at the same pace for the next 10 years. However, more than 90% of the building bricks used in Viet Nam is fired clay bricks. The production of 20 billion fired clay bricks per year during 2008-2010 consumed more than 3 million tonnes of coal equivalent, corresponding to the emission of 8 million tonnes of CO₂.

Almost all fired clay brick producers use traditional technologies that consume more energy, produce more emissions and waste causing serious pollution to local areas. A majority of these brick producers only see the immediate economic gain of traditional production methods. In addition to that, there is a lack of understanding among them about technological options and economic advantages of manufacturing NFBs in the long term. They also lack knowledge about the regulations on brick manufacturing in terms of quality assurance and environmental protection as well as lack of understanding on how to comply with these regulations. The market further lacks supervisory and enforcement mechanisms for emission control and brick quality control.

Consumers, building designers, architects, and contractors have a strong preference for existing products due to their general lack of knowledge about new products' quality and usage. The major issue is the lack of understanding about the economic implications of using quality non-fired bricks. Consumers still place emphasis on purchase price in selecting products to buy. They do not know about the economic gains from the use of materials such as high quality non-fired bricks (e.g., use of less mortar, quality construction, and lighter buildings).

Lately, the Government of Viet Nam (GOV) has recognized NFB technology as one of the sound environment-friendly technologies that could serve as an alternative to fired clay brick production and realization of the Master Plan of Construction Material Development up to 2020. To boost NFB production, GOV approved the Non-Fired Brick Development (NFBD) Programme on 28 April 2010. This programme represents the main baseline project in Viet Nam in the area of energy efficient brick making. The national targets set by GOV in this programme are:

- The share of NFB production will increase to 20-25% by 2015 and 30-40% by 2020
- Utilization of 15 - 20 million tonnes of industrial waste (ash) from coal-fired power generation and coal kilns in other industries – this translates to savings of 1,000 hectares of agricultural land per year; and,
- All traditional fired clay brick making plants will be gradually replaced by NFB production facilities.

To achieve these targets, GOV will offer preferential policies on corporate tax, import tax for equipment and materials used in producing non-fired bricks and other financial incentives for producers. The NFBD Programme will focus on the promotion of modern and semi-modern technologies producing three major kinds of NFBs: (i) block bricks made of cement, fly ash, ash, ore tailing and other industrial waste; (ii) block bricks and hole bricks made of fly ash, ash, ore tailing and non-agricultural soil; and (iii) autoclaved aerated concrete (AAC) made of sand, fly ash, cement, aluminum, ore tailing. Below is a summary of the relevant baseline projects/activities for this proposed project.

Summary of Baseline Projects

Baseline Project	Scope of Activities	Budget
Non-Fired Brick Development (NFBD) Programme – MOC	(i) Awareness and information dissemination on NFB production and utilization; (ii) Promulgation of regulations and guidelines for NFBD Programme implementation (including setting up the list of encouraged	MOC - US\$ 400,000 Relevant provincial agencies - US\$

⁶ Hereby the term of building bricks means that standardized bricks with dimension 210 x 100 x 60 mm/per bricks are converted from all kinds of bricks (including fired clay bricks and NFB).

	construction materials and the list of raw materials and equipment for NFB production lines to be exempted from taxes); and (iii) Implementation of research and development (R&D) activities focusing on the AAC technology, building mud, as well as improving the building codes related to NFB utilization.	200,000
National Programme of Key Technology Products Promotion for the period 2011-2015 (KTPP) – Managed by MOST	The technology and key equipment for NFB production have been proposed to be included in the KTPP. Activities will include: (i) Promotion of R&D related to NFB technology; (ii) Supporting the pilot production of related NFB equipment; and (iii) Supporting the market development of these technologies /equipment.	MOST - US\$ 1 million Private sector – up to US\$ 4 million
Energy Efficiency and Renewable Energy Promoting Project – VDB, JICA	The project covers the period Nov 2009 - Dec 2012. The main objective of this project is to promote energy efficiency activities and renewable energy investments in enterprises (end-borrowers) in Viet Nam, by promoting awareness campaign, and providing financial assistance to end-borrowers through the Viet Nam Development Bank (VDB), and to strengthen the appraisal capacity of VDB through the technical assistance.	US\$ 40 million - two-step loan programme for supporting EE&RE investment projects in enterprises.
Viet Nam Clean Production and Energy Efficiency Project (CP&EE)	The project is aimed at scaling-up the adoption of energy-efficient technology in new and existing industrial facilities and supporting energy efficiency improvement in the large commercial and residential sectors, including promotion of more efficient electrical appliances.	US\$ 50 million - participating banks
PECSME Loan Guarantee Fund	According to the Government Decision made in January 2011, the LGF will continue to provide loan guarantees for small and medium scale enterprises to access loans from financial institutions beyond PECSME by the end of June 2011.	The Loan Guarantee Fund (LGF) - US\$ 1.7 million
Viet Nam Environment Protection Fund (VEPF) under Ministry of Natural Resources and Environment (MONRE)	VEPF is responsible for providing grants and concessionary loans for national programmes/ projects on environmental protection.	VEPF - US\$ 24 million.

B. 2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund/NPIF) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

Even though the Government will offer attractive policy interventions in promoting NFBs, its set targets will be hard to achieve since there is a lack of understanding on the part of consumers, building designers, architects and contractors regarding the economic and environmental benefits of using these types of bricks, a lack of technical capacity in producing NFBs as well as lack of access to financial sources for financing technology application projects (e.g., NFB production). Almost all of the NFB producers in Viet Nam are small scale enterprises that produce cement block bricks (collective production of the cement block bricks accounts for 81% of total NFBs produced). Most of them use traditional manual methods in producing NFBs, and the product quality is very low, to the extent that their applications are limited only to construction of low-rise buildings, pavement and wall fences. Some CBB producers have imported low quality technology from China without proper technology transfer in terms of operational training and quality assurance of the product produced.

Some new lightweight concrete bricks producers went into production recently. However, since the market for such products is not yet fully established and features uneven product quality, the sales and consumption of this building material are very poor. Most of the production units only operate at 20-30% of design capacity, with sales reaching only 50-60% of production. As a result, many production units have had to stop production. A recent review by the Ministry of Construction

shows that there is a lack of technical guidelines for building design and construction using NFBs and a lack of guidelines from the Ministry of Finance on how to avail of incentives like exemption from land use and soft loan provisions.

Without GEF support, the NFB industry will not meet the 30-40% target by 2020. Under the business-as-usual scenario, the share of NFBs in the overall building bricks market will only increase by 1% per year, meaning that it would increase from 10% in 2010 to just 15% and 20% in 2015 and 2020 respectively. Incremental barrier removal activities are required to stimulate a rapid scale up of the NFB industry. In summary, the relatively low market share of non-fired brick products in Viet Nam is due to the following reasons:

- The centuries of practice using clay as a raw material for brick making, which is hard to change;
- Lack of knowledge and understanding about the quality and the economic and environmental benefits that can be derived from using NFBs;
- High initial investment cost of equipment and other machinery required for the local manufacture of non-fired bricks.

The following are the identified barriers in the widespread production and application of NFBs in Viet Nam:

Policy barriers: Lack of approved policies and guidelines for the development of NFB technology; Lack of codes, standards and regulations on NFB production and its utilization in building construction. There is an absence of an overall legal framework to mandate the shift from traditional clay-fired bricks toward the development of the NFB industry and to create an enabling environment for full market potential.

Institutional barriers: Institutional capacities for coordination between relevant government agencies and for monitoring and enforcement are weak. Local authorities lack the resources, capacity and knowledge required to develop relevant policies and guidelines.

Market barriers: consumer demand for NFBs is limited due to higher cost, variable quality and lack of information on the benefits of NFBs. Low consumer demand for NFB is currently the most significant barrier to NFB development. At present, consumers including building designers, architects, and contractors still have a strong preference for clay-fired brick products due to their general lack of knowledge about new building materials products' quality and usage.

Awareness barriers: low level of awareness among users, brick manufacturers, building practitioners, and local banks about NFB manufacturing technology and advantages of using NFBs; Lack of on-the-ground operating examples of NFB production facilities, and NFB applications; and lack of information on the costs and benefits of NFB applications.

Technical barriers: Limited availability of technical capacity for the design, installation, operation and maintenance of NFB manufacturing facilities; Lack of brick manufacturers that are capable of implementing NFB technology; Limited experience with the technical, economic and environmental aspects of NFB manufacturing technology.

Financial barriers: Lack of financing schemes for financing non-fired brick technology application projects; and Lack of financing from local banks/financing institutions for NFB production projects.

The proposed project is intended to address the above barriers and assist the NFB Programme and KTFP Programme through an integrated set of four components comprising: (1) policy support for NFB technology development, (2) technical capacity building on NFB technology application and operation, (3) sustainable financing support for NFB technology application, and (4) NFB

technology application investment and replication.

Component 1: Policy support for non-fired brick (NFB) technology development - This component will help relevant government agencies to develop favorable policies and guidelines; adapt the existing preference policy to the application of NFB technology in brick production; and develop a set of technical regulations and guidance for the development of NFB manufacturing technology. At the same time, it will be necessary to formulate, adopt and enforce emission standards in brick manufacturing as well as develop policies to discourage the use of agricultural land for brick production such as agricultural land planning, clay resource fee, etc. The expected outcome from this component is the promulgation of, and compliance with, favorable policies that promote manufacturing and usage of NFBs.

The envisioned outputs that would help realize the outcome are: (1) Established legal framework mandating the replacement of clay-fired bricks with NFBs; (2) Formulated policy incentives to encourage NFB production and usage in building construction; (3) Developed policy on the use of good quality agricultural soil for brick making; (4) Integrated mandatory use of NFBs in building codes; (5) Regulations and guidelines for building design and construction using NFBs; (6) Guidelines on adoption and enforcement of existing emission standards in building brick manufacturing; and (7) Capacity and skills of relevant officials enhanced for M&E and quality control/inspection.

Component 2: Technical capacity building on NFB technology application and operation – This component comprises a set of activities that will help improve local capacity in the provision and application of NFB production lines, including consultancy services for non-fired brick project development, engineering design, installation, operation and maintenance. The expected outcomes from this component are: (1) Improved technical capacity of the local service providers on NFB technology; (2) Increased design, installation, operation and maintenance of NFB plants by local service providers; and (3) Selected NFB producers are capable of producing bricks that meet the required product quality standards.

The major outputs to realize these outcomes are: (1) Established strategic partnership in NFB technology transfer between local service providers and international technology suppliers; (2) Completed training on the provision of engineering and consultancy services for local interested NFB service providers; (3) Completed technical assistance to improve local capacity in the local manufacture of NFB technology equipment and components; (4) Documented technical guidelines on NFB project development for interested local engineering service providers; (5) Completed training for brick producers on NFB technology operation and management; (6) Completed and approved quality and energy performance standards for locally manufactured NFBs; and (7) Completed training on evaluation and certification of NFB “quality assurance” for Agencies of Standard, Metrology and Quality in provinces.

Component 3: Sustainable financing support for NFB technology application – This component is primarily designed to address the barriers of lack of access to finance for NFB project investments through the utilization of a loan guarantee fund as well as existing financial sources available for energy conservation (EC), environment and technology innovation, including the National Technology Innovation Fund (NATIF) managed by MOST, the Viet Nam Environmental Protection Fund and some local commercial banks interested in financing EC&EE investment projects (Vietinbank, Techcombank, etc.). The expected outcome from this component is the improved/enhanced availability of financial sources for investment projects on NFB technology application as well as for manufacturing component equipment of NFB production lines.

The envisioned outputs that would help realize this outcome include: (1) Documented assessment of the financial source viability and capital investment for NFB technology projects; (2) Completed

training courses/ seminars for banks/financing institutions on the appraisal of NFB technology projects; (3) Arranged financial scheme for NFB projects that includes utilization of the loan guarantee fund and financial incentives given to low carbon technology; and (4) Developed and established financial scheme for assisting NFB application projects.

Component 4: NFB technology application investment and replication – This component will involve investment in new NFB production lines in practical applications, including their identification, feasibility studies, engineering design, financial arrangement, installation, operation and maintenance, documentation, dissemination, technical support, monitoring, evaluation and replication. The expected outcomes from this component are: (1) Boosted confidence in the financial feasibility, economic and environmental benefits of NFB production among financial institutions, brick manufacturers, and regulatory bodies; and (2) Increased number of NFB production units; and (3) Increased overall market share of NFBs.

The major outputs to realize these outcomes are: (1) Completed feasibility studies and engineering designs of three production lines; (2) Completed three production lines for different types of NFB production technologies; (3) completed project evaluation reports; (4) completed reports on the investment programme results; (5) Completed and documented technical assistance for implementation of 50 NFB replication projects with a combined total production capacity of up to 0.75 billion bricks per year.

Emission Reductions

The successful implementation of the proposed project will also contribute to the achievement of the national targets set forth in the National Programme for NFB, resulting in the cumulative CO₂ emission reduction of 4,531 ktonnes during 2012–2020.

The implementation of three investment projects (each project with 15 million bricks/year capacity) is scheduled to be completed by the end of the third year of project implementation. The baseline emissions calculated for traditional brick manufacturing are 0.191 kg CO₂/brick and estimated emissions in the NFB production are 0.047 kg CO₂/brick. Therefore, project emissions must be deducted from the estimated baseline emissions in order to calculate the emission reductions that are attributed to the NFB technology. The annual direct project emission reductions⁷ are 6,482 tCO₂/y and over a period of 10 years of project lifetime, the emission reductions are calculated at 64,816 tCO₂. It is expected that there will be 50 other NFB production lines (each project with 15 million bricks/year capacity) to be installed with technical assistance and financing arrangement from the proposed project in the duration of project implementation. In this regard, the direct post project emission reductions during the 10 year influenced period are estimated at 1,080,274 tCO₂. Therefore, altogether direct and direct post project emissions due to the implementation of 53 non-fired brick manufacturing units are estimated to be 1,145,090 t CO₂ during an influence period of 10 years. Moreover, the project is expected to influence the market share of NFB as stated above. Such projects will bring CO₂ emission reductions which are indirect emission reductions of 4,531 ktonnes during 2011-2020 calculated based on a top-down approach that can be indirectly attributed to this project. Assuming a replication factor of 3, the indirect emission reductions over an influence period of 10 years will be 194,449 t CO₂e (64,816 * 3) based on a bottom-up approach.

Without GEF support to cover the incremental cost associated with the removal of barriers, those hurdles would remain in place. These include: deployment (how the new NFB technology will be applied in brick manufacturing by overcoming technical, financial, and policy barriers); diffusion (how to promote and create awareness among the brick industry, building designers, architects and contractors on the benefits of NFB production and utilization, and to disseminate technical know-

⁷ (0.191-0.047) kg CO₂/brick*3 projects*15 million bricks/y/project

how and skills in the development and application of the NFB technology in production and utilization of NFBs in construction); and transfer (how the NFB technology or equipment and components of the technology will be marketed in Viet Nam by addressing technical, market, financing, institutional and policy barriers).

Without this proposed project, the country would have very limited application of this technology and limited success in establishing a suitable environment for widespread adoption of non-fired brick technology in brick manufacturing. Among the initial steps towards realizing such technology, this project will focus on the deployment, diffusion and transfer of NFB technology in the brick manufacturing sector in Viet Nam. With the GEF support for the incremental cost needed for removal of the barriers described above, it will help expand the envisioned NFB market, which will subsequently contribute to the reduction of investment costs in the long-term. While contributing to the mitigation of climate change globally, as a result of the project, a significant GHG reduction will be realized from the implementation of three investment projects in the brick manufacturing sector and realization of 50 replications during project implementation.

Sustainability

The project will ensure sustainability of project results by strengthening institutional and regulatory capacity, in particular by putting in place more robust monitoring and enforcement mechanisms, developing local production capacity and related technical skills for large-scale production of high quality NFBs, and operationalizing a loan guarantee mechanism to stimulate investment in the NFB industry.

B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF.](#)":

The project will have the following socio-economic impacts:

- Effective use of 15-20 million tonnes of industrial waste (ash) from coal-fired power generation and coal kilns in other industries. This would lead to a saving of 1,000 hectares of agricultural land per year, directly benefiting farmers, who make up a large percentage of Viet Nam's workforce.
- Reduce exhaust fumes from traditional coal brick kilns containing numerous toxic substances, which are extremely harmful to the environment, agricultural crops, and the health of workers as well as communities living in surrounding areas.
- Ease of conflicts between fired clay brick producers and agricultural farmers because of reduced air pollution in the residential areas and agricultural areas where traditional brick producers are located.
- Utilization of NFBs helps to save up to 4.6 - 6% of the total cost of building construction.

The project will help to reduce the workload of female workers in the brick making sector. The share of female workers currently employed in traditional brick production units account for up to 35% of the total workers. All female workers are assigned to drudgery work such as carrying green bricks from the drying yard to the kiln. If traditional brick production is replaced by NFB production, all manual processes will be replaced by machinery and thus lead to a reduction in the drudgery of female workers. Women workers will be retrained to have essential knowledge and skills to work in NFB production plants, so they will have a better working condition and better incomes. As NFB production develops, large areas of agricultural land will be saved, so for those women who cannot be retrained, they will have an opportunity to work on agricultural production.

B.4. Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:

Normally initiatives for promoting new technologies in developing countries without accompanying holistic support programmes would be perceived as high risk projects. In this case, the technology introduction in this proposed project will be accompanied by a large number of barrier removal activities which would substantially reduce associated risks in the adaptation and implementation of NFB technology.

Risk	Mitigation Measure	Risk Rating
Technical risk: the capacity of local manufacturers of NFB might not meet the technical requirement of the NFB technology transferors/owners, so that partnership might not be realized.	The counter measures in the proposed project include: (1) identification of technology suppliers in other countries where NFB technology is successfully practiced in parallel to engaging with the suppliers within the country; (2) develop the capacity of local manufacturers in terms of technical know-how from the beginning of the project.	Medium
Financial risk: The financial incentives and loans from existing funds might not be available in the early stages of the project. That would delay the progress in demonstration as well as the applicability and sustainability of the model financial scheme.	The proposed risk reduction measures include: (1) close coordination and consultation with the relevant stakeholders in each of the proposed activities and involving them at a very early stage (PPG phase), (2) inclusion of the financial capacity in the criteria for selecting pilot sites to ensure that the hosting companies/investors are financially capable.	Medium
Operational risk: Delay in endorsement and enforcement of new regulations, guidelines and standards on NFB manufacturing and utilization; delay in endorsement and approval of enabling policies on NFB technology application and deterrent policies for using good quality agricultural soil for brick making; and delay in the formulation, adoption and enforcement of emission standards in brick manufacturing. This might lead to a lack of interest by local manufacturers towards a cleaner production technology and delay the implementation of investment projects.	The proposed counter measures include (1) Work with the government authority responsible for enforcement and formulate standards to agree on a special arrangement for the GEF project and expedite the regulations and formulation of standards; (2) Formulate the project steering committee with high-level representation from concerned authorities (in this case MOST, MOC and IBST).	Low

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

Stakeholder	Role
Ministry of Science and Technology (MOST)	Implementing partner responsible for managing and operating day-to-day project implementation.
Ministry of Construction (MOC), Ministry of Finance (MOF) and Ministry of Natural Resource and Environment (MONRE)	Associate implementing partners participating in developing policy, standard and regulations.
Local government agencies such as Technology Transfer Centers (TTCs), Energy Conservation Centers (ECCs), and Agencies of Standard, Metrology and Quality (STAMEQs) under Departments for Science and Technology (DOSTs)	The local government agencies will participate in the project at the provincial level for effective project implementation.

Institute for Building Science and Technology (IBST), Hanoi University of Technology and the Universities of Construction in Hanoi and HCMC	These universities and academic institutes will be involved in the provision of technical training.
Center for Science and Technology (CERATEC), Viet Nam Building Ceramic Association (VIBCA), Viet Nam Federation of Civil Engineering Association (VFCEA) and Viet Nam Architect Association (VAA)	NGOs that participate in the project as co-financing institutions through in-kind contributions. They will play an active role in disseminating information and raising the awareness of different stakeholders on NFB benefits by using their current networks.
Viet Nam Building Glass and Ceramic Corporation (VIGLACERA) and Viet Nam Trade and Industrial Bank (Vietinbank)	Private sector institutions that participate in the project as co-financing institutions that provide loan towards the investments for NFB technology application.
Viet Nam Environment Protection Fund (VEPF) managed by MONRE	May provide finance towards initial investment.
National Foundation for Science and Technology Development (NAFOSTED) under MOST	Responsible for managing the Loan Guarantee Fund (LGF) after the PECSME implementation and will provide loan guarantees for brick producers to access credit from financial institutions for their NFB project investments.
Viet Nam Machinery Erection Corporation (LILAMA) and Construction and Mechanical Corporation (COMA)	Will be involved in supplying the equipment as components and parts of the NFB production line. They will be the potential partners of the main international NFB equipment suppliers.
Labor unions, women's unions and youth unions	The project will closely coordinate its activities with labor unions, women's unions and youth unions, particularly on the retraining of workers for NFB manufacturing.
Brick industry associations	National and provincial brick associations will be involved in the awareness and information dissemination activities of the project.

B.6. Outline the coordination with other related initiatives:

The project development team at MOST will consult and involve the implementers of the relevant ongoing energy efficiency projects/programmes as well as technology transfer programmes in the country in the design and development of the project in order to explore synergies and avoid overlaps. They include: (i) National Targeted Programme on EC&EE; (ii) WB-GEF-MOI Commercial Energy Efficiency Project (CEEP), and (iii) Viet Nam: Promoting Energy Conservation in Small and Medium Scale Enterprises (PECSME); (iv) UNDP/GEF regional project, Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling (BRESL); (v) National Programme on Technology Transfer (TT) – including R&D/TT on energy conservation and renewable energy managed by MOST; (vi) the proposed Energy Conservation and Renewable Energy Fund supported by JICA and hosted by the Viet Nam Development Bank; and (vii) the Viet Nam Clean Production and Energy Efficiency Project supported by GEF and WB and hosted by MOIT.

The project will establish links with the relevant agencies and ongoing projects/programmes such as (a) the Master Plan on Construction Material Development up to 2020, and (b) the Programme on Non-Fired Brick Development up to 2020 coordinated by MOC to identify the relevant activities that will build on their respective achievements. The project is fully aware of Viet Nam Clean Production and Energy Efficiency Project. JICA's initiative of energy conservation and renewable fund for Viet Nam, in cooperation with the Viet Nam Development Bank, is at the first phase of operation. There is still an opportunity for fund leverage and the project will consult with the respective project teams to explore any possible co-financing support. Building construction associations will also be mobilized to participate in the project to promote the widespread application of NFBs in their respective sectors.

With regards to other initiatives in the region, the project will promote learning and knowledge sharing and forge partnerships between Vietnamese entities and other country partners to replicate best practices and facilitate technology transfer. The companies that will be involved in the project investments will be liaising with technical experts from other countries (particularly those supplying the NFB technology). The project will also form part of UNDP's Community of Practice on energy efficient brick making, linking this initiative to bricks projects in China, India and Bangladesh.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

UNDP occupies a unique position in promoting energy conservation technology. In Viet Nam, UNDP has previous experience as a broker/promoter in technology transfer and capacity development for energy conservation in two large GEF projects, namely Promoting Energy Conservation in Small and Medium Enterprises in Viet Nam - PECSME and Viet Nam Energy Efficient Public Lighting - VEEPL. The achieved results from these two projects demonstrate that the support although small compared to the need was catalytic in transferring low cost energy conservation technologies and best management practices to private, public businesses and SMEs in Viet Nam, including SMEs in the brick sector. The projects also illustrate how well UNDP coordinates partnerships across public and private sectors, including the involvement of commercial banks/financial institutions in energy conservation and energy efficiency related activities.

Besides, in recent years UNDP Viet Nam has actively supported GoV in strengthening its capacity to participate in climate change negotiations at the national and international level. UNDP Viet Nam also has experience in policy advocacy and policy development for energy conservation. Lack of favorable EE policies represents one of the major barriers to wide-spread application of energy conservation technologies and practices. Regarding project execution or management, UNDP has vast experience in implementing GEF projects (five full-sized projects over the last 7 years) in Viet Nam. In the past, UNDP has also developed a strong partnership with various institutions, including ministries, businesses, banking institutions, and local authorities. Such strong and growing partnerships will help deliver the project results successfully. Finally, in the Asia-Pacific region, UNDP has experience in implementing similar GEF-assisted projects on energy efficiency in the brick industry (e.g., India, Bangladesh, and China) and in the building sectors (e.g., China, India, and Mongolia).

C.1. Indicate the co-financing amount the GEF agency is bringing to the project:

UNDP will provide USD 550,000 as co-financing in the form of contribution from the UNDP project on "Strengthening national capacity to respond to climate change in Viet Nam, reducing vulnerability and controlling GHG emissions". The project focuses on assisting GoV in the development of a climate change framework, mechanism and capacity strengthening to inform, guide and coordinate climate change related issues, and to formulate investment plans and ways to change consumer behavior for low-carbon economic development.

C.2. How does the project fit into the GEF agency's program (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

The expected outcomes of the Project as mentioned above will contribute to achieving UNDAF outcomes and UN One Plan (OP) outputs, which are agreed with the Government of Viet Nam:

- UNDAF Outcome 1: Government economic policies support growth that is more equitable, inclusive and sustainable.
- One UN Plan Outcome 3: Viet Nam has adequate policies and capacities for environmental protection and the rational management of natural resources and cultural heritage for poverty

- reduction, economic growth and improving the quality of life.
- Expected One UN Plan Outputs/Indicators: The project will contribute to the achievement of the following OP Outputs:
 - OP Output 3.2 - Environmental strategies, policies, plans and regulations developed with broad participation of local people and stakeholders and in line with international environmental conventions;
 - OP Output 3.21 - Initiatives to promote rational and efficient use of energy to reduce greenhouse gases that cause climate change. Specifically the project will seek to directly achieve the following results indicated in the UN One Plan: (OPI 3.2.1) Initiatives to promote rational and efficient use of energy to reduce greenhouse gases that cause climate change; (OPI 3.2.2) Strengthened national, regional and provincial plans, regulations and standards for energy efficiency and energy conservation, and improved access by poor people to modern energy services (national and local level); and,
 - Output 3.2.3 Improved energy efficiency and sustainable energy services in the private sector using a comprehensive approach including promotion of energy-efficient technology and equipment, investment in technology upgrading, sustainable energy management practices, and promotion of CDM projects.

UNDP has extensive experience in providing technical assistance oriented activities and other capacity building initiatives to help improve local government capabilities and the enabling environment for implementing environmental and sustainable energy programmes in Viet Nam. It is well positioned to work with and advise the Government of Viet Nam on policy, strategy and best approaches to meet serious environmental and energy challenges based on its respective comparative advantage.

Within the UNDP Country Office in Viet Nam, the Sustainable Development Cluster (SDC) is responsible for energy and climate change related projects. The SDC team consists of seven full-time senior professional staff members that have more than 10 years of experience in project/programme management and are currently managing a portfolio of 12 projects; three international technical specialists who have many years of international experience in energy efficiency and climate change related issues; and one international technical specialist working on climate change policies.

To ensure the success of project implementation, the UNDP country team will involve various stakeholders and co-financing partners during the formulation and implementation of the project through consultation meetings, technical workshops, and contractual agreements. In addition, project implementation will be overseen and technically assisted by the UNDP-GEF Regional Coordination Unit for Asia-Pacific in Bangkok (UNDP-GEF AP RCU).


PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Dr. Nguyen Van Tai	Director General	Ministry of Natural Resources and Environment	11/30/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Adriana Dinu UNDP/ GEF Officer-in-Charge		April 11, 2012	Faris Khader, Regional Technical Advisor, Climate Change Mitigation	+66 2304 9100 ext 2756	faris.khader@undp.org