



Accelerating low-carbon circular economy through cleantech innovation towards sustainable development in Viet Nam

Part I: Project Information

GEF ID

Project Type

MSP

Type of Trust Fund

GET

CBIT/NGI

CBIT No

NGI No

Project Title

Accelerating low-carbon circular economy through cleantech innovation towards sustainable development in Viet Nam

Countries

Viet Nam

Agency(ies)

UNIDO

Other Executing Partner(s)

Ministry of Natural Resources and Environment (MONRE)

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Sustainable Development Goals, Chemicals and Waste, Sound Management of chemicals and waste, Best Available Technology / Best Environmental Practices, Industrial Emissions, Waste Management, Industrial Waste, Hazardous Waste Management, eWaste, Emissions, Eco-Efficiency, Plastics, Climate Change, Climate Change Mitigation, Renewable Energy, Energy Efficiency, Sustainable Urban Systems and Transport, Financing, United Nations Framework Convention on Climate Change, Paris Agreement,

Nationally Determined Contribution, Influencing models, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Demonstrate innovative approaches, Deploy innovative financial instruments, Stakeholders, Private Sector, Large corporations, Capital providers, Individuals/Entrepreneurs, Financial intermediaries and market facilitators, SMEs, Communications, Public Campaigns, Awareness Raising, Behavior change, Education, Strategic Communications, Type of Engagement, Consultation, Participation, Information Dissemination, Partnership, Civil Society, Community Based Organization, Academia, Trade Unions and Workers Unions, Non-Governmental Organization, Beneficiaries, Local Communities, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Gender-sensitive indicators, Gender results areas, Access to benefits and services, Capacity Development, Access and control over natural resources, Participation and leadership, Knowledge Generation and Exchange, Integrated Programs, Sustainable Cities, Municipal waste management, Buildings, Municipal Financing, Energy efficiency, Transport and Mobility, Integrated urban planning, Urban sustainability framework, Capacity, Knowledge and Research, Knowledge Generation, Workshop, Professional Development, Course, Seminar, Training, Knowledge Exchange, South-South, Conference, Peer-to-Peer, North-South, Innovation, Learning, Theory of change, Targeted Research

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 0

Duration

48 In Months

Agency Fee(\$)

165,296.00

Submission Date

9/23/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-4	GET	1,739,954.00	10,000,000.00
Total Project Cost (\$)		1,739,954.00	10,000,000.00

B. Indicative Project description summary

Project Objective

To accelerate the application of innovative cleantech solutions for low carbon and circular economy towards realizing sustainable development in priority sectors in Viet Nam

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
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Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Policy, institutional framework and national cleantech innovation and entrepreneurship ecosystem (CIEE) strengthening and connectivity enhanced	Technical Assistance	1.1 Policy framework to promote innovative cleantech solutions for low carbon circular economy in priority sectors strengthened and interconnected	<p>1.1.1 Study and analysis on technology gaps conducted, and best available technologies and cleantech innovation opportunities in priority sectors in Vietnam identified and recommended</p> <p>1.1.2 Evidence based policy instruments related to cleantech innovation and entrepreneurship developed</p> <p>1.1.3 National institutions strengthened for cleantech innovation and entrepreneurship support and linkages, collaboration, and synergies across CIEEs promoted (at least 6 capacity building events conducted with up to 90 participants in total)</p>	GET	300,000.00	1,000,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Policy, institutional framework and national cleantech innovation and entrepreneurship ecosystem (CIEE) strengthening and connectivity enhanced	Technical Assistance	1.2. Gender equality supported and strengthened by the CIEE in Viet Nam	1.2.1 Women's cleantech hub/network established to support and accelerate the formation of local innovation ecosystems in a more inclusive manner	GET	50,000.00	150,000.00
			1.2.2 Mentoring programme for women cleantech entrepreneurs and mentors implemented			
			1.2.3 Campaign conducted to raise awareness on women role models in the cleantech ecosystem			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Transforming early-stage innovative cleantech solutions into scalable enterprises	Technical Assistance	2.1 Early-stage cleantech innovations accelerated	2.1.1 GCIP methodologies, guidelines, tools and training systems for cleantech innovation and entrepreneurship accelerator adapted for Viet Nam	GET	400,000.00	350,000.00
			2.1.2 Pool of cleantech innovation and entrepreneurship experts (trainers, mentors and judges) trained and certified to support cleantech innovation and entrepreneurship accelerator in line with GCIP training system			
			2.1.3. Two annual national competition-based cleantech innovation and entrepreneurship accelerators conducted (at least 80 enterprises)			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Transforming early-stage innovative cleantech solutions into scalable enterprises	Technical Assistance	2.2 Investment, piloting and demonstration of innovative cleantech solutions for low-carbon circular economy	2.2.1 In depth capacity needs assessment of the selected entrepreneurs conducted for systematic promotion and acceleration of cleantech commercialization (for at least 8 entrepreneurs)	GET	300,000.00	1,500,000.00
			2.2.2 Advanced support provided for business model development and refinement of innovative solutions taking into account of the progresses and findings through the capacity needs assessment (for at least 8 entrepreneurs)			
			2.2.3 Model business cases of innovative cleantech solutions are validated (at least for 2 cleantech solutions)			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Transforming early-stage innovative cleantech solutions into scalable enterprises	Investment	2.2 Investment, piloting and demonstration of innovative cleantech solutions for low-carbon circular economy	2.2.4 Financing mobilized for implementation of fully functional innovative cleantech solutions (at least for 2 cleantech solutions)	GET	450,000.00	6,000,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Project coordination, monitoring and coherence	Technical Assistance	3.1 Coordination and coherence strengthened	3.1.1 The GCIP internal guidelines for project management teams are adapted for Viet Nam's country context and implemented	GET	41,777.00	78,000.00
			3.1.2 Knowledge management, communication and advocacy strategy is adapted from Global programme for Viet Nam's country context and implemented			
			3.1.3 The web platform is operated for the project to maintain the GCIP community			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Project coordination, monitoring and coherence	Technical Assistance	3.2 Impacts and progress of all the project activities and indicators are adequately monitored and reported	3.2.1 National impact monitoring established and linked to Global GCIP 3.2.2 Project effectively monitored including monitoring and reporting on the ESMP and risks 3.2.3 Gender mainstreaming action plan operationalized, monitored and impact on GEEW evaluated 3.2.4 External mid-term review and independent terminal evaluation conducted	GET	40,000.00	70,000.00
Sub Total (\$)					1,581,777.00	9,148,000.00

Project Management Cost (PMC)

GET	158,177.00	852,000.00
Sub Total(\$)	158,177.00	852,000.00

Project Management Cost (PMC)

Total Project Cost(\$)

1,739,954.00

10,000,000.00

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	UNIDO	Grant	Investment mobilized	50,000.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	100,000.00
Recipient Country Government	Viet Nam Environment Protection Fund Ministry of Natural Resources and Environment (MONRE)	Loans	Investment mobilized	8,000,000.00
Recipient Country Government	Viet Nam Environment Protection Fund Ministry of Natural Resources and Environment (MONRE)	In-kind	Recurrent expenditures	1,200,000.00
Private Sector	To be determined	Equity	Investment mobilized	650,000.00
Total Project Cost(\$)				10,000,000.00

Describe how any "Investment Mobilized" was identified

The co-financing modalities were initially discussed with the envisaged lead executing agency, Viet Nam Environment Protection Fund, Ministry of Natural Resources and Environment (MONRE) which will provide co-financing in the form of in-kind contribution as well as through the means of loans for financing selected innovation projects through GCIP. VEPF is a state-owned financial institution with the function of mobilizing financial resources to support the activities in the field of environmental protection including low carbon and sustainable development. VEPF propose to mobilize its own funds as investment as loans to support the businesses in the cleantech sector in alignment with the government policy, in the amount of USD 8 million. In general, it is envisaged that cleantech enterprises (start-ups and SMEs) and their solutions, that are to be identified and supported in the framework of this project, can also be of interest to the private sector entities in Viet Nam as providing potential investment opportunities. Due to COVID-19, related restrictions, in-depth stakeholder consultation with the private sector were limited while it is expected that there are certain amount of potential private stakeholders in Viet Nam with the appetite to invest in cleantech innovations. During the PPG phase, the project will engage the stakeholders especially in private sector with a view to mobilizing co-financing and determine the confirmed structures of co-financing.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNIDO	GET	Viet Nam	Climate Change	CC STAR Allocation	1,739,954	165,296	1,905,250.00
Total GEF Resources(\$)					1,739,954.00	165,296.00	1,905,250.00

E. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

50,000

PPG Agency Fee (\$)

4,750

Agency	Trust Fund	Country	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNIDO	GET	Viet Nam	Climat e Change	CC STAR Allocation	50,000	4,750	54,750.00
Total Project Costs(\$)					50,000.00	4,750.00	54,750.00

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	144000	0	0	0
Expected metric tons of CO ₂ e (indirect)	720000	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	144,000			
Expected metric tons of CO ₂ e (indirect)	720,000			
Anticipated start year of accounting	2022			
Duration of accounting	10			

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	468			
Male	572			
Total	1040	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

1. The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

Country Context and Global Environmental Problem

1. The most recent 2018 IPCC report[1]¹ notes that current trends indicate that global warming will pass 1.5° above pre-industrial levels between 2030 and 2052. In Viet Nam, the impact of the climate change has already been seen in the change of its climatic patterns including the change in the level of extreme weather events and natural disasters contributing to increased vulnerability[2]². There are exacerbated risks for the country induced by the climate change which include, among others, loss of income opportunities for those dependent on climate dependent sectors such as agriculture, increased exposure to hazards in the coastal and delta areas where most of the large urban municipalities are located, flash floods and landslides in the northern mountain and central areas and increased occurrence of droughts and floods throughout the country.

2. According to the latest Viet Nam's National inventory report submitted in 2021, Viet Nam's total GHG emissions in 2016 are estimated to be 316.7 million tons of carbon dioxide equivalent[3]³. The figures have been growing more than triple since 1994. This rapid growth is attributed to its vibrant economic development. The country is one the most rapidly growing economies within the Southeast Asian region, recording a GDP growth rate of 6.8%[4]⁴ in 2019. Viet Nam's GDP per capita has more than doubled in the past ten years, from USD 1,217 in 2010 to USD 2,715 in 2019, lifting some 45 million people out of poverty.

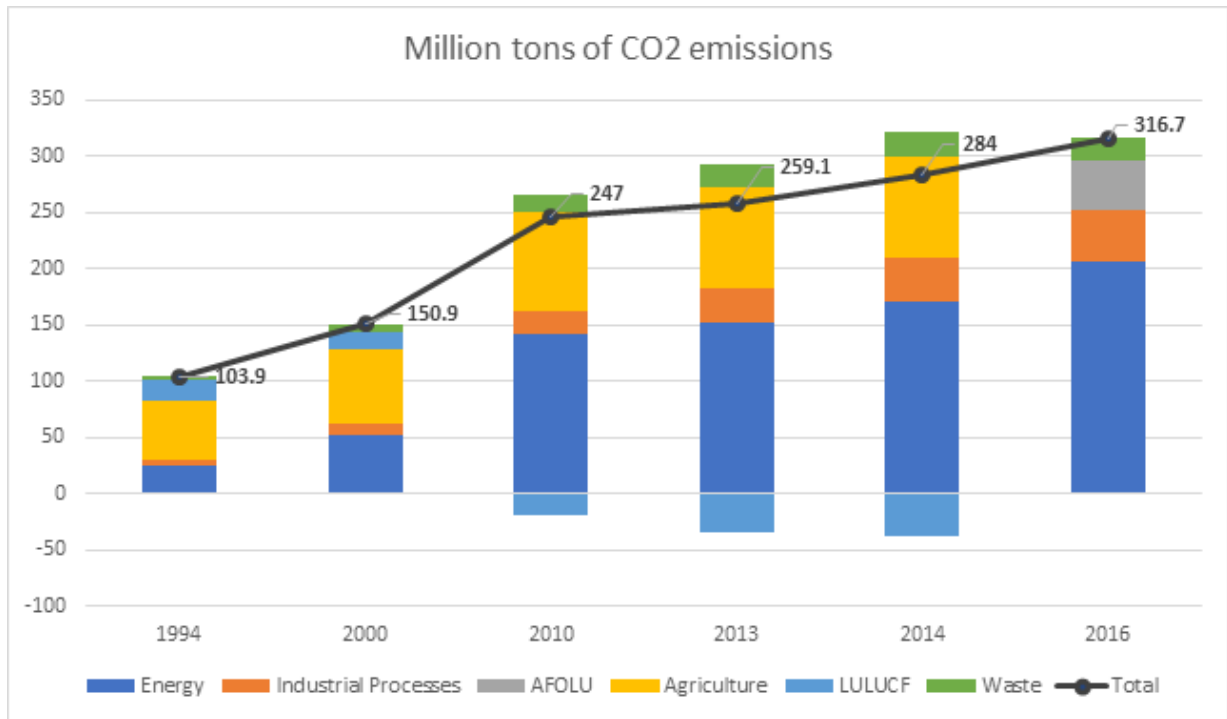


Figure 1: Trajectory of CO2e emissions in Viet Nam by sector

3. Among the sources of GHG emissions, 65 % is contributed from the energy sector. Within the energy sector, the energy industry including power plants, petroleum refining factories and gas processing, etc. has the largest share of emissions at 44.2%. The emissions are mainly derived from combustion of fossil fuels for power generation. Among the fuel use, coal consumption contributes more than 65% of the total energy used for the electricity generation. The electricity access rate sharply increased from 14% of the population in 1993 to 99% in 2016. The reliance on the use of coal not only contributes to the increase of GHG emissions but also other environmental problems such as air pollution. Aside from energy industries, manufacturing industries and construction as well as transport are large sources of emissions in the sector and they are about 18% each also by consuming various types of fossil fuels.

4. Next to the energy sector, industrial processes and AFOLU[5]⁵ sectors are the second largest sharing 14.5% and 13.9% of Viet Nam's GHG emissions, respectively. The emissions from industrial processes mainly come from chemical and physical material transformation such as production of cement, lime, glass, ammonia, nitric acid (N₂O), and iron and steel. Among these, cement production mainly associated with production of clinker constitutes about 80% of GHG emissions. Major emissions in AFOLU sector are caused by rice cultivation, specifically, methane

emissions from rice paddies that produce about 49.7 million ton of CO₂e. The figure is almost offsetting the amount removed by the forest land which sequesters 54.6 million CO₂e. Aside from rice cultivation, enteric fermentation from livestock such as cow, buffalo, goats, swine and sheep which also produce methane contributing large portion in the sector at around 12.4 million CO₂e emissions.

5. The waste sector contributes about 6.5% of the total GHG emissions of the country. The total emissions from the waste sector is at 20.7 million tons of CO₂e derived from solid waste disposal as well as waste water treatment and discharge which share about 50.3% and 43.2% in the sector emissions respectively. While the waste sector has a relatively small share in the national GHG inventory as of 2016, the measures to address emissions from the waste sector is no less important than the others as the amount of waste in the country is expected to grow rapidly due to steady economic and population growth in the country. It is estimated that, according to MONRE, the amount of solid waste in Viet Nam increased from 12.8 million tons in 2004 to 54 million tons in 2020, increasing about 4 times in the past 15 years^[6]. Municipal solid waste is the majority of the solid waste disposed. The municipal solid waste is characterized as a variety of types of materials such as paper, plastic, metal, leather, glass, textile, grass & wood, kitchen, etc. from sources including households, shops & markets, restaurants, parks, street sweeping, institutions etc.

6. Viet Nam's population is about 100 million^[7] as of 2020. Especially urban population is increasing at 3% annual growth rate from 2010 to 2020^[8]. There is normally a strong correlation among the amount of waste generated and population growth as well as urbanization. Accordingly, the waste sector is expected to significantly contribute to increased GHG emissions in the near future if no effective interventions are provided. Moreover, urbanization is also linked to a chain of environmental problems including urban sprawl, land- use change, and increased demand for transportation, energy and corresponding air pollution. In conjunction with the country's vulnerability to climate change impacts which are leading to increase frequency and occurrence of natural disasters, there are increasing threats to health as well as human welfare which leads to poverty and easily jeopardize continuous economic growth and sustainable development in Viet Nam.

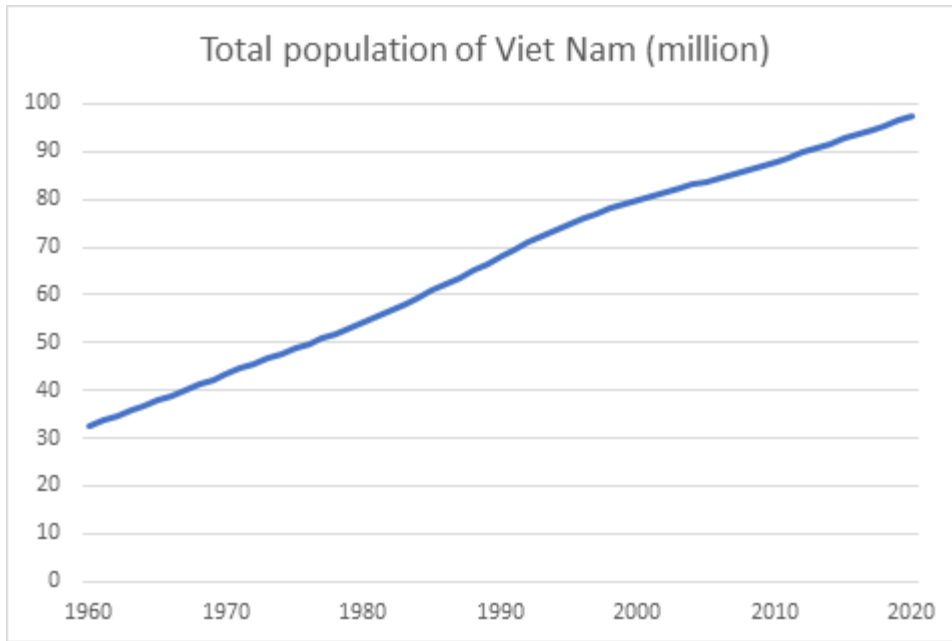


Figure 2: Total population of Viet Nam from 1960 ? 2020

7. Since Viet Nam's electricity primarily relies on fossil fuels, economic growth without effective interventions will directly result in the increase of GHG emissions. According to the report by McKinsey & Company[9]⁹, Vietnam's power sector capacity is reported to be expanding at the rate of 10% annually of which 38 % of that capacity came from hydropower, 34 % from coal-fired plants, and 21 % from natural gas as of 2016. While it is of utter importance to decouple economic growth from the fossil fuel use in the country, the uptake of renewable resources is yet to be exploited. This is despite the fact that, according to the report, the leveraged cost of electricity (LCOE) for renewables are estimated to be cheaper than traditional thermal generation due to the country's available solar and wind sources together with the reduction of the capital cost of these technologies.

8. The reasons for this stagnated renewable energy development are systemic including the economic (e.g. no bankable power purchase agreement (PPA) currently given for renewable projects, higher cost or lack of capital compared to the traditional type of thermal power projects), physical (weak grid capacity), perceptual (concerns from system planner for the impact on existing power system), capacity as well as knowledge (lack of experiences) and regulatory & administrative frameworks (unclear PPA and renewable approval process and tariffs and delay in project implementation due to complex regulatory framework)[10]¹⁰. These systemic problems also cause risks to the energy security of the country.

9. While facing the issue to address the growing need for energy, Viet Nam, like the other developing countries, is also having challenges in planning the urbanization infrastructural management in the wake of rapid urbanization and industrialization of the country. Waste management is one of the pressing issues in major urban centers of the country as the generation of solid wastes in those cities are enormous. For example, HCMC, which is the largest city of Viet Nam, alone generates more than 9,000 tons of solid waste daily.

Table 1: Solid waste generation in major cities in Viet Nam[11]¹¹& [12]¹²

City	Population	Solid Waste generation/day in ton
HCMC	9,411,805	9,128
Hanoi	8,418,883	6,500
Thanh Hoa	3,690,022	2,246
Dong Nai	3,236,248	1,838
Binh Duong	2,678,220	1,764

10. Considering the amount of the solid waste in HCMC, a study identified opportunities associated to the challenges to the waste management as shown in the table below. However, potential innovative approaches and synergies are seldom built in those cities in the country. For example, provisions on sustainable waste management measures including controlled treatment and disposal of waste, degree of environmental protection in waste treatment and disposal as well as recycling rate and quality of 3Rs (reduce, reuse, recycle) as well as waste to energy technologies are not commonly exist.

Table 2: Challenges and opportunities for solid waste management in HCMC

Challenges	<p>Lack of infrastructure</p> <p>Limited availability of technologies</p> <p>Lack of human resources</p> <p>Insufficient budget for solid waste management</p> <p>Limitation of technology</p> <p>Lack of participation in waste segregation at source due to low awareness due to low awareness</p> <p>Low waste collection fee and financial constraints</p> <p>Weak institutional and policy framework for solid waste management</p>
Opportunities	<p>High biodegradable organic fraction of the waste suits for clean technologies such as composting, anaerobic digestion and collection of biogas</p> <p>Potential agricultural demand for organic fertilizers</p> <p>Non-recyclable waste with high calorific values can suitable for incineration or be used for refuse-derived fuel (RDF)</p> <p>In a big city, network for recycling activities are developing at large</p> <p>While separation at source is important, there are social organization emerging such as Women's Union, Young Communist League, Veterans' Union, and HCM young pioneer organization</p> <p>Policy to increase the use of green energy (The unit price for electricity produced from biogas is 7USD/kW and from incineration is 12 USD/kW)</p>

Source: Nguyen, T et. al. (2020)[13]¹³

11. In Viet Nam, municipal solid waste including from households, commercial businesses, shops and streets were collected by URENCO (85%) and other private sector entities (6%) while the rest (9%) is littered directly into the environment[14]¹⁴. A study estimates that while 63% of the collected solid waste is taken to landfill sites, 43% of them is buried in an unsanitary way with high risk of pollution[15]¹⁵&[16]¹⁶. Many collection facilities do not met technical standards and have not secured the requirement for environmental sanitation, resulting in the effluent wastewater discharge,

which causes harmful insects and bad odor negatively affecting the people living nearby. A small portion of the waste is incinerated without energy recovery. Recycling is not widely practiced. In some big cities such as HCMC, Da Nang and Hanoi, for example, landfill sites have become overloaded.[17]¹⁷ As shown in the table below, the current waste management practice causes further problems including environmental impacts, community health impacts and socio-economic impacts.

Table 3: Impacts of conventional waste management practice in Viet Nam

Environmental impacts	<p>Increased GHG emissions due to o the lack of collection resulting in MSW being thrown to the channels, lakes, rivers degrading the water quality</p> <p>Accumulation of MSW in residential areas causing the odor problem</p> <p>Landfill leachate also causing water and soil pollution</p> <p>Uncontrolled burning of the waste at the open dump sites causing increased levels of CH4 and CO2</p>
Community health impacts	<p>People living near the open dumping sites and unsanitary landfills are exposed to the adverse impacts with the symptoms of dermatological disease, respiratory diseases, and diarrhea</p>
Socio-economic impacts	<p>Expenses used for collection, transportation, treatment and disposal have been increasing in addition to the expense required for treating environmental pollution</p> <p>Environmental conflicts arisen from the inappropriate storage, transportation, treatment and disposal of MSW e.g. between pollution causing companies/enterprises and suffered community, social groups in handicraft villages, small-scale industry activities and agricultural activities, and production activities and landscape as well as culture.</p>

Nguyen Duc Luong et al (2013)[18]¹⁸

12. There is an inherent complexity of the issue of waste management which requires interdisciplinary and multidimensional measures. The conventional way of waste management already faces its limit to cope with the increasing volume of the waste. Collection, sorting and treating the waste have complex and labor intensive characteristics. As such, recycling businesses tends to be occupied within informal settings. The matter is also associated to low legal enforcement in the sector and low awareness of public on the need to pay for the waste disposal which consequently causes at

least 80% of waste treatment costs being subsidized by the government resulting in budget constraints[19]¹⁹.

13. An increasing attention is attributed from the related government agencies on the waste management, however, the significant increase of the waste quantity is overwhelming the capacity to cope with the problem with their limited capacity in infrastructure, equipment as well as staff. A research conducted on the waste management practice in Viet Nam illustrates that the shortcomings are systemic in policy and regulation, finance and investment, awareness and technical knowledge and capacity[20]²⁰. Public awareness on environmental control of waste management or on the concept of circular economy, material recycle, as well as reduce, reuse recycle (3Rs) are also limited and people tend to dispose materials without separation at sources including those which are still serviceable.

14. The increased promotion of entrepreneurship and adoption of clean technology innovations will be able to support addressing challenges of the country spread across the sectors including waste and energy. While small and medium sized enterprises (SMEs) play a major role in Viet Nam's economy and account for 98% of all enterprises, having generated 47% of the GDP in 2019, SMEs have historically played a minimal role in the country's industrialization due to multiple constraints such as access to finance, knowledge and technologies. Mobilization of SMEs with clean technology innovations can trigger solutions throughout the supply chain of waste. This will build and enhance the sustainability of Viet Nam's economy, while also having positive economic and social benefits through the promotion and support of entrepreneurs and innovation, and through its contribution to energy diversification and security while accruing environmental benefits such as reduced contamination and pollution. The potential beneficiaries are not only the entrepreneurs themselves, but all actors along the value chain, including distributors and retailers who might come from historically disadvantaged communities.

15. The need for Viet Nam to foster innovation and research on economic (as opposed to socio-ecological) grounds alone is highlighted by Viet Nam's relatively low position in the Global Innovation Index (47 of 131)[21]²¹, the Knowledge Economy Index (103 of 144)[22]²² and the Global Competitiveness Index (67 of 141)[23]²³. In addition, innovation in cleantech has the potential to help Viet Nam, as the country with the growing carbon emissions profile in South East Asia with expectation of population and economic growth, to achieve its policy commitment to transition away

from its legacy of fossil-fuel-powered development that produce harmful environmental, social and economic conditions.

16. A low carbon circular economy and sustainable development can be a driver for cleantech innovation, particularly in contributing to climate change mitigation, as it encompasses such a wide range of sectors and technologies. The concept of circular economy recognizes that natural resources are finite and aims to use waste materials or keep the materials in products in circulation for as long as possible: reusing, repairing, remanufacturing, sharing and recycling. While the concept is largely focused on developing new technologies and businesses, it also includes the notions of 'designing out' waste and restoring natural systems. Solutions related to biogas, water recycling and a reduction in new materials all have clear potential to contribute to GHG emission reductions and a low carbon economy. Although switching to greener, more sustainable industrialization pathways present short and medium-term policy challenges, it can also create more resilient opportunities over the short, medium and long-term while simultaneously mitigating serious social-ecological risks.

17. In making the transition to a low carbon circular economy, the country is still facing complex interconnected challenges spread across multiple disciplinary measures including social, environmental and economic changes. Although switching to greener, more sustainable industrialization pathways present short and medium-term policy challenges, it can also create more resilient opportunities over the short, medium and long-term while simultaneously mitigating serious social-ecological risks.

Root causes and barriers that need to be addressed

18. Viet Nam, faces challenges in planning infrastructural management and coming up with new and innovative solutions to towards taking sustainable pathway. For example, solutions to make meaningful strides for sustainable development are still not fully operationalized including utilization of public private partnerships as well as in grass root level development support. Potential synergies are yet to be built between the opportunities and solutions towards greening urbanization. For example, increasing waste generation from municipal and industrial sector has yet to be acknowledged as a potential source of energy. The institutions charged with the responsibility to make decisions on solid waste management, operate in the enormous information, policy and strategy vacuum and lack therefore in the ability to address the looming environmental disaster.

19. Nurturing business models, services and products with established local ecosystem for cleantech innovation can be one of the counter measures to address these issues including e.g.

maximizing energy generation from renewables, enhancing energy efficiency at the process including recovery of energy as well as minimizing environmental impact considering life cycle of materials. There is increasing awareness on the important role of accelerating the application of innovative cleantech solutions to address the challenges and turn them into opportunities towards low carbon and circular economy in priority sectors in Viet Nam that can attract investment at local and global levels and, in turn, allow them to scale and to deliver transformational economic, social and environmental impacts. However, there are still a number of challenges remaining that limit Vietnamese businesses in commercializing cleantech solutions, including lack of clean technology accelerators and strategic coordination amongst key sectoral players, as well as limited access to appropriate finance, national legislation and regulatory framework for the uptake of clean technologies and public awareness of clean technology industry and the benefits[24]²⁴.

20. The complex challenges and barriers in Viet Nam related to acceleration of SMEs and startups towards for low- carbon circular economy and sustainable development are as follows:

Table 4: Barriers and challenges to Cleantech Innovation in Viet Nam

Barrier category	Description
Policy and regulatory related barriers	The current policy and regulatory frameworks do not comprehensively support the demand for cleantech entrepreneurship and innovation[25] ²⁵ . Additionally, they do not envisage innovative market mechanisms, particularly these suiting the needs of the SME sector, which would incentivize uptake of cleantech. Laws and regulation including those for taxation, trade and customs duties are not supportive especially for SMEs and rather prohibitive for their entrepreneurship[26] ²⁶ . The policies on intellectual property right are inconsistent and overlapping at national, ministerial and institutional levels, which makes ineffective and inefficient operation[27] ²⁷ . Also, there are no mechanisms to regulate additional cost of external verification, enhanced disclosure (in the case of green bonds) and the participation of institutional investors and the capital market to indirectly stimulate demand.

<p>Awareness, knowledge and capacity related barriers</p>	<p>In general, there exists a lack of awareness, knowledge and capacity for exploiting potential out of innovations and entrepreneurship in accelerating low-carbon and circular economy. At the institutional level, there remain significant weaknesses in the organization and capacity around sustainable and low-carbon development planning and execution in general especially. Government entities have limited national capacity to manage the planned transition and mobilization of finance at the necessary scale. The absence of a platform to efficiently operationalize and leverage the various available green and low-carbon financial instruments hurdle their mainstreaming. The relevant national actors are not fully aligned and coordinated along the green financing cycle.</p> <p>Furthermore, private and public sector lack experience, knowledge and skills in cleantech, including available market mechanisms and financing sources. In addition, start-ups/SMEs lack expertise in identifying and developing bankable innovative cleantech projects. There are lack of workforce who are appropriately equipped with the quality and relevance in the field of entrepreneurship and innovation^{27&[28]}²⁸. The limited technical capacity makes it difficult for them to source green investments. In particular, this includes a lack of capacity related to business model elaboration and aspects related to passing detailed due-diligence (proof of concept, financial aspects, legal aspects, etc.) of the projects and companies, which enhances the risks of bankruptcy and financial losses or litigation cases at later stages of product development. The barriers also include limited capabilities in moving an idea to product manufacturing and aspects such as prototype development, identification of production sites and partners, establishing supply chains and logistics, etc. Besides, capacity barrier also relates to lack of understanding of climate change aspects and potential climate mitigation and adaptation benefits of the cleantech products and services.</p>
<p>Finance related barriers</p>	<p>Despite the large array of financial mechanisms, there are significant constraints for the uptake of cleantech projects in the country especially for SMEs^[29]²⁹. Access of start-ups/SMEs to green finance remains limited mainly due to a) the high cost of finance associated with high interest rates and the fact that the foreign exchange loans are exposed to currency risk; b) very short finance maturities for cleantech; c) high collateral requirements for borrowers. Therefore, traditional financing sources that are available today are insufficient. In general, there is lack of innovative financing schemes for start-ups/SMEs, that could help leverage existing instruments, as well as limited transparency in the conditions and availability of financial support. Given SMEs share in country's economy, facilitating their access to green financing schemes and mainstreaming green financing into generic SME financing products becomes a central challenge.</p>
<p>Behaviour related barriers</p>	<p>Associated with the lack of awareness mentioned above, there is consequently a lack of supportive actions including sectoral and cross-sectoral cooperation and partnership among SMEs, academia, finance and policy-making entities^{27&28}. There is no proactive and effective outreach as well as easily accessible information on the initiatives and benefits of cleantech innovation. Lack of administrative transparency is also depicted as an issue in Viet Nam²⁶. The information does not reach the relevant target beneficiaries and may not achieve intended outcome. This consequently leads to continuation of the status quo.</p>

21. In summary, Viet Nam's cleantech sector is an emerging sector which lacks capacity and coordination. There remains a need for further support in the field of advanced commercialization support, further incubation, access to early-stage financing, national networking within the complex ecosystem, commercialization with market and finance linkages, widening and increasing the geographical reach and support to national partners. These interventions are required to further strengthen the resilience of the Viet Nam's innovation and entrepreneurial economy to address domestic environmental challenges while also to operate within the global market and to result in economic growth, global environmental benefits and job creation. This will create economic opportunities and support a shift towards a sustainable development of the country. The proposed project is therefore designed to directly address the barriers described.

2. The baseline scenario and any associated baseline projects

a) Policy and legislative baseline

22. In 2020, Viet Nam holds the chairmanship of ASEAN. During his keynote speech, Prime Minister Nguyen Xuan Phuc underlined the strength of the region's economy, being the third most dynamic economic zone in the world ? generating USD2.95 trillion. He further noted that the ASEAN Community shall foster seamless connectivity and deepen integration within and beyond the region, on the basis of innovation, stability and the growing influence of the 4th Industrial Revolution upon the social and economic life of the entire community. The ASEAN Community shall serve as a model of circular economy, endowed with new vigor. He further underlined that the ASEAN Community shall become more resilient through effective climate change adaptation and response, and better management of natural disasters, pollution and plastic waste.

23. Viet Nam's third National Communication and Third Biannual Updated Report (BUR3) entails a comprehensive list of the policies and registrations related to climate change. The government strongly supports measures to address climate change. Among others, the cornerstone decisions include the National Green Growth Strategy and associated National Green Growth Action Plan under which the country will take measures for achieving a low carbon economy towards 2050. This is also linked to the government decision on amending national strategy for general management of solid waste to promote application of advanced and environmentally friendly solid waste treatment technologies and as well as energy recovery and GHG emission reductions in the waste sector. In addition, in response to these national level policies, provincial governments developed action plans to address climate change. The action plans translate the national strategic direction of low carbon and green growth as well as transition to circular economy into actions. By December 2020, 55 out of 63 provinces and cities throughout the country have developed their Implementation Plans for the Paris Agreement, 35

localities had issued their action plans on climate change response for the 2016-2020 period with a vision to 2050, 34 localities have issued their Green Growth Action Plans to implement the National Green Growth Strategy including implementation of GHG inventory activities which creates the basis for develop their mitigation targets as well as researching, developing and implementing their potential mitigation activities.

24. According to the policies and regulations, successful outcomes are observed. For example, there were 500 MW capacity of wind power plants, 6,000 MW capacity of solar power plants, 325 MW capacity of biomass and 10MW capacity of solid waste power plants by October 2020. The proportion of renewable energy had reached about 11.2% of the total primary commercial energy with total output having reached 4.4%. The energy conservation was estimated to have reached 5.7% in the 2011-2015 period. 24 out of 59 urban areas have issued guiding documents on the development of green growth urban areas. A variety of cultivation methods have been applied with the use of fertilizers and animal feeds while 70% of waste from livestock has been processed. All 63 provinces and centrally-managed cities have approved solid waste management planning.

25. These strategies and several relevant policy documents incorporates several key building blocks towards realization of circular economy, which include consumption of less raw materials, improvement of energy efficiency, expansion of renewable energy, reduction of fossil fuel use, promotion of 3Rs and sustainable production and consumption etc.[30]³⁰ In addition, the recently adopted Law on Environmental Protection No.72/2020/QH14 will enable the country to take further comprehensive actions towards climate change response specifically including circular economy. In this connection, for example, MoNRE is working on building regulations, roadmaps and mechanisms to encourage transition towards low carbon circular economy[31]³¹.

b) National baseline initiatives and programmes on accelerators

26. In Viet Nam SME sector faces multiple challenges and barriers including lack of resources, expertise, time, awareness etc. There are not coherent and collaborative approaches taken for accelerating innovation and entrepreneurship yet in the country. However, the government has recently

just started to adopt cleantech-friendly policies including those related to research, innovation and entrepreneurship set forth in the country. For example, the Ministry of Natural Resources and Environment (MONRE) has proposed 10 groups of solutions to enhance the implementation of the Strategy for the period 2021-2030, including stepping up scientific and technological research and application and digital transformation, promoting innovation in response to climate change; increasing investment from the state budget; promoting international financial mobilization; mobilizing the investment of private sector for climate change response activities[32]³². Within the Socio-Economic Development Strategy 2011-2020, the Ministry of Science and Technology identified measures to increase the innovation policy and deployment throughout the country by enhancing competitiveness at the company and products level, narrowing of space to support business entities in Viet Nam as well as to advance internalization of international rules and practice related to innovation management and promotion. In 2018 the Vietnamese government issued a Law on supporting Small and Medium Enterprises with a view to support and further integrate domestic SMEs into global value chains as well as to make use of the increasing FDI into the country. Other relevant regulations and policies of the Government to support and encourage the operation of enterprises including the Decree 38/2018/ND-CP dated March 11, 2018 regulating details on investment for start-up SMEs and Decision 844/QD-TTg dated May 18, 2016 on support for the project "Ecological innovation for national innovation to 2025".

27. There are also several accelerator, innovation and incubation support funds and programme operational in the country. The Viet Nam Environment Protection Fund (VEPF) [33]³³ provides grants and concessional loans for projects that seek to prevent environmental pollution, droughts, and water shortages as well as for those that respond to climate change and ensure security of water resources. In the period of 2013-2018, the VEPF was assigned a component of a World Bank funded project for piloting investment loan to build centralized waste water treatment plant in the industrial zone with authorized capital operators for concessional loans of USD 20 million. The same institution will be the leading national executing of this project. Key stakeholders will include, but are not limited to, the MONRE, the Ministry of Planning and Investment (MPI) and the industrial zone developers (the investors of wastewater treatment plant and the beneficiaries of project).

28. Vietnam Climate Innovation Center (VCIC) [34]³⁴ was launched in 2014 in Hanoi by the support from the World Bank. VCIC has the mandate to promote the National Green Growth Strategy, under the management of the Ministry of Science and Technology (MOST). The VCIC has supported 948 green technologies, thereby avoiding 42,766 CO₂ emissions, contributing towards additional clean energy of 104,810 MWh, raising USD 1.6mln through 108 investment funds. The center receives funding from Australia's and DIFD's World Bank fund.

29. Green Innovation and Development Center (GreenID)[35]³⁵ is a non-profit organization in Viet Nam which works to promote sustainable development in Vietnam and the larger Mekong region and is now on its way to become a leading and credible civil society actor promoting sustainable energy sector development. The thematic pillars of programme include sustainable energy, clean air and water and green growth. Many projects have been implemented by the center such as the EU sponsored E-Enhance project that aimed at fostering the development of renewable energy and energy efficiency in Viet Nam through capacity building for civil society organizations and local champions to improve energy access and living conditions.

30. Vietnam Silicon Valley (VSV)[36]³⁶ is an accelerator invest in early stage start-ups. It provides several programs for start-ups including i) AI Accelerator Challenge Programme which is funded by the MoST with support from the Aus4Innovation Program[37]³⁷, ii) VSV Capital Accelerator which invests in Vietnam-connected startups and operational since 2014. VSV Capital Accelerator is designed to support early stage entrepreneur to validate and access to finance through various supports including organization of workshops, mentoring and network events.

31. Vietnam Innovative Startups Accelerator (VIISA)[38]³⁸ is a business acceleration program with provision of a seed-stage investment that invests to build global-ready startups in Viet Nam. The program covers 4 stages of acceleration including pre-acceleration and growth stages. The selected start-ups will participate in integrated program and build knowledge and techniques including vision setting, learning to pitch, legal matters, B2C/B2B sales, user testing and research, strategizing growth plan as well as building brand and fundraising.

32. 500 Startups[39]³⁹ is a global venture capital which provide finance, mentorship, and connections to both global and regional startups. 500 Startups Vietnam is a US 14 million fund to make investments into Viet Nam connected startups, i.e., startups built by Vietnamese talent and/or targeting the Vietnam market. As of the end of September 2020, 500 Startups Vietnam has invested in various verticals including E-commerce, FinTech, EdTech, AdTech, Healthcare, etc. The services also include provision of support for early-stage start-ups in Viet Nam as well as training for Vietnamese investors guiding investment opportunities in the country.

33. Startup Wheel^[40] is a 6-month startup competition, run from March to August annually for startups and young entrepreneurs all around the world. There are Vietnamese and international tracks but there is no age and nationality limit and start-ups can participate in the competition as long as they are doing or planning to do business in Vietnam. The selected startups will be given acceleration support and prize including 2-day exhibition for startups to showcase startups' products/ services to more than 15,000 attendees and pitching sessions at semi-final round (Top 60) of 2 minute pitch in front of more than 100 esteemed judges as well as final round (Top 10) of 5 minute pitch and 5-minute Q&A with a board of esteemed judges consisted by top CEOs from large corporations and top startup investors in Vietnam.

c) Regional and international initiatives and programmes on accelerators

GCIP

34. Since 2011 UNIDO has been supporting cleantech companies in their development via GCIP which uniquely fosters an ecosystem approach that supports cleantech innovations in existing and new SMEs and start-ups through the provision of catered tools and methodologies that enhance their productivity and competitiveness while promoting the establishment of a supportive policy and regulatory framework. By the end of 2017, GCIP accelerated over 865 start-ups/SMEs in 8 countries including Malaysia and Thailand.

35. The success of GCIP was confirmed through the GEF's evaluation in 2018^[41]. In its framework it was also recommended that: a) Any future GCIP or similar program should be structured using a more globally coordinated approach with appropriate choice of interventions based on strategic country selection; b) GCIP should actively support national-level coordination to operationalize dynamic CIEE; c) There should be sufficient time allowed to customize and sharpen the focus on policy strengthening and regulatory frameworks to foster cleantech innovation and its adoption; d) The network of private sector partners should be expanded to address GCIP participant needs for business expertise and early stage technology validation; e) Direct and indirect impacts of the GCIP should be measured by establishing adequate monitoring and evaluation systems and ensure that they are implemented using standardized and relevant indicators; f) Country engagement should be deepened

during the project period, including a plan and resourcing to sustain activities and expand outcomes after project closure.

36. Based on the above-mentioned recommendations UNIDO designed the GCIP Framework in 2019 (approved by GEF as programme 10408). The GCIP Framework consists of ten country child projects, all of which are connected to the three driving pillars, including a) Pillar 1. Transforming early-stage innovative cleantech solutions into commercial enterprises; b) Pillar 2. Cleantech innovation and entrepreneurship ecosystems strengthening and connectivity; c) Pillar 3. Programme coordination and coherence. The coherence with in the GCIP Framework is ensured through the GCIP global coordination child project (GEF ID 10461) (hereinafter referred to as GCIP Global).

37. The GCIP Framework builds upon the achievements and key lessons learned from the implementation of the GCIP projects so far. In particular, it benefits from the collective feedback by various stakeholders including national counterparts, institutions and SMEs successfully participating in GCIP as well as strategic partners at the global level.

The Private Financing Advisory Network (PFAN)

38. The Private Financing Advisory Network (PFAN), is an initiative hosted jointly by UNIDO and the Renewable Energy and Energy Efficiency Partnership (REEEP) and is a global network of climate and clean energy financing experts that offer business coaching and investment facilitation to entrepreneurs developing climate projects in emerging markets. PFAN mobilizes private financing to reduce greenhouse gas emissions and build climate resilience? contributing to Paris Agreement and SDGs i.e., SDGs 7 (Energy), 9 (Industry), 13 (Climate Action), and 17 (Partnership). A network of 99 in-country private sector experts in 39 countries are supported by network of 45 investment partners globally to provide investment advisory services, investment facilitation and financing. To date, PFAN has supported at least 127 climate and clean energy businesses to mobilize more than USD 1.7 billion of investment. Furthermore, PFAN currently has a pipeline of hundreds of projects across the globe that are being supported. Further results demonstrate that through this investment, 3.3 million tons of CO₂ have been mitigated annually and an additional 975MW of clean power installed. This year already, PFAN has facilitated at least 69 investment-ready projects.

The Global Entrepreneurship Network (GEN)[42]⁴²

39. GEN operates a platform of projects and programs in 170 countries aimed at making it easier for anyone, anywhere to start and scale a business, including Viet Nam. It has several initiatives including Global Entrepreneurship Week (GEW) through which GEN celebrates the successes and impact of entrepreneurs in an effort to help break down cultural barriers and reach new audiences, the Global Entrepreneurship Research Network (GERN) and GEN's Startup Nations policymaker network through which GEN helps identify and crowdsource best-in-class policies and public programs that help entrepreneurs thrive, the Global Business Angels Network, Global Enterprise Registration, Startup Huddle, GEN Starters Club, Startup Open, and other programs through which GEN offers programs and resources intended to help smooth the path to market for founder teams and provide entrepreneurs at all stages with the support necessary to reach the next level, and other outreaching and networking events including its Global Entrepreneurship Congress (GEC) and GEC+ series, the annual Startup Nations Summit, global annual meetings of its vertical communities and by co-hosting other events across the globe through which GEN helps break down siloes and enhance collaboration among entrepreneurs, investors, policymakers, researchers.

Google for Startups Accelerator: Southeast Asia[43]⁴³

40. Google for Startups Accelerator: Southeast Asia aims to support local startups and entrepreneurs to solve specific, technical challenges with the best of Google resources - people, network, and technologies. As part of the global programme of 'Google for Startups Accelerator', once the selected founders outline the top challenges facing their startups, they will be paired with relevant experts from Google and the industry to solve those challenges. Participating startups will receive mentorship and specialized expert supports from the global mentor network. Google for Startups Accelerator: Southeast Asia will cover applications from startups headquartered in Indonesia, Malaysia, Pakistan, Philippines, Singapore, Thailand, and Vietnam.

EU-Viet Nam Sustainable Energy Transition Programme[44]⁴⁴

41. There are several relevant components under the programme. The Global Green Growth Institute (GGGI) will support local start-ups in creating marketable innovative energy efficiency solutions. Specifically, it will provide acceleration programme, which include engaging with the start-up community, providing technical guidance and financial support. It would also aim at enhancing and

creating a national network of innovative energy efficiency start-ups. In addition, UNIDO will support promotion, stimulation of market demand and adoption of energy efficiency by industry and SMEs for their greater energy performance, reduced carbon footprint and enhanced productivity & competitiveness.

Strengthening Climate Change Research and Innovation Capacities in Cambodia, Laos and Viet Nam [45]⁴⁵

42. This is a three year capacity building project co-funded by the European Commission. It aimed at supporting Higher Education Institutions (HEIs) in Cambodia, Laos and Viet Nam especially with a focus on 1) building up the human capacities of partner institutions to initiate, develop, manage, assess and exploit research and innovation in climate change, as well as to modernize relevant curricula with the integration of research and innovation in Climate Change towards more competence-based study programs and 2) strengthening institutional capacities by setting up a solid, regional and competitive multi-disciplinary network. The core activities include analytic work such as study visits and conducting empirical study and analysis, provision of modular trainings on climate change and convening of network opportunities such as seminars and conferences.

Aus4Innovation Program[46]⁴⁶

43. Aus4Innovation is an AUD \$13.5 million development assistance program that aims to strengthen Vietnam's innovation system, prepare for and embrace opportunities associated with Industry 4.0, and help shape Vietnam's innovation agenda in science and technology. Through the Aus4Innovation program, Australia and Vietnam will together explore emerging areas of technology and digital transformation, trial new models for partnerships between public and private sector institutions, and strengthen Vietnamese capability in digital foresight, scenario planning, commercialization, and innovation. The programme include i) Digital Foresight where CSIRO's Data61 and Vietnam's MoST prepared a report looking at Vietnam's Future Digital Economy, ii) Innovation Partnership Grants where funding is available at certain times throughout the year for Australian and Vietnamese businesses, iii) Science Commercialisation Partnerships where a team from CSIRO is working with MoST's National Agency for Technology Entrepreneurship and Commercialization Development to pilot activities to improve the uptake of new technology by Vietnamese agribusiness and iv) Policy Exchange where activities will focus on collaboration to address emerging challenges in the implementation of Vietnam's innovation agenda.

3. The proposed alternative scenario with a brief description of expected outcomes and components of the project

44. This project seeks to promote and support the introduction of innovative clean technologies and products, business models and services to contribute towards low carbon, circular economy and sustainable development which include, among others, new and sustainable material integration, energy saving measures, environmentally friendly waste treatment as well as sustainable agriculture and aquaculture through the framework of Global Cleantech Innovation Program (GCIP). By doing so, the project also will create synergies with the national strategic directions towards further integration of its economy into the global market establishing a new trend in environmental management and sustainable development, in which circular economy, green economy and innovation is mainstreamed.

45. GCIP is a global program designed to respond to the increasing global demand for environmental sustainability, climate action, and to unleash the potential of cleantech innovation and entrepreneurship to help transform priority sectors and systems. To address the highlighted barriers above faced by SMEs in transforming their cleantech innovations into market ready solutions, the programme uses a holistic ecosystem approach which facilitates the growth of cleantech SMEs, improves coordination of national activities and foster synergies between participating countries. GCIP has a unique approach as it seeks to capacitate the private sector to deliver environmental benefits through transforming early-stage cleantech companies into fast-growing enterprises whilst simultaneously developing the cleantech innovation and entrepreneurship ecosystems in participating countries.

46. The GCIP platform will aggregate and enhance efforts to strengthen and connect the ecosystems of partner countries, and at the same time connect them to a truly global innovation ecosystem. Over the long-term, the project seeks to build robust innovation ecosystems that can identify and systematically support high-impact cleantech technology innovations as well as attract large-scale investments. This mechanism is expected to deliver significant global impact on limiting global temperature rise to well below 2 degrees centigrade as well as generating local environmental benefits.

47. The proposed advanced cleantech innovation project for Viet Nam is aligned with the GCIP of which UNIDO is the lead implementing agency. The Theory of Change (ToC) for the GCIP shows how the programme will deliver accelerated uptake and investment in SMEs with high-impact cleantech innovation products and services which, in turn, will meaningfully contribute to climate change mitigation targets and to green growth and job creation.

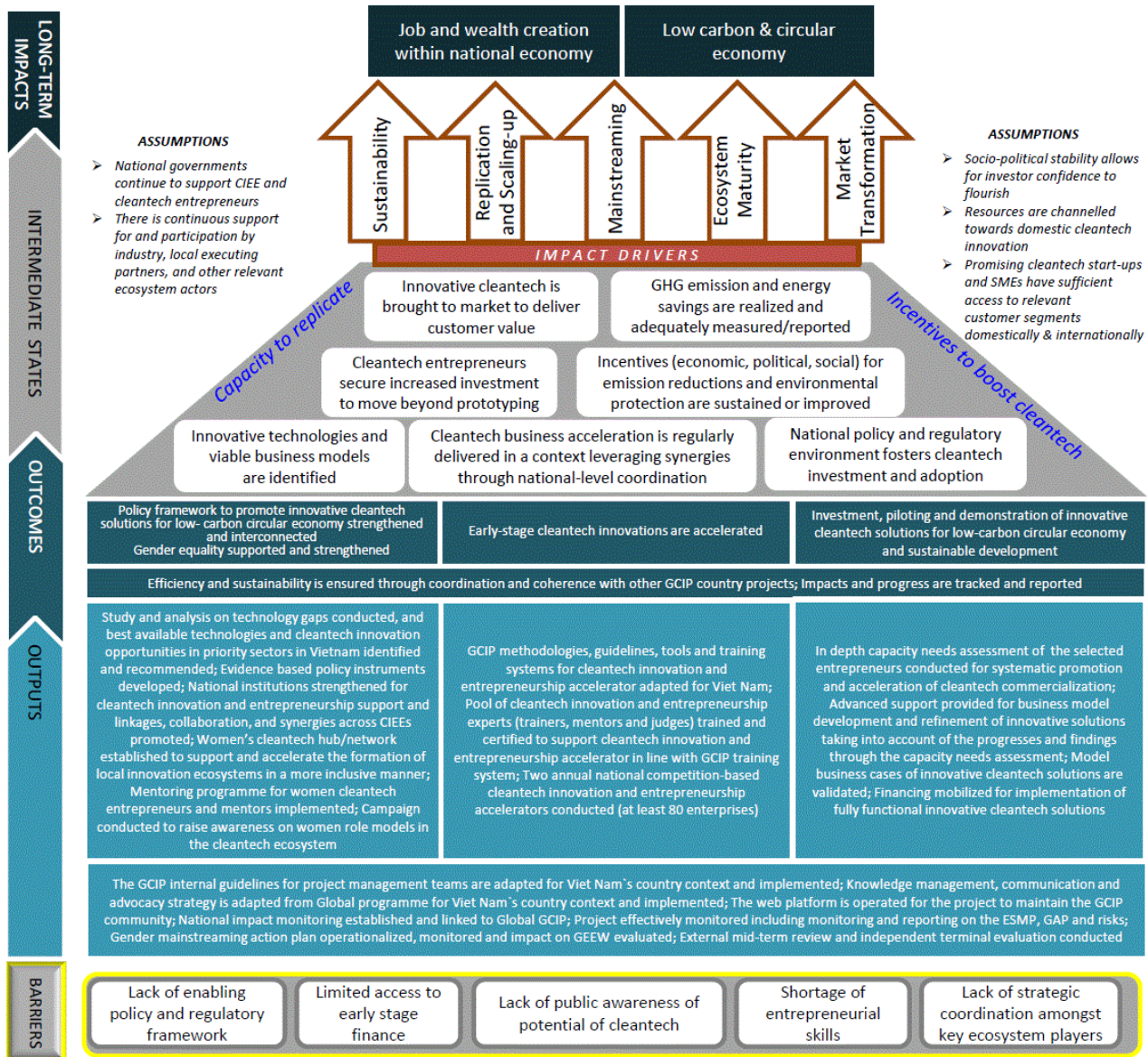


Figure 3: Theory of Change for the Global Cleantech Innovation Programme

Brief Description of the Theory of Change

The project has been designed to address the barriers set out in the previous section. Specifically, the barriers faced by innovators will be addressed by the provision of support from concept through to commercialization while helping them adopt different approaches to entrepreneurship. This will include: provision of ideation and concept validation services, holding annual accelerators, advanced accelerators to provide follow-on support to the GCIP alumni as well as targeted support services, investment facilitation, mentorship and partnership support - across the country supporting at least 80 entrepreneurs. To assist piloting projects of innovation and early-stage entrepreneurship with a view to support the deployment and scale-up of cleantech solutions with a focus on low carbon circular economy as well as in the priority sectors in the country (waste management, renewable energy and recycling). To support these outputs, GCIP guidebooks will be developed for Viet Nam and at least 40 business innovation and entrepreneurship experts will be trained in and certified to an enhanced approach to business model development.

The fragmented cleantech innovation ecosystem will be addressed with the establishment of a national cleantech innovation hub linking all the project support. Capacity gaps will be addressed with targeted capacity building for policy makers and institutional actors, and the policy and regulatory environment will be strengthened with support to address the gaps in areas such as IP, behavior change in value chains and consumers and promoting a circular economy. Networking, advocacy, knowledge generation and exchange will enhance awareness amongst ecosystem stakeholders and increase impact of the project whilst global GCIP cooperation and exchange will increase opportunities for Viet Nam entrepreneurs.

IF these outputs are delivered **THEN** the following outcomes will be realized: promising early stage cleantech innovations are accelerated across the country by being supported from concept through to commercialization; GCIP alumni are supported and financed for national, regional and global expansion; and the national ecosystem and institutions are strengthened to promote and support cleantech innovation and entrepreneurship. All the outputs are underpinned by a gender mainstreaming action plan that contributes toward the debunking of gender stereotypes and ensuring that women, men and youth can equally lead, contribute to and benefit from the programme. At the same time there will be greater recognition and improved efficiency and sustainability of the Viet Nam accelerator programme.

BY identifying and supporting innovative technologies and viable business models whilst increasing institutional capacity and ecosystem connectivity, **THEN** the cleantech entrepreneurs are able to secure increased investment from more aware investors, **AND** enables them to commercialize their innovative products. At the same time, **IF** a supportive policy and regulatory environment, including incentives exists, **THEN** cleantech investment and adoption will be fostered. **ALSO** in turn these interventions will bring innovative clean technologies to market and drive uptake, delivering customer value and contributing to the reduction of GHG emissions and energy savings. Continued growth and the mainstreaming of the technologies will result in market transformation and job and wealth creation within Viet Nam, accompanied global environmental benefits including GHG emission reductions.

48. Based on the lessons and experiences gained through the global GCIP framework so far, this project will put focus on cleantech innovations especially with specific focus on those related to low

carbon circular economy as well as in the priority sectors in the country (waste management, renewable energy, and recycling) while ameliorating the preconditions for domestic SMEs to successfully engage with investors. It will include improving resource and energy efficiency as well as renewable energy capacity within the material cycle towards disposal at the end. The approach will also focus on management of wastage and pollution, drawing on methods of pollution control, cleaner production, eco-efficiency, life cycle management, closed loop production and industrial ecology to ultimately decrease emissions generated by the waste sector.

49. In addition, the Global Cleantech Innovation Index 2017 enables to measure where clean technology companies are likely to emerge in the next 10 years through innovation inputs (general and cleantech-specific drivers) and innovation outputs (emerging and commercialized cleantech). By referring to these indicators, the interest of the Vietnam's cleantech sector will further be elaborated during the PPG phase. The approach of this project would also be aligned with national priorities such as National Green Growth Strategy envisaging green economic development mainstreamed towards 2050 while tasking the country 1) low carbon growth, 2) greening of production, 3) green lifestyles and 4) restored natural capital. In addition, in the wake of Industry 4.0 as well as the National Digital Transformation Programme^[47]⁴⁷, digital transformation within the context of low carbon, circular economy and sustainable development will also be considered.

50. Accordingly, the project will be implemented in close collaboration with national and regional institutions to build an enabling cleantech ecosystem for development, commercialization and integration of innovative and appropriate clean technologies. Ultimately, this project will support the Vietnam's Governmental actions towards expanding the opportunities for economic activities; developing human capacity; and developing and expanding access to reliable infrastructure. By doing so, the project will support the pathway towards sustainable growth and socio-economic transformation in Viet Nam.

51. While a large number of start-ups have suffered during the pandemic, COVID-19 has also led to an increase in entrepreneurial activity^[48]⁴⁸. While these innovative start-ups are undoubtedly essential for the future of innovation and supporting them is critical, the current COVID-19 crisis also shows the importance of small businesses with more incremental approaches to innovation and the need for support through well designed accelerator programme. The nature of innovation is often incremental but, at the same time, essential for survival and adapting to the 'new normal' while turning the crises into growth opportunities.

52. The economic recovery packages provide a possibility for countries to recover better, greener and in a more sustainable manner. Cleantech innovations can not only make economic impacts in Viet Nam by creating jobs and wealth through engagement of SMEs and entrepreneurs into business but also enhance the country's capability to create new opportunities for green and sustainable development.

53. In order to safeguard the sustainability of the project and to ensure that the upscaling of the success of GCIP programme in Viet Nam, the public and private sectors will provide co-financing to support cleantech innovation ecosystems for domestic SMEs. This will ensure ownership and identification of innovations around municipalities and local industries while greening the local value chains.

54. The project builds on the collective feedbacks by various stakeholders including national counterparts, partner institutions and SMEs successfully participating in GCIP as well as strategic partners at global levels. The project will also work with new partner, at regional levels, to help build the eco-system at the provincial levels as well.

55. In addition, the GCIP approach especially in Component 2 in this project, accelerates innovations that have highest GHG emission reduction potential and have highest chances of going to the market through a number of phases and together with its partners like PFAN, continually de-risks the enterprise's business model in order to increase the likelihood of investor interest. This is important to note since the sources of investment that the GCIP start-ups will be able to mobilize will depend on the alignment of the priorities of the institutions that have shown interest to invest.

GCIP connection to PFAN to support the start-up to scale up journey of cleantech enterprises

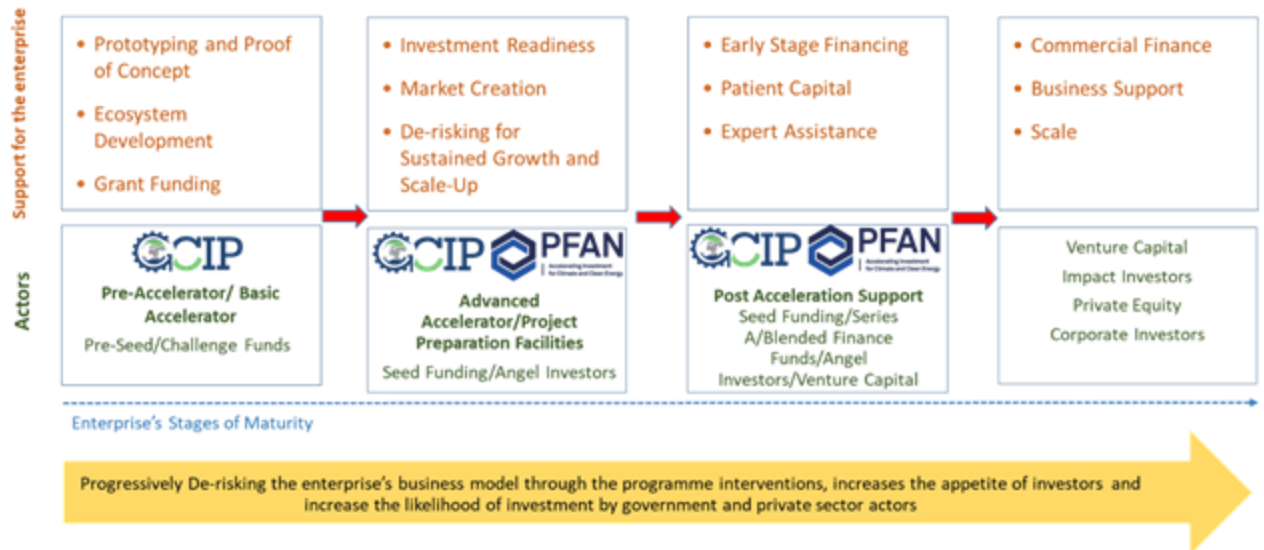


Figure: 4 Start to Scale-up Journey, De-risking for Investment Readiness

56. The objective underpinning the linkages established between GCIP and PFAN is to offer the ventures supported by the project a continuum of support services as they mature towards commercial viability and scaling up. GCIP combines a top-down (policy support) with a bottom-up (support for home-grown innovation) approach. The final investment decisions are made between the start-up and the investor, once they find common value. A start-up may have several investors mixing public and private financing. The connection between the Viet Nam accelerator programme with the other country projects and the Global projects under GCIP framework enables investors at a global level to also access start-ups from each country i.e., through activities like Investor Connect, National Forums and the Global forums.

57. The project will continue to strengthen and promote connectivity within the national cleantech innovation and entrepreneurship ecosystem focusing on innovative technology in low carbon circular economy in Viet Nam by: (i) identifying, fostering and supporting cleantech innovators and entrepreneurs including technology verification and demonstration; (ii) building capacity within national institutions and partner organizations for the successful implementation of the accelerator approach and sustainability of the cleantech ecosystem; and (iii) supporting and working with national policy makers to develop the policy and regulatory innovations to catalyze and support cleantech innovations as business models. Through this approach, the project will actively support cleantech SMEs and start-ups to develop cleantech innovations into commercial businesses, thereby promoting the continued growth of a cleantech industry in Viet Nam.

58. The main components of the project and their description are below:

Project Component 1. Policy, institutional framework and national cleantech innovation and entrepreneurship ecosystem (CIEE) strengthening and connectivity enhanced

59. The policy framework and institutional sustainability are integral parts of the 'Cleantech innovation and entrepreneurship ecosystem (CIEE)', and also of strategic relevance in ensuring that the outputs and outcomes of the project are contributing to the national priorities and sustained after project closure. This component will aim to strengthen institutional capacity in key national ecosystem players, as well as regional and local institutions and enhance their connectivity, to engage in cleantech acceleration and commercialization in Viet Nam.

Outcome 1.1 Policy framework to promote innovative cleantech solutions for low carbon circular economy in priority sectors strengthened and interconnected

60. The Outcome 1.1 focuses on strengthening policy frameworks and ecosystems to promote innovative cleantech solutions especially focusing on in the priority sectors of waste management, renewable energy, and recycling. This includes better awareness on technology gaps and innovation opportunities in the field of low-carbon circular economy and sustainable development in the country, knowledge on benchmarking and evaluating performance and applicability of relevant technologies such including identification of best available technologies.

61. It will also focus on development of policy instruments and recommendations in the field of clean tech acceleration in ensuring that the outputs are contributing to the national priorities and sustained after project closure.

1.1.1 Study and analysis on technology gaps conducted, and best available technologies and cleantech innovation opportunities in priority sectors in Vietnam identified and recommended

62. This will be an iterative process where study and analysis are conducted to identify technology gaps and innovation opportunities. The study and analysis will be designed to address the gaps and highlight as necessary national policies and processes for the creation and development of startups in Viet Nam based on creativity, innovation, the use of new technologies, the achievement of high added value as well as national and international competitiveness.

63. Moreover, in identification of technology gaps and innovation opportunities, considerations will be given to social dimensions such as the role of women in the innovation ecosystem in Viet Nam. Such social dimensions will be analyzed and recommendations will be made on how gender equality create opportunities for enhancing innovation; and the role of social innovation for low-carbon economy and sustainable development.

64. During the process, indicators to evaluate performance of innovative cleantech solutions for low-carbon circular economy and sustainable development are defined. This will include the definition of impact indicators, the design of a detailed system, methodology and tools etc. where to be monitored and overseen by UNIDO in close coordination with other relevant stakeholders in Viet Nam. Also, this will be developed and harmonized at the global level and the project will focus on adapting these to the national circumstances. The indicators will consider, among others, its impact on GHG emission reductions as well as potential of other -environmental benefits. It will also take into account of necessary localization and modification to make it adoptable to local requirements.

65. Efforts will be made to include social dimensions into the impact indicators include social dimensions such as women`s involvement, job creation, income, well-being, etc. by innovative cleantech solutions,

66. Accordingly, the list of best available technologies and innovation opportunities for low carbon circular economy are identified and recommended. It will consolidate high potential technologies/models in priority sectors (agro-industries and industrial waste, renewable energy, and recycling) in Viet Nam. Consideration will also be given to very early-stage innovative cleantech solutions which will need business acceleration support including entrepreneurship and business skills training.

1.1.2 Evidence based policy instruments related to cleantech innovation and entrepreneurship developed

67. Priority will be given to assisting national government in developing policies, regulations and incentives required to promote cleantech innovations. The project will assist in reviewing the existing policies and regulations relating to the promotion of clean technologies, innovation and entrepreneurship and prepare a gap analysis report on policy requirements.

68. Recommendations for policies on facilitating innovative technology and enterprises are developed and operationalized including financial incentives and guidelines for non-grant instruments. This will be done to create a conducive environment for commercialization of cleantech solutions. Further aim will be to ensure that national ecosystem players are supported to understand and contribute in their roles as part of the ecosystem, and will have the capacity to continue promoting national cleantech innovations towards commercialization and market creation beyond the project.

69. For the purpose of preparing policy recommendations, multi-stakeholder policy dialogues will be facilitated to prompt discussion and collaboration among policy makers and other cleantech ecosystem actors under consideration of gender equality. The dialogues will be captured and reflected in the policy recommendations as necessary and applicable which will be presented to relevant government ministries and agencies.

70. The related policies and regulations will include those promoting the low carbon technologies of the selected categories in SMEs including small scale technologies, and those governing the protection of intellectual property rights, agreements on sponsorships, roles, responsibilities, and rights of different stakeholders

71. Special efforts will be made to formulate gender-responsive policies that aim at involving women entrepreneurs and mentors in the Cleantech programme. For this purpose, a gender mainstreaming action plan will be operationalized throughout the project implementation.

72. Under the leadership of the MONRE as well as in a process of wide consultations with GCIP alumni and relevant national CIEE stakeholders, a roadmap will be prepared to guide a long-term implementation of the policy recommendations, also beyond the GCIP Viet Nam timeline, especially for the effective innovative clean technology ecosystem and its value chain.

1.1.3 National institutions strengthened for cleantech innovation and entrepreneurship support and linkages, collaboration, and synergies across CIEEs promoted (at least 6 capacity building events conducted with up to 90 participants in total)

73. A National Cleantech Innovation and Entrepreneurship Ecosystem (CIEE) assessment will be conducted to analyze the strengths and weaknesses of Viet Nam's CIEE and roles and responsibilities of key institutions (i.e. funding agencies and industry associations etc.). It will include an expert study for identification of relevant players to be engaged and coordinated as well as provision of a framework model under the present institutional and regional institutions to strengthen the ecosystem with a view to establish a national hub. This will be instrumental in identifying the capacity building needs and optimal set of interventions nationally. The further aim will be to ensure that national, regional, local ecosystem players are supported to understand and contribute in their roles as part of the ecosystem, and will have the capacity to continue promoting national cleantech innovations and enterprises towards commercialization beyond the project.

74. This output will also serve as a structured stakeholder consultation and engagement process at the start of project implementation including consideration of social and gender dimensions so as to promote gender equality and women's empowerment (GEEW). The CIEE assessment will be updated at least once during the project period as a means to measure impact achieved through project activities on the CIEE of Viet Nam.

75. Accordingly, capacity of national and regional institutions and key associations of CIEE to host and support the Cleantech programme will be built. Training workshops will be organized for relevant central and regional governmental officials and staff concerning technical and administrative needs and also for other market players like funding agencies, industrial associations, project developers, enterprise executives, startups, government officials, operators, current users, companies, academia etc. on integrated solution.

76. The pool of experts that can act as mentors and judges for the GCIP Accelerator will be a valuable asset for GCIP as well as for building a robust national cleantech innovation ecosystem. GCIP alumni will also participate in 'train the trainers' events to foster a vibrant and sustainable Cleantech ecosystem through partnerships and collaboration. Where possible, these training events will be held in person, but provision has also been made to design vibrant and interactive on-line courses and materials should Covid-19 restrictions still be in place. The training events will make use of the case studies and materials provided by the global GCIP as applicable. Such global training materials will be translated into Vietnamese as necessary and will be tailored to local circumstances by GCIP alumni. These training sessions will produce a critical mass of informed actors that will trigger further clustering of the innovative thinkers as well as to create evidence based decision making models for the responsible and key post holders in the organizations.

77. Therefore, GCIP will maintain a community of mentors and judges that can positively influence the cleantech innovation initiatives of Viet Nam beyond the GCIP. It will also seek to establish a robust network with national financial institutions and funds to raise awareness and sensitize various stakeholders on the opportunities and risks associated with cleantech products under the low carbon circular economy. Based on the stakeholders, meetings/feedbacks, studies could be focused on policy streamlining to enhance impact through policy interventions and scale-up/ replications.

78. A GCIP alumni network will be established and actively supported by the Project Executing Entity (PEE) in order to support the community of the accelerator alumni, coaches, judges and mentors through, activities to gather, share lessons learned, and realize synergies. Activities under output will be executed in conjunction with the web-based knowledge management platform under Output 3.1.3 and establish online tools and the maintenance of the platform for the alumni network to gather, share, and correspond. National networking will further be strengthened and expanded by enabling the Vietnamese alumni network to gather with other GCIP alumni at national, related regional and international events.

79. Corporate Public Private Partnership (PPP) forums will be held for raising investment and partnership with the private sector organizations. Viet Nam Environment Protection Fund and other accelerators, incubators and angel funds will be approached to hold special sessions to find ways and means to support cleantech innovation activities. PPP Fora will be organized annually, to further facilitate ecosystem connectivity.

80. At the regional and global levels, Viet Nam cleantech SMEs and key ecosystem players will be invited to participate in GCIP wide events, including the global GCIP Forum organized in and for GCIP partner countries around the world. The GCIP Forum will bring selected finalists of the global and national Accelerators together for recognition and awards, and for opportunities to be connected with potential partners, customers, technology scouts and investors from around the world. Importantly, the GCIP Forum will also serve as a platform for innovation showcasing, and investment matching, and will be an important annual milestone for networking, advocacy, and knowledge exchange among CIEE players. The GCIP Forum will not be a stand-alone event, but it will be organized on the margins of highly visible global gatherings, such as for example the UNFCCC COP, Cleantech Group forums, etc.

81. In addition, participation at annual events such as the Cleantech Forum Asia, the Asia Clean Energy Summit and the Asia-Pacific Climate Week events will enable the Vietnamese alumni network to enhance dissemination of best practices and enhance their exposure to international investors. Furthermore, regional cooperation will be promoted and formalized between the GCIP Viet Nam and

other GCIP CIEEs in the region (e.g., with Indonesia and Cambodia). Particular attention will be given to garnering participation of successful women entrepreneurs in the programme to promote gender equality and the empowerment of women through involvement of role models.

82. In addition, a specifically focused support on capacity enhancement of the Viet Nam Environment Protection Fund (VEPF) and local environment funds will be provided to strengthen their appraisal capacity on innovative cleantech solutions. The support will aim to capacitate these funds to promote cleantech innovation and entrepreneurship for accelerating transition towards the low carbon circular economy and further enhance sustainability of the cleantech ecosystem in Viet Nam while addressing the inclusiveness of the action.

83. The activity includes development of a handbook, based on the experience gained through the project, for guiding the procedures on evaluation and appraisal of innovative cleantech solutions with a view to further flourishing green financing in Viet Nam for both technology investors and developers in sustainable manner.

Outcome 1.2 Gender equality supported and strengthened by the CIEE in Viet Nam

84. The project aims to strengthen gender equality within the Viet Nam's CIEE with the intention to create more opportunities for women entrepreneurs. Specific efforts to empower women entrepreneurs will be implemented with a view to accelerate cleantech innovation while addressing the important proven linkages between achieving environmental sustainability, gender equality, and the empowerment of women. To fully capitalize on the transformative power of women's entrepreneurship, targeted measures need to address the specific barriers that women face, such as the lack of access to networks and role models.

1.2.1 Women's cleantech hub/network established to support and accelerate the formation of local innovation ecosystems in a more inclusive manner

85. In conjunction with Output 1.1.5, clean technology and innovation platforms will be gender responsive by establishing a cleantech hub/network for women with a view to support and accelerate the formation of local innovation ecosystem in an inclusive manner. With a view to reflect the different needs and opportunities for women, research and analysis will be conducted in conjunction with the operationalization of a gender mainstreaming action plan under Output 3.2.4 below.

86. The women's hub /network platform will be established and function as part of the cleantech ecosystem in Viet Nam including giving necessary support for women in cleantech innovation and entrepreneurship.. It is a key vehicle for promoting women's involvement into the project by identifying and facilitating relevant stakeholder groups which are invited to provide their views on implementation of clean technology solutions in low carbon circular economy. Taking into consideration of the results of the research and analysis on women's different needs and opportunities, the vision and mission including roles and responsibilities of this hub/network will be constituted. The initial list of members will include institutions promoting GEEW (e.g. women chambers, women universities, etc.) and to be evolved by including those mentors, judges, project partners and entrepreneurs who participate in this project.

1.2.2 Mentoring programme for women cleantech entrepreneurs and mentors implemented

87. In conjunction with Output 2.1.2, a mentoring programme specifically targeting women will be conducted. The programme will be elaborated to engage women entrepreneurs, associations and gender focal points to participate as both mentors and mentees. Therefore, the design of the programme will take into account of the output of a gender mainstreaming action plan operationalized under Output 3.2.3. Based on the analysis, specific needs and opportunities of women involvement in the cleantech ecosystem in Viet Nam will be identified and addressed through the programme. Engagement of institutions promoting GEEW (e.g. women chambers, women universities, etc.) will be pursued.

88. A pool of woman experts with the knowledge and connections to support cleantech innovations towards commercialization will be developed and supported to actively participate in cleantech ecosystem in Viet Nam with a view to further enhance sustainability by addressing the inclusiveness of the action.

89. In case, if there are not sufficient women mentors in the country, a train the trainer programme for mentors could be conducted e.g. training/ mentoring women to become mentors for other women.

1.2.3 Campaign conducted to raise awareness on women role models in the cleantech ecosystem

90. In order to promote GEEW in cleantech, a campaign will be conducted to enhance awareness on women role models in the cleantech ecosystem. This will be based upon the successful practices of the global programme where several women role models were featured. The campaign will include, among

others: the development of targeted GCIP promotional material e.g. documentation, print, video and other electronic media; preparation and dissemination of success stories through social media; etc.

Project Component 2. Transforming early-stage innovative cleantech solutions into scalable enterprises

91. Component 2 focuses on identifying innovative cleantech solutions and business model ideas, and providing entrepreneurial skills and business growth support. Providing direct support to early-stage cleantech SMEs to enhance the capacity and competitiveness for business growth, Viet Nam's private sector's potential and contribution as cleantech solution providers, and to leverage market opportunities embedded in climate change mitigation enhances. Outcome 2.1 focuses on early-stage innovative cleantech solutions and provides business acceleration support related to entrepreneurship and business skills training. Outcome 2.2 provides targeted technical assistance through advanced and gender-responsive business growth and investment facilitation service. Furthermore, cleantech SMEs in the expansion stage will receive investment facilitation and mentoring services towards financing, piloting and commercialization.

Outcome 2.1 Early-stage cleantech innovations accelerated

92. Early stage cleantech innovations with high impact potential for climate, environment and social benefits especially under circular economy will receive business acceleration support for increased market and investment readiness .The selection criteria for innovations to receive support will be determined in alignment with the national priorities outlined in the NDC targets, and other key policies and strategic documents in consultation with key stakeholders, and will be aligned with GEF 7 programing directions.

93. This project will benefit from the GCIP tools, approach and methodologies on how to promote cleantech innovation and entrepreneurship in developing and emerging economy countries as developed under GEF program 10408 .This support includes guidebooks and practical tools for operation and management of the accelerator at a national level and complimentary activities, which will provide the reference framework for the accelerator in Viet Nam within this project.

94. The diagram below shows the types of assistance required by cleantech SME, depending on their stage of growth, based on which the GCIP approach is built where outcome 2.1 focusses on early-stage cleantech SMEs while outcome 2.2 will focus on growth and expansion stage cleantech SMEs.

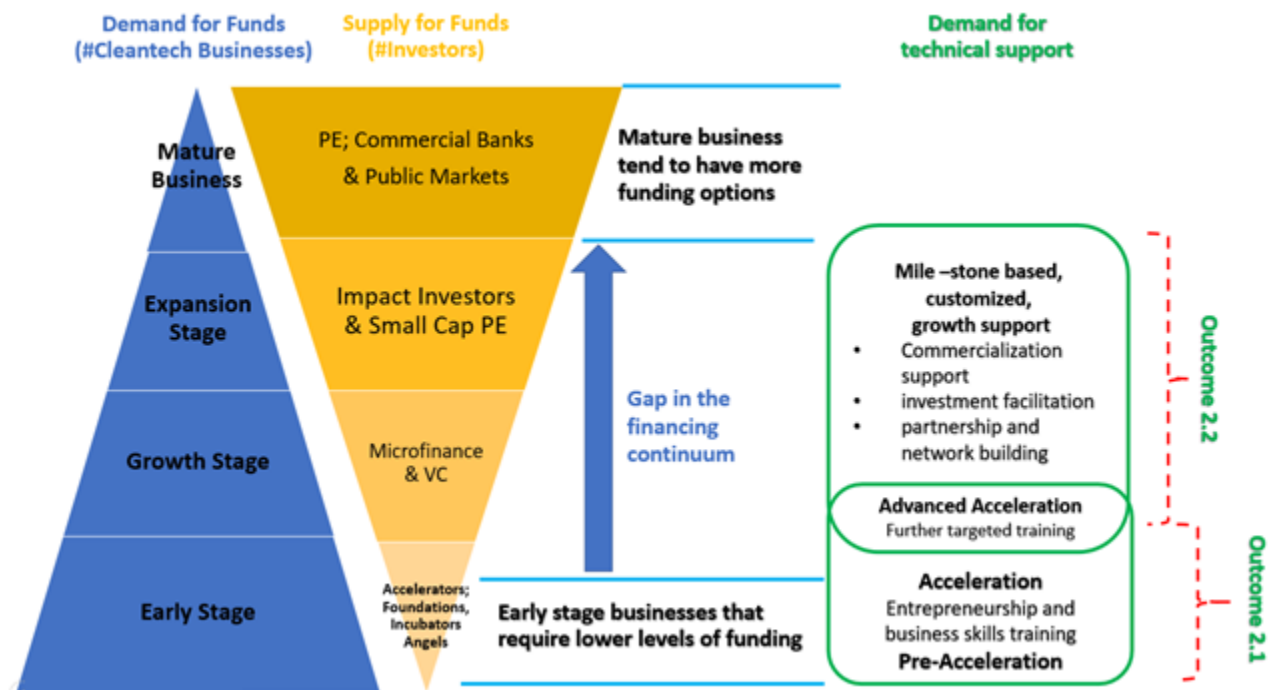


Figure 5: Demand for funds and technical support per development stage.

2.1.1 GCIP methodologies, guidelines, tools and training systems for cleantech innovation and entrepreneurship accelerator adapted for Viet Nam

95. Accelerator guidebooks that emphasize on the GCIP approach and methodology for promoting cleantech innovation and entrepreneurship in developing and emerging countries, will be made available as practical tools and guidelines for the operation and management of the national accelerator in Viet Nam. These guidebooks will be reviewed and adapted by the national Project Executing Entity (PEE) to reflect the context of Viet Nam's cleantech ecosystem including market conditions, policy environment, development priorities, technology priorities, local examples, etc. Three Accelerator guidebooks will be developed on i) Acceleration, ii) Advanced Acceleration and iii) Post-Acceleration support. These guidebooks will define the scope, criteria and awards categories of the Accelerator in

consultation with Viet Nam's ecosystem actors, including the government, business and civil organization stakeholders and so be aligned with their priorities and in line with the country's innovation potential. The level of innovation to be eligible to receive support through the Accelerator will also be specified during the review of the guidebooks, as well as the selection criteria of the Accelerator. The guidelines will also be the principal input to the web based knowledge management tool.

2.1.2 Pool of cleantech innovation and entrepreneurship experts (trainers, mentors and judges) trained and certified to support cleantech innovation and entrepreneurship accelerator in line with GCIP training system

96. Developing a pool of cleantech innovation and entrepreneurship experts to act as mentors, coaches and judges is critical to the effectiveness of accelerators in providing the right support to the participating teams as well as their long-term sustainability. This is because the delivery of the accelerator curriculum and the connections facilitated with the right actors will depend on the capacity and networking of these experts. In order to ensure coherence of approach among mentors, coaches and judges, a cleantech innovation and entrepreneurship expert training system developed under UNIDO/GEF project 10408 will be employed by the project. Similar to the accelerator guidebooks, the training system will be reviewed by the Viet Nam PEE and adapted for the national context, ensuring that the training materials accurately reflect market, business, policy, and investment climates.

97. A pool of experts with the knowledge and connections to support cleantech innovations towards commercialization is also crucial to the cleantech ecosystem. The community of experts trained/certified are expected to positively influence the cleantech innovation initiatives at national level, and will contribute to the strengthening of the cleantech innovation and entrepreneurship ecosystem in general.

98. The entrepreneurship training programme will be organized for local universities. The training session on entrepreneurship will be organized, focusing on those aspiring students and individuals who want to be the torchbearer and hand holders, to further spread the message for innovation to others aspiring to make careers in innovation in clean technologies to themselves become role models.

2.1.3. Two annual national competition-based cleantech innovation and entrepreneurship accelerators conducted (at least 80 enterprises)

99. Two annual competition-based cleantech innovation and entrepreneurship accelerators will be conducted based on the guidelines and tools developed under output 2.2.1. for acceleration of the identified best available technology and innovative technology solutions for low-carbon circular economy and sustainable development aligned with the outputs and outcomes delivered under Component 1. The GCIP Accelerator entails a 4 to 6 months curriculum designed specifically to support cleantech innovations stemming from developing and emerging countries, to develop viable business models and grow cleantech enterprises. About 40 enterprises are supported through each Accelerator cycle. Through the GCIP Accelerator, a cohort of cleantech SMEs with high-impact potential are identified and invited to receive intensive business and entrepreneurship mentoring and coaching to accelerate their growth as businesses. Support is provided to improve their business skills and investor pitch and in connecting them to potential business partners, financiers or investors.

100. During the project, the cleantech innovation program will assist PEE, by directing and focusing the startups and innovators to strengthen business models and their solutions. Competition elements will be incorporated into the Accelerator as an incentive to participating teams. The call for applications will be issued in ?impact categories? related to a resource efficient and circular economy, defined to address multiple environmental challenges including waste to energy, waste management and utilization, sustainable use of natural resources, the increase in renewable energy, energy efficiency and recycled resources, e-mobility, energy storage, etc.

101. The National Accelerator cycle will be guided by a general timeline recommended by UNIDO that aims to leverage the ongoing cycles across the global programme and allows Viet Nam to align with some GCIP-wide activities where possible (e.g. online webinars, participation at the global forum, etc.)

102. In terms of selection criteria, priority will be given to innovations with significant GHG reduction potential, which will be determined through the reduction potential of the innovation (technology or business model) itself, and the estimated market and business potential which will determine the up-take of the innovation .Accordingly, selection criteria of the Accelerator will include a threshold for the projected environmental impact per USD for supported technologies .Women and youth empowerment and entrepreneurship will also be a key consideration in the selection process into the Accelerator.

Outcome 2.2 Investment, piloting and demonstration of innovative cleantech solutions for low carbon circular economy

103. Start-ups and SMEs will be supported through advanced and gender-responsive business growth services as well as receiving investment facilitation services. Advanced- and Post-Accelerator Business growth support and tipping point investment facilitation services will be provided to the cleantech SMEs to commercialization, piloting and demonstration of innovative cleantech solutions for low-carbon circular economy and sustainable development towards commercialization and mobilization of investment to scale up.

104. This outcome focuses on supporting selected businesses to further develop their innovations to reach commercial and sustainable success. Thereby, a cost-effective path will be pursued and allow entrepreneurs to focus on the added value and benefits of the entire process, especially in terms of training, networks and financial facilitation.

2.2.1 In depth capacity needs assessment of selected entrepreneurs conducted for systematic promotion and acceleration of cleantech commercialization (for at least 8 entrepreneurs)

105. This output is to support especially for at least top 8 entrepreneurs of 2 accelerator cycles under output 2.1.3. The scope of assessment may include technology verification, prototyping and product development, piloting, legal and administrative support, IT services, tax registration, protection of intellectual property (IP), product life cycle assessment, environmental and social risks assessment, additional mentoring/courses on cleantech entrepreneurship, etc. As necessary and to the extent possible, the assessment will be conducted in a gender-responsive manner by considering whether there is the gender-nexus in the selected cleantech. This will be instrumental in identifying the capacity building needs and optimal set of interventions for the selected entrepreneurs.

2.2.2 Advanced support provided for business model development and refinement of innovative solutions taking into account of the progresses and findings through the capacity needs assessment (for at least 8 entrepreneurs)

106. The GCIP guidebooks adapted to Viet Nam's ecosystem context under output 2.1.1 as well as the capacity needs assessment under output 2.2.1 will be the basis of executing this output. The advanced and Post-acceleration support will be tailored to the specific alumni's needs for progressing into the next phase of business growth and in overcoming product related market barriers.

107. As each innovation and enterprise is different and will require customized support, extensive consultations will take place as part of the selection criteria and process to ensure that the needs and expectations of the alumni is fully understood and agreed on at entry into advanced and post acceleration support for low-carbon circular economy and sustainable development taking into account of the progresses and findings through the capacity needs assessment. A mile-stone based approach will be employed to measure progress of each enterprise.

108. National and/or international consultants will be assigned to provide firsthand technical support for the small-scale project proponents such as startups and small local enterprises, to commercialize their solutions and for the large scale deployment of clean technologies at the local levels.

109. Targeted technical assistance will be provided to the cleantech businesses at growth stage in line with the findings of the capacity needs assessment. Cleantech businesses in the growth stage will receive investment facilitation and mentoring services towards financing, piloting and commercialization. Furthermore, national cleantech businesses will be supported to expand their businesses to other countries through global project (10461). The global framework will enable national enterprises to be linked to investors (impact, venture, angels, and commercial) at global levels.

2.2.3 Business cases validated for piloting at least three innovative cleantech solutions (at least for 2 cleantech solutions)

110. Additional business model validation may also be necessary to reflect the developments in technology/product readiness, business, market and manufacturing readiness. Market conditions and market demand created by national policies and development priorities of Viet Nam will be an integral part of the business model development and market potential of the innovations so that those supported under this project will be well integrated into the context of sustainable low-carbon circular economy of the country.

111. At least 3 innovative cleantech solutions will be selected and validated for piloting their businesses with high-impact potential. The businesses are expected to maximize their potential climate benefits and to minimize any negative environmental or social impacts identified, particularly relating to local climate risks.

112. In terms of selection criteria, priority will be given to innovations with significant GHG reduction potential, which will be determined through the reduction potential of the innovation (technology or business model) itself, and the estimated market and business potential which will determine the uptake of the innovation. Women empowerment and entrepreneurship will also be a key consideration in the selection process. Therefore, the selection criteria will involve gender dimensions so that at least one of the three innovative cleantech solutions is women led entrepreneur and/or at least one of the three has particularly high impact on GEEW.

2.2.4 Financing mobilized for implementation of fully functional innovative cleantech solutions implemented/commissioned (at least for 2 cleantech solutions)

113. Investment facilitation and support for selected start-ups and SMEs with innovative projects will be implemented, as selected from GCIP Accelerator program (Output 2.1.3). It will promote on broad level, as selected startups will be strengthened to provide scale up projects under GCIP scheme.

114. Raising awareness and sensitizing various stakeholders, such as financial institutions, funds and investors, on the opportunities and risks associated with cleantech products and market trends. In particular, two dimensions of investment facilitation such as i) equipping the enterprises to address the investment decision criteria of the financiers, and ii) identifying the right type of financiers and vehicles most adequate for the innovation and development stage of the enterprise, will be considered for increasing investors' confidence in cleantech innovation.

115. Moreover, to assist companies in making connections to potential investors and partners, investment facilitation events will be held inviting partner corporations and government agencies to highlight opportunities for investment, loans, grants, technology adoption and partnerships. The intention is to assist as many semi-finalist companies as possible to raise funding (grant and equity), find customers, and build partners within 12 months of completing the competition. There will be a specific focus on undertaking activities that would involve women entrepreneurs more actively in seminars and investor group meetings.

116. In addition, at least two fully functional innovative cleantech solutions will be implemented/commissioned at the scale. Financing will be sought through investment funds and impact investment funds to support early stage cleantech businesses. In addition, the project may support the implementation of innovative cleantech solutions through a financial incentives. Under this output, the critical funding gaps within the early stage cleantech business journey will be identified. Based on this, a sustainable funding model will be considered and designed for enhanced resource mobilization.

117. The impact of these fully functional innovative cleantech solutions will be monitored including for the accrued GEB. The monitoring of GHG emission reductions will be aligned with the GCIP approach taken by the GEF approved program GEF ID 10408 as well as national and technology/innovation specific circumstances. Other environmental and social co-benefits such as marine litter avoided and/or waste with POPs/mercury avoided will also be considered and tracked if any as per the selected technologies and innovations.

Project Component 3. Project coordination, monitoring and coherence

118. The activities under Component 3 are aimed at ensuring that the achievements of the Viet Nam accelerator programme are captured and communicated in a consistent way whilst aligning with global GCIP framework (10408). Also that the Viet Nam accelerator programme is implemented in coherent and coordinated way to align with other GCIP country projects under the GCIP Framework. To this purpose, the project executing entity of Viet Nam accelerator programme is expected to collaborate with the GCIP Global as well as to contribute to information gathering, knowledge sharing, and dissemination efforts.

Outcome 3.1 Coordination and coherence strengthened

119. The Viet Nam accelerator programme will be implemented in coherence with the global GCIP Framework. As such, it will link the CIEE of Viet Nam to the global network of CIEEs in other GCIP partner countries, as well as it will receive support from the GCIP Global programme. Under the GCIP, all the individual country efforts will be aligned and reflect common impacts (cumulative GHG emission reductions, investment mobilized, and other environmental and socio-economic impacts achieved). Therefore, mutual benefits will be created between the GCIP global framework and individual country's efforts based on sound coordination and coherence mechanisms among the partner countries.

3.1.1 The GCIP internal guidelines for project management teams are adapted for Viet Nam's country context and implemented

120. To maintain coherence of the GCIP approach across multiple countries, GCIP internal guidelines for project management teams will be developed and disseminated by UNIDO, including 1) operational guidelines for the Project Management Unit (PMU) to be established within PEE, 2) a sustainability and exit strategy framework to be developed in the first year of project implementation, and subsequently shared with the national PEEs for review and adaptation,. The operational guidelines will cover: a general introduction to the GCIP Framework, including explanation of organizational roles within it (e.g. of Global Advisory Board and Project Steering Committees); description of communication channels between Viet Nam and the GCIP Global; information on risk management and data protection; a list of foreseen support activities to be available from the GCIP Global; introduction to the IT management of the GCIP web platform; environmental/social management principles, as well as gender mainstreaming and ESSPP principles to be applied by the PMU in the course of project management. In addition, annual meetings for national PEE representatives will be organized to offer a platform for training and exchange of experiences/insights related to the implementation of the GCIP internal guidelines.

3.1.2 Programme-level knowledge management, communication and advocacy strategy is adapted from Global programme for Viet Nam`s country context and implemented

121. To facilitate this exchange, a knowledge management, communication, and advocacy strategy framework will be developed by UNIDO with a particular focus on: 1) Promoting visibility of accelerator programme and communicating its impacts achieved at national and global levels under GCIP framework; 2) Increasing awareness of the catalytic role of cleantech in addressing climate change and environmental issues; 3) Showcasing cleantech innovations from the GCIP alumni and enhancing their visibility and credibility

122. The knowledge management, communication, and advocacy strategy framework will be shared with the national executing entity for review and adaptation to the needs of the country. As a result, the knowledge management, communication, and advocacy strategy of the Viet Nam accelerator programme will be developed.

123. In line with the knowledge management, communication, and advocacy strategy framework, the national executing entity is expected to provide briefing sessions, press releases, social media presence and advertising, all of which will be targeted at different audience groups, with a special attention to the needs of women and youth. These activities will be supported by partners, including local entrepreneurs, celebrities, GCIP alumni, relevant service providers (e.g. patent attorneys, accountants), university departments and societies (e.g. engineering, entrepreneurship and

energy clubs), organizations that are in frequent contact with cleantech entrepreneurs (e.g. trade groups, entrepreneur groups), and investors (e.g. venture capital funds, angel networks).

3.1.3 The web platform is operated for the project to maintain the GCIP community

124. A web based knowledge platform will be established and maintained which will act a one-point solution for all the information as well as progress of different cleantech projects. This platform will act as the cluster information portal on clean technologies, to allow for robust interaction for all actors to share the information on technical resources and financial/investment opportunities for cleantech innovation with the following key functions.

- For internal management and operations. Guidelines, tools and other knowledge products developed will be disseminated through the web platform.

- For execution of annual accelerators to be used from the beginning of the accelerator cycle (e.g. call for application and receipt of applications), and during the accelerator (e.g. webinars, submission of assignments, etc.)

- For connecting national ecosystem players. All alumni enterprises, as well as certified mentors and coaches will be invited to join the online community as a networking tool. Profiles and impact potential of each supported cleantech solution will be showcased through the web platform. Therefore, it will serve as a gateway for potential investors and customers to collect information on alumni enterprises.

125. The web platform will capture policy briefs, impact reports, brochures, webinars, and other types of promotional materials. Information will also be disseminated through events, social media channels, trainings, workshops, etc. as appropriate.

126. In addition, the website will be connected to the global web platform to connect Viet Nam to the broader GCIP community globally. The web platform for GCIP Viet Nam will be designed and developed in conjunction with the GCIP-wide guidelines and templates, to reap benefits of the plug-and-play approach of GCIP and to maximize synergies and efficiencies of linking with other GCIP partner countries.

Outcome 3.2 Impacts and progress of all the project activities and indicators are adequately monitored and reported

127. The monitoring of project impacts and progress is essential for the adequate and timely delivery of results. This project component covers project monitoring and oversight by UNIDO in close coordination other relevant stakeholders. Initial activities under this component include the definition of progress and impact indicators and the design of a detailed monitoring plan and methodology.

3.2.1 National impact monitoring established and linked to Global GCIP

128. The GCIP methodology for impact assessment will be developed under the global GCIP framework project (10408), and will ensure a shared understanding of GCIP associated terminology amongst all involved stakeholders and will allow for extrapolation and comparison. It will ensure that GCIP's impact is clearly understood and can be used for programme and management decision making. As a minimum, tracking will include global environmental benefits (GEBs), energy saved, additional renewable capacity installed, job creation and investment leveraged. Data will be gender-disaggregated where appropriate and data on youth participation will also be recorded. This common methodology will be used to monitor GCIP impact in Viet Nam.

129. PEE and its partners will receive online training on the use of the methodology from UNIDO and subsequently they will train all semi-finalists across the programme (as part of the Accelerators) to provide GEB estimations of their innovations, using the training module developed. This will further allow the programme to show impact on a global level.

130. Dedicated resources will be assigned to track and monitor the business growth, social and environmental impact of the GCIP alumni enterprises in Viet Nam. Alumni will be expected to periodically provide relevant data to the national organization for a period into the future, when the impacts will be primarily felt, and can be quantified and verified. The data will be used to create a Viet Nam GCIP Impact report and content for promotion and advocacy purposes (news articles, social media posts, brochure and leaflets, videos etc.) that are tailored to diverse types of audiences (investors, national government agencies, donors, students). This will benefit the GCIP alumni enterprises by providing increased credibility and visibility. Monitoring data will be shared with the global GCIP framework project (10408), to consolidate the impact of GCIP as a global initiative.

3.2.2 Project effectively monitored including monitoring and reporting on the ESMP and risks

131. The monitoring of project progress is essential for the adequate and timely delivery of results. A detailed monitoring plan for tracking and reporting on project time-bound milestones will be prepared by UNIDO in collaboration with PEE and project partners at the beginning of project implementation and then periodically updated. PEE will prepare progress review reports every six months. Environmental and Social Safeguards Policy and Procedures, Risks, Stakeholder engagement, global environmental benefits (GEBs), energy saved and increase in installed renewable energy capacity, job creation, as well as gender dimensions and baselines for gender related targets (to be outlined in and aligned with the Gender Mainstreaming Action Plan operationalized under Output 3.2.3), will be captured appropriately in the M&E plan and reported on in the progress review reports and PIRs, and in the collection and assessment of relevant data. Further details of the M&E are provided, along with a budget, in the Section of 'Monitoring and Evaluation' below.

3.2.3 Gender mainstreaming action plan operationalized, monitored and impact on GEEW evaluated

132. In order to mainstream the gender dimensions, detailed gender analysis including gap analysis will be conducted during the PPG phase by hiring a gender expert based on which a detailed gender action plan will be developed and operationalized throughout the project implementation to support project contribution for enhancing gender equality and women's empowerment (GEEW). Efforts will be made to ensure that voices of both women and men are considered when discussions are held. As necessary, gender-disaggregated focus group meetings will be organized so that both men and women can lead, shape, participate in, contribute to and benefit from the project through mutual knowledge sharing. The operationalization of the action plan will be monitored and evaluated according to data and indicators incorporating gender dimensions including sex-disaggregated data collection, performing gender analysis, etc.

3.2.4 External mid-term review and independent terminal evaluation conducted

133. An external mid-term review will be conducted halfway through the project implementation period. An independent terminal evaluation will be conducted six months prior to the terminal review meeting. The final evaluation will look at the impact and sustainability of results, including the contribution to the capacity development and the achievement of global environmental benefits. An independent terminal evaluation will also provide recommendations for follow-up activities.

134. The project monitoring will support MONRE in evaluating the performance and progress of GCIP on the project level, and to enhance GCIP impact during scale-up/replications activities.

4. Alignment with GEF focal area and/or Impact Program strategies

135. GCIP generally, and this project specifically, is firmly aligned with the objectives of the GEF-7 Climate Change Focal Area Strategy CCM 1-4, "Promoting innovation and technology transfer for sustainable energy breakthrough?". This project seeks to foster private sector engagement in accelerating the uptake and investments in innovative cleantech solutions at scale. The GCIP prioritizes cleantech innovations in the domains that are fully aligned with GEF 7 priorities i.e., electric drive technologies and electric mobility, accelerating energy efficiency, decentralized renewable energy power with energy storage, and cleantech innovations related sustainable cities and sustainable food systems. Therefore, GCIP is a transversal intervention that supports all priorities of GEF 7's Climate change focal area.

136. The proposed project supports cleantech innovation and entrepreneurship in Viet Nam so that they commercialize and scale-up their operations thereby delivering climate and sustainable solutions that reduce GHG emissions while accruing other benefits. By fostering commercially viable solutions, the project will have lasting positive effects on the global environment, as well as on development of dynamic and vibrant markets for clean technologies creating new industries and green jobs locally and globally. This will be done through provision of much needed and best available catalytic technical assistance to cleantech SMEs. The project will ultimately promote establishment of sustainable innovation ecosystems for small and medium-scale enterprises and startups in the country.

137. By strengthening partnerships with the private sector interested in investing in clean technologies and contributing towards upscaling missed opportunities for green economic growth and green jobs, the project seeks to address existing barriers for entrepreneurs to fully commercialize their innovative products and exploit untapped potential especially in promoting cleantech innovations especially with specific focus on those related to low carbon, circular economy and sustainable development. The potential scope of interventions will include utilization of agro and industrial waste,

renewable energy, and recycling in major cities of Viet Nam as well as the sustainable use of natural resources while reducing GHG emissions.

138. In addition, in conjunction with the GCIP framework (10408), the proposed project promotes synergies with other GEF Programmes to leverage more impacts. In particular, it looks to establish operational, investment and/or knowledge management links with other GEF flagship initiatives such as the prospective Africa Minigrids Programme, Sustainable Cities IP, GreenChem and FOLUR. Furthermore, the proposed project will also exchange knowledge and lessons on opportunities for technology and business model innovations across these programmes.

5. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

139. The private sector is key to the creation and expansion of the market for cleantech products and services, achieving GEBs, generating jobs, and supporting economic growth. In Viet Nam, a clear government prioritization is given to promote innovations and start-ups/SMEs and to put the necessary policies and strategies in place. However, significant barriers still exist for cleantech enterprises, leading to their very low success rate. In essence, the CIEE in Viet Nam is still weak, and if the GEF funding is not provided, it is very likely that cleantech innovations will not be adequately developed in Viet Nam in the near future. This will result in many unrealized opportunities in reducing GHG emissions, in strengthening partnerships with the private sector keen on investing in cleantech, in commercialization of cleantech enterprises, and ultimately in missed momentum for green economic growth and jobs.

140. This project aims to go beyond the current baseline. As discussed in the baseline section includes SMEs with breakthrough cleantech innovations in developing markets having a very low success rate due to lack of key skills and capacities to transform their innovations into viable, scalable, and fast-growing enterprises. Furthermore, the innovation and entrepreneurship ecosystem Viet Nam can be hostile and initiatives to support these SMEs remain disjointed and uncoordinated. This project has been designed to learn from GCIP supported under GEF 5 & 6, to create opportunities for greater impact through providing greater commercialization support and investment facilitation services to expand opportunities for market expansion. This project is designed to provide catalytic and effective interventions that galvanize private sector interest and investments in the cleantech innovation and entrepreneurship space and also strengthen the national cleantech innovation and entrepreneurship ecosystem and connect it at a global level. These interventions, create a critical mass of interest in the cleantech sector, drive the transformation cleantech markets and result in more cleantech SMEs contributing to climate change mitigation and low-emission development.

141. Building on the baseline, including GCIP under GEF 5 & 6, the project will:

a) adapt and institutionalize methodologies, guidelines, tools and training systems for the accelerator, advanced accelerator, and post-accelerator support and for mentors, judges, trainers to be trained and certified in Viet Nam. This will ensure that the country will continue to run the GCIP accelerators long after the GEF project has ended.

b) provide post acceleration support and investment facilitation services so that cleantech innovators from this will be able to commercialize their innovation and mobilize funding for scaling-up.

c) support the design and establishment of early-stage financing mechanism to ensure that GCIP alumni from this project

d) increase focus on developing policy and regulations on cleantech innovations at national level

e) participate in global events around the global competition-based accelerator such as dialogues, investor networks to promote networking and learning

f) create bigger market opportunities for cleantech innovators to expand their businesses and hence increase their success rates and reduction of more GHG emissions.

142. Furthermore, the link to the UNIDO/GEF program 10408, Viet Nam's cleantech ecosystem will benefit from cross-border connectivity and synergies with ecosystems of other GCIP partner countries, leading to bigger market opportunities for Vietnamese cleantech SMEs to expand their businesses and hence increase their success rates and results in greater GHG emission mitigation efforts. One of the many incremental services that the GCIP project provides (through its linkages to the global framework) is access to global investors. As an estimate, evidence from GCIP under GEF 5& 6 shows that some GCIP alumni were able to mobilize global funding and expand their operations. From Turkey, Episome Biotech (2017 semi-finalist) raised \$1.7million in investment through 3 rounds from Diffusion Capital Partners based in The Netherlands; Seyisco raised USD 100,000 and B-Preg and Solter Vision also raised foreign capital. Actual figures are not yet available as to the level of increased GHG emission reductions achieved as a result of the international funding, but the global funding allowed B-Preg (bio-composite parcel shelves) to expand internationally and they now estimate annual emission reductions of 4180 tCO₂e/year and growing. Similarly, Solter Vision (remote PV plant analysis) now estimates annual emission reductions of 15,300 tCO₂/year and Seyisco (efficient pot hole filling) already estimates 826k tCO₂e per year saved. Episome (biotech) has the potential to reduce GHG emissions by 40 million tonnes/year once expanded globally. Therefore, SMEs with innovative cleantech solution can rapidly expand their businesses by accessing international financing opportunities and simultaneously rapidly expand global environmental benefits.

143. The GEF funding of 1.73 million US\$ is estimated to catalyze co-financing of 10 million US\$ from both public and private sectors which are interested in promoting solutions for low carbon, circular economy and sustainable development which contribute to GHG emission reductions. The project activities are regarded as opportunities for growth of SMEs in the country. The GEF resources will be used to bring best practices and international expertise to capacity development efforts. The project will support at least 80 entrepreneurs among which at least 8 solutions will receive investment facilitation services, so that they reach financial closure and market expansion; none of which would be achieved without the project. In addition, through national ecosystem strengthening activities, the project will create basis for enhancing awareness and visibility of business and investment opportunities in the cleantech sector, thereby prompting further interest and financial flows.

144. The PEE is responsible for fostering implementation of country's climate change mitigation actions. In addition, the project will work with already existing funds, institutions and programme as mentioned in the baseline section and develop targeted capacity building activities to which GEF will bring experiences from cases from other regions. By holding outreaching and capacity building events in regional locations, the project will enhance outreach of its activities throughout the country including women and youth.

145. Viet Nam is requesting GEF funding to help address the barriers to cleantech innovation, which will lead to positive socio-economic (economic growth, green job creation, attraction of foreign and domestic investment, etc.) and environmental (contribution to the reduction of GHG emissions and to global environmental sustainability, etc.) impacts. What is more, these impacts will be amplified through opportunities for coordination and connectivity with other GCIP partner countries, and thus for global cleantech innovation scale-up.

146. The GEF grant will stimulate the formation of local innovation ecosystems and will leverage additional sources of funding by private sector sponsorship, existing institutional resources, and funding mechanisms. The identification of local cleantech solutions through the operation of regional accelerator programs will provide tailored services for local environmental benefits with global GHG emission savings benefits. These locally identified solutions will be scaled across Viet Nam through the national platform and linked to global markets through the Global Cleantech Platform to leverage allocated funding sources and maximize global environmental and climate mitigation benefits. This project will seek to catalyze systemic transformation in the cleantech sector by providing post-acceleration support services so that more cleantech SMEs commercialize their innovation and scale-up their operations. By employing an ecosystems-based approach, the project will stimulate cleantech ecosystems at provincial levels that will provide support to cleantech SMEs in the long-term.

The project will build capacity of regional institutions and train a cadre of cleantech experts who will continue to support cleantech start-ups.

147. If GEF funding is not provided, it is very likely that clean technology innovations for low carbon circular economy and sustainable development innovation will not be adequately developed in Viet Nam (or only at a very low levels). Cleantech enterprises will continue to lack key skills on transforming their innovations into enterprises. Furthermore, investment will not be accrued for the cleantech enterprises for expanding their businesses. This will result in the loss of opportunities for green growth in the country where GHG emissions will continue to increase due to the economic development and increasing population is yet be expected.

6. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

148. The long-term lifetime of cleantech innovations introduced in the market and the strengthened and interconnected CIEE will be reflected in multiple GEBs including, primarily, GHG emission reductions. The GEBs achieved through the implementation of this project will be identified and quantified on the basis of the innovations marketed and their uptake. Given the nature of the project, the low-carbon products and services developed and commercialized will contribute to the GEBs beyond the project life and scope.

Background on GCIP's target for avoided GHG emission for the GCIP Framework (GEF ID: 10408)

149. In order to ensure that GCIP supports innovative cleantech solutions with high impact potential, and delivery of GEBs at the programme level, a target approach is applied. To achieve cost effectiveness of GEF funding for GEBs, a value of 5 to 10USD/tCO₂e avoided is targeted (corresponding to an overall cost per ton at programme level of USD38-76/tCO₂e). This means that, with GEF funding of almost USD 18 million, GCIP Framework aims to deliver between 1.8million and 3.6 million tons CO₂e by 2030. As 10 countries will be a part of the overall GCIP Framework, almost 1,000 semi-finalists are expected to be supported through the accelerators in all countries across the programme. Therefore, the target for the minimum projected potential of avoided GHG emissions per enterprise is between 1,800 to 3,600 tCO₂e by 2030.

150. To put this minimum target approach in context, a review of previous GCIP alumni GHG reductions was carried out. The review, looking at three sources of information, shows that the proposed avoided emission target is plausible and quite conservative. It also demonstrates the huge likely variety of emission reductions due to the different country contexts and technology innovations. The review also shows that where an innovation has real market potential, the avoided GHG emissions are very significant and that the GCIP approach has experience in successfully identifying and accelerating such companies.

151. Firstly, a survey carried out by UNIDO of 14 of its GCIP alumni showed that these companies had already generated 600,000 tCO₂e savings by 2017 and projected to generate over 4.8 million tons of GHG emission savings by 2020 (or 340,000 tCO₂e/year per company).

152. Secondly, the Independent Evaluation Office (IEO) report of eight GCIP projects included a sample of alumni in its annex with projected avoided emissions between zero (either they had not been estimated yet or the cleantech was not related to CCM) and 5 million tCO₂e per year. A median for emission reductions that were reported (which occurred only for a small proportion of the total alumni, namely 60 out of 900) is 88 tCO₂ per year. If alumni with estimated reduction are included (34) in the calculations, then the median increases to 12,200 tCO₂/year with the interquartile range from 350 tCO₂ to 81,000 tCO₂/year.

153. Thirdly, the Mission Innovation Framework for Assessing Avoided Emissions, in which a number of GCIP alumni (selected as part of Mission Innovation's 100 innovative clean energy solutions in 2019) were included, shows for example that Atomberg Technologies (which manufactures an energy efficient fan) is estimated to avoid 5 million tCO₂e/year by 2030. In turn, BEAD, an energy management AI optimization enterprise, is estimated to avoid 319 million tCO₂e/year by 2030. These two companies were also covered by the IEO report mentioned above, but Atomberg had not provided an estimate (so was assumed zero) and BEAD's estimate was 5 million tCO₂e/year.

154. A ten-year horizon was selected for estimating the GHG emission savings. However, assessing a priori the GHG reduction potential of cleantech solutions (products, services) to be identified through GCIP has proven to be difficult, as by definition GCIP encourages open innovation, and the types and categories of cleantech products and services that will be supported can only be determined after the selection of semi-finalists as part of the GCIP Accelerators. Also, expected difficulties include attribution of the incremental GEBs of the cleantech solutions to the GCIP support. However, the design of past GCIP assumed abatement costs (for GEF funding) of between 0.68 USD/tCO₂e in Turkey to 29.77 USD/tCO₂e in Armenia. As the targets were exceeded in those

countries, and as the proposed benchmarks are within the same range, they are considered realistic and conservative.

155. The target of between 5 to 10 USD/tCO₂e avoided, that is set for the GCIP Framework, translates into avoided GHG emissions per enterprise of between 1,800 to 3,600 tCO₂e. The provided target range will enable the GCIP country child projects to support a mix of technologies with different CO₂ emission reduction potentials, and in particular allow innovations into the GCIP Accelerators that a) have a relatively low CO₂ reduction potential, but a considerable demand and market growth potential (that can lead to amplification of GEBs), as well as b) that create multiple benefits (including socio-economic, such as job creation, gender mainstreaming, etc.).

156. In addition, indirect GEBs facilitated through the CIEE strengthening are also expected. In particular, indirect GHG emission reductions could result from: strengthened capacity of institutions and human resources to support commercialization and uptake of cleantech solutions at large; investments mobilized for cleantech solutions at large due to reduced risk perceptions; as well as longer-term emission reductions from behavioral change. An estimated factor of 5 is chosen to provide a projection for indirect GEBs. Where possible, efforts will be made to verify the indirect GHG emission reductions achieved at national and global levels through terminal evaluations.

157. This target-based approach for the estimation of GHG emission reductions will be applied across all 10 child projects under the GCIP Framework (GEF ID: 10408). A GCIP methodology for the calculation and monitoring of GHG reduction potential will be developed by the GCIP Global (GEF ID: 10461) in the first year of the project implementation, as well as it will be shared with all GCIP partner countries to enable coherent approach. In order to ensure that the desired GEBs are cumulatively delivered by the GCIP Framework, appropriate measures will be applied across the programme. They will entail placing a benchmark for the estimated GEB to be delivered by the cleantech innovations at the GCIP Accelerator application stage, so that only solutions with sufficient impact potential are supported. If the projected GHG emission reduction does not meet the minimum requirement set, the innovation will not be accepted in to the GCIP Accelerators.

Estimation of Global Environmental Benefits of the cleantech project in Viet Nam

158. The Viet Nam cleantech project will be implemented in coherence with the global GCIP Framework (GEF ID: 10408). As such the country project will be implemented in alignment with the GCIP methodologies and tools to evaluate common impacts (cumulative GHG emission reductions, investment mobilized, and other environmental and socio-economic impacts achieved).

159. The two cycles of national accelerator programme in Viet Nam are expected to support at least 80 enterprises (semi-finalists), as a result of which the avoided direct GHG emissions over a ten-year horizon are estimated at between 144,000 and 288,000 tCO₂e of direct GHG emission savings and 720,000 and 1,440,000tCO₂e of indirect GHG emission saving (based on an estimated factor of 5). The lower range has been used as input to the GEF corporate core GHG indicator target (indicator 6) as a conservative estimation.

160. To facilitate the achievement of GEBs, there will be awareness raising and promotional activities during the call for applications to the Viet Nam accelerator programme, and also the applicants will be supported in calculating GHG emission reduction potential of their innovations. Additional training on GHG monitoring and calculation will be provided to all semi-finalists.

161. In addition, other environmental and social co-benefits are also expected to result from this project. These are likely to include reduction in waste in the environment, reduction in air pollutants (e.g. NO_x, SO_x, PM and CO) and bad odor, improved water quality, reductions in material use, avoid land pressure problem in urban area, improve energy security and access to clean and sustainable energy, promote circular economy, compliance with laws and regulation, improving living conditions, health & hygiene of population specially poor communities, quality of employment including income generation and jobs creation. These additional benefits are considered during the accelerator and tracked if any as per the selected technologies and innovations.

7. Innovation, sustainability and potential for scaling up

Innovation

162. The GCIP is unique in its approach of fostering the expansion of SMEs and start-ups into cleantech products and markets. From the assessment of the current policy framework and the identification of innovative technologies to their development and commercialization, the GCIP supports entrepreneurs across the whole innovation value chain to develop the idea of circular economy and GHG reduction that will have a real impact in Viet Nam and global markets. In contrast to other accelerators and incubator programme, GCIP not only promotes innovation, but also uses an innovative approach that is cross-sectoral and multi-tiered to strengthen the national innovation and entrepreneurship ecosystem by building capacity in national institutions, creating strong linkages between the most relevant ecosystem players and by raising awareness among them.

Sustainability

163. The impact pathways of the project are carefully selected to address key barriers and galvanize continued actions by ecosystem players so as to achieve transformation impact in terms of GHG emissions reductions and job and wealth creation in Viet Nam. The mainstreaming of cleantech innovations that will continue beyond this project will ultimately result in the decoupling of economic growth from GHG emission increase.

164. The sustainability of this project is ensured by involving public and private sector institutions and by building their capacity to make sure that the activities under the different components can be carried out by them after project closure.

165. Besides, the comprehensive trainings conducted for participants, judges and mentors will create a critical mass of technicians with sound business skills in different regions of the country. This knowledge can be easily transferred to create a virtuous cycle of enhancing the cleantech ecosystem to identify and support innovations through business growth and towards commercialization.

166. The project will develop an advocacy and communication strategy, with the intention to support the creation of strong networks and the effective communication channels among the cleantech ecosystem actors, and their sustained interactions and networking post project closure.

167. The project will closely work with the proposed executing partner and associated agencies to strengthen its institutional capacity in order to effectively absorb the knowledge and technical capacity created by GCIP.

168. Strengthening the capacity within the project executing entity (PEE) to conduct the national accelerator with public and private funding post project closure will ensure sustainability of the project's impacts, as shown through previous GCIP partner countries. Sustainability and exit strategies will be provided by GCIP as a template and guideline, which will then be reviewed and adapted for Viet Nam. The sustainability of the project is reinforced by the following:

- During and post the Viet Nam Accelerator the cleantech SMEs will be guided through the development process of the concepts to ensure that their innovative concepts are sustainable and will have a real impact on the Vietnamese market. To ensure that this intensive mentoring approach is sustained beyond the project implementation period, the project will conduct capacity building activities for the national counterpart institutions, mentors and judges in the country;

- Through investment facilitation, cleantech SMEs will be able to mobilize funding and investments from angels, impact investors and other sources of fund;

By generating and using methodologies, guidelines, tools and training materials for competition-based accelerators, the project will ensure that institutions and industry associations engaged in running the accelerators will have adequate resource materials to use in running such accelerators beyond the life of the programme;

- By linking cleantech innovation ecosystems across countries, the project will create a business environment and incentives for cleantech SMEs, policy makers, and industry associations to work across countries. This will be sustained through these stakeholders investing their own resources in these activities beyond the life of the programme;

- Through the establishment of a web platform, where cleantech SMEs alumni and stakeholders will continue to update and use as a market place where global technology innovation ecosystem players will continue to post innovations, investors will continue to scout for new innovations, policy makers and regulators will continue to use to learn about policy and regulatory innovations. In fact, the web platform, will catalyze continued connectivity of innovation ecosystems from different countries;

- The management of knowledge generated from the project in terms of fact sheets, guidebooks, tools and reports on accelerating cleantech innovation. This will ensure that stakeholders will be provided with a continuous access to these tools and apply them to sustain the GCIP approach;

- Strengthening national institutional capacity to ensure that the skills and experience are there to sustain the cleantech innovation platforms and run the accelerators beyond the GEF funding;

- Supporting the maintenance of standards in terms of GCIP processes and practices so as to ensure adherence to the highest quality of norms. Such norms will guarantee that the GCIP will transform to a recognized brand, securing long-term sustainability;

- Development of long-term partnerships with the private sector which will form part of national exit strategy and guarantee continued funding of the programme.

Scaling up

169. The Viet Nam cleantech project is implemented in alignment with the GCIP child projects under the global GCIP Framework (GEF ID: 10408). This will enable the country project to bear a considerable potential for local and regional expansion in terms of cooperation and networking, as well as sectoral expansion through close relationship with other GCIP partner countries in the region and across the globe. The stakeholders involved in the Viet Nam accelerator programme are enabled to form international partnerships and to enter foreign markets. Through continuous extension of GCIP into additional countries, these opportunities are continuously augmenting.

170. The project will enhance the traditional GCIP approach according to identified limitations by including post-competition services like investment facilitation and commercialization services as well as by expanding to challenge based competitions, focusing on the field of low-carbon circular economy, sustainable development and there like responses and building up of resilience against emerging challenges such as COVID-19.

171. The commercialization element aims at complementing the training provided during the acceleration process to maximize the ability of each supported alumni to reach the commercialization stage. By providing support to alumni and other eligible cleantech innovators, GCIP is expected to effectively increase job creation, competitiveness, wealth generation and GHG emission reductions. It is also expected that the project will serve as a catalytic force to advance the cleantech innovation and entrepreneurship ecosystem in Viet Nam as well as to coordinate and maximize the synergies with national and international relevant players.

172. The private sector, in their attempts to address existing energy challenges, will play an instrumental role in driving and sustaining technical innovation in Agro-industry, industrial waste, renewable energy and recycling sector. The project approach is premised on mobilizing economic interest by stakeholders who will sustain the interventions of the project beyond the life of the project.

173. In addition, the Viet Nam cleantech project is expected to set building blocks for the country to advance its actions under the following GEF replenishment cycle especially in terms of integrating circularity concept into the policies, planning and actions which can deliver multiple environmental benefits across climate, biodiversity and chemicals and waste[49]⁴⁹.

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- [43] <https://startup.google.com/accelerator/southeast-asia/>
- [44] https://ec.europa.eu/international-partnerships/system/files/commission-decision-aap-2020-vietnam-annex-1_en.pdf
- [45] https://ec.europa.eu/international-partnerships/system/files/commission-decision-aap-2020-vietnam-annex-1_en.pdf
- [46] <https://research.csiro.au/aus4innovation/>
- [47] Decision No.749/QĐ-TTg <<https://opengovasia.com/vietnam-aims-to-become-a-digital-society-by-2030/>>
- [48] <https://www.weforum.org/agenda/2020/04/how-an-entrepreneurial-approach-can-help-end-the-covid-19-crisis/>

[49] GEF-8 Programming Directions (PREPARED BY THE GEF SECRETARIAT)
https://www.thegef.org/sites/default/files/council-meeting-documents/GEF-8%20Programming%20Directions_0.pdf

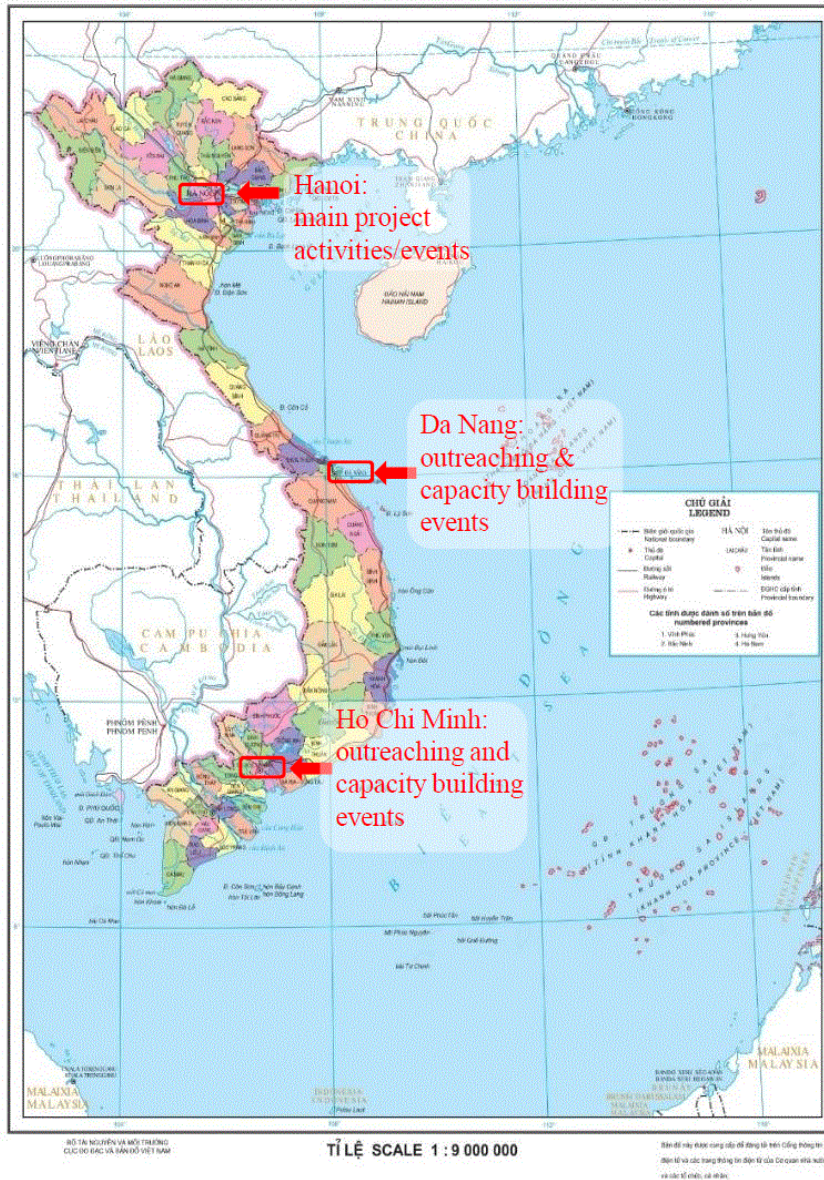
1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

While the project is targeted at beneficiaries (entrepreneurs and all relevant CIEE stakeholders, such as universities, policy makers, financiers, and R&D institutions) from all over the country, the main project events will be conducted in the capital city of Hanoi, as well as some outreaching and capacity building events in Da Nang and Ho Chi Minh cities in Viet Nam. This is due to the benefits resulting from a relatively dense concentration of relevant stakeholders there, and well developed infrastructure. The project boundary will not overlap any other country's territory. The geo-coordinates and location for these cities are as following:

- 1) Hanoi: 21.02722° S, 105.83508° E
- 2) Da Nang: 16.05492° S, 108.20293° E
- 3) Ho Chi Minh: 10.82095° S, 106.62851° E

**BẢN ĐỒ HÀNH CHÍNH NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
ADMINISTRATIVE MAP OF SOCIALIST REPUBLIC OF VIETNAM**



2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

Below table provides an indicative list of stakeholders to be engaged for successful implementation and execution of the programme .A detailed stakeholder map and engagement plan will be developed during the PPG phase, including roles and responsibilities of key stakeholders.

Main Partner	Description and Mandate	Envisaged role in the project
Ministry of Natural Resources and Environment (MONRE)	<p>MONRE performs the state management functions in the fields of Land, Water resources, mineral resources, geology, environment, hydrometeorology, climate change, measuring and mapping, general management of natural resources and protection of sea and island environment, explore, state management of public services in the fields under the management of Ministry.</p> <p>MONRE is working for environmental protection and implementation of multi-lateral environmental agreements as Focal point for CBD, UNFCCC and GEF.</p>	<p>MONRE will guide the overall strategic direction of the project execution. The Project Steering Committee (PSC) will also be established under the Chairmanship of the Ministry.</p>

Main Partner	Description and Mandate	Envisaged role in the project
Ministry of Science and Technology (MOST)	MOST performs functions of State management on science and technology, including scientific research, technology development and innovation activities; development of science and technology potentials; intellectual property; standards, metrology and quality control; atomic energy, radiation and nuclear safety; and State management on public services in fields under the Ministry's management as stipulated by law	The project will cooperate with MOST for determining the policies and direction of the science and technology in Viet Nam and will be a member of the PSC. MOIT will support for strengthening the policy and regulatory framework that creates a nurturing innovation ecosystem in the higher education and research institutions. MOST will also provide linkages between the project and activities on entrepreneurship and technology innovation in institutions of higher education and research institutions. In particular, the researchers and students from these institutes will be systematically invited to submit their cleantech project ideas under this project. In the long-term, it is envisaged that MOST will help with the development and adoption of a new curriculum on entrepreneurship, innovation and energy, thus supporting the sustainability of the Cleantech ecosystem in Viet Nam.
Ministry of Industry and Trade (MOIT)	MOIT works for the advancement, promotion, governance, regulation, management and growth of industry and trade.	The project will cooperate with MOIT on support for establishing clean technology innovation networks with experts including mentors and judges. The MOIT will be a member of the PSC and will provide the linkages between clean technology innovation to industry and SMEs. In particular, MOIT will link the cleantech project to issues of trade and investment, especially supporting the transition of startups into manufacturing industries and trade, and promoting investments in the selected startups.

Main Partner	Description and Mandate	Envisaged role in the project
Ministry of Planning and Investment (MPI)	MPI performs the functions of state management over planning, development investment, and statistics, including the provision of general advice on strategies, master plans, plans for national socio-economic development and public investment; on mechanism and policies for economic management; on domestic investment, foreign investment into Vietnam and Vietnam's investment abroad; economic zones; on official development assistance (ODA) source, preferential loans and foreign non-governmental aids; on bidding; on development of enterprises, collective economy and cooperative sector; on statistics; performs the state management over public services in sectors, fields under its state management as prescribed by laws.	The project will cooperate with the MPI on the policy and regulatory framework that creates a nurturing innovation ecosystem in the priority sector of the project. MPI will be a member of the PSC and will provide the linkages between clean technology innovation to the governmental strategic priorities.
Department of Gender Equality under the Ministry of Labor, War Invalids and Social Affairs (MOLISA)	MLISA performs state management function on the areas of: labour, wage and salary, employment, vocational education, social insurances, occupational safety and hygiene, people with special contribution to the country, social protection, children related issues, gender equality, social vices control and prevention.	The project will cooperate with the department of Gender Equality under MOLISA to facilitate engagement of women into the project activities and enhance project positive impact on promoting GEEW in cleantech ecosystem in Viet Nam.
Vietnam Climate Innovation Center (VCIC)	VCIC is implementing the National Green Growth Strategy under the management of the MOST. VCIC, sponsored by World Bank (WB) from the fund of Australia government and the Department for International Development (DFID) under the management of Ministry of Science and Technology (MOST), and being operated by Project Management Unit (PMU) of VCIC will support climate innovation entrepreneurs from the stage of incubation to commercialization, international market approach, to turn climate challenges into green growth and sustainable development opportunities.	VCIC will be engaged in the project especially for provision of trainings, business incubation, mentor trainings, knowledge dissemination to promote the low carbon circular economy. The project is envisaged to create mutual benefits with VCIC by sharing and channeling networks of entrepreneurs and investors identified through the project activities. In addition, it will play a practical role in capacity building during project implementation for executing trainings. Representative of VCIC will be a member of the PSC.

Main Partner	Description and Mandate	Envisaged role in the project
EU-Vietnam Energy Facility	Co-financed by the EU and the German Federal Ministry for Economic Co-operation and Development-BMZ in close cooperation with the MOIT to enhance access to sustainable energy in Vietnam's rural areas and contribute to a more sustainable energy sector.	The project will seek for partnering with the EU-Vietnam Energy Facility and its engagement especially for mentoring and judging including the investment support for high potential low carbon circular economy solutions.
Viet Nam Environment Protection Fund (VEPF)	VEPF is the national fund for environmental protection and operates as a state financial institution under the MONRE.	VEPF is expected to be nominated as the lead executing agency of the proposed project and take the lead in sustaining and expanding in the Cleantech Competition and Accelerator programme after the completion of the present project. VEPF will be the secretariat of the PSC and will report to the PSC Chair.
Hanoi University of Science and Technology (HANU)	HANU is an institution for training, research and technology transfer, providing high-quality university and post-graduate human resources, proficient in expertise, proficient in foreign languages and public applications. information technology to meet the increasing demand of the domestic and international labor market.	The project will closely cooperate with HANU and other leading universities and research institutions to encourage participation and increase awareness among students and entrepreneurs. Thus, HANU and other universities and research institutions will be engaged as potential sources of new clean technologies, emerging entrepreneurs, knowledge networks, applied research collaboration and additional team members.
Innovators/ Entrepreneurs	Innovators/entrepreneurs will be the most important stakeholders and will be the main beneficiaries from the project's activities.	It is expected that the project will reach out and engage with innovators and entrepreneurs in Viet Nam by utilizing existing channels and ongoing activities in Viet Nam to support their initiatives while creating GCIP alumni. The network of GCIP alumni is envisaged to keep actively collaborating with innovators and entrepreneurs engaged in the project and thereafter.

Main Partner	Description and Mandate	Envisaged role in the project
<p>Organizations which promoting GEEW and gender focal points</p>	<p>UN Women holds office in Viet Nam and is a part of the UN "Delivering as One" initiative in Viet Nam and it leads UN's advocacy to further promote gender equality by enhancing women's economic empowerment, ending violence against women and girls and improving women's access to justice, and making gender equality a key part of the national legal framework, policies and plans.</p> <p>Vietnam Women Entrepreneur Committee was established under Vietnam Chamber of Commerce and Industry of Vietnam and supports for women entrepreneurs' and women-owned business' rights; support for trade, investment, and technology development for women entrepreneurs; and trainings and capacity building for women entrepreneurs.</p> <p>The Vietnam Association of Female Entrepreneurs (VAFE) aims to promote the capacity and role of businesswomen for the country's sustainable development, offering a venue for them to share experience and improve their professional knowledge. It will also protect the legitimate interests of women entrepreneurs and workers in businesses.</p> <p>Vietnam Organization for Gender Equality (VOGE) was established and came into operation in 2016 by a team of young, competent and enthusiastic students who always showed concern and initiatives in social problems solving.</p> <p>Initial analysis and consultations were conducted and the organization can be a focal point to enhance engagement of women and youth to the project activities.</p> <p>Other stakeholders will also include relevant gender focal points and experts, as well as local and international associations and/ or</p>	<p>Relevant women entrepreneurs/innovators, CSOs and NGOs focusing on gender equality issues and advocating women's empowerment, and gender experts/focal points will be invited to participate in and contribute to all activities of the project.</p> <p>The project will deliberately mobilize interest from women entrepreneurs by targeting the involvement of their associations in the project process (for instance by reaching out to both qualified women and men equally). This will be done by taking into consideration the cultural context that exists in Viet Nam. That way, the project would adequately address the gender imbalances in SMEs and provide a solid basis to empower women in clean technology innovations.</p>

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

174. UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive industrial development, which are key drivers for poverty alleviation and social progress. Commitment of UNIDO towards gender equality and women's empowerment (GEEW) is demonstrated in its policy on Gender Equality and the Empowerment of Women (2019), which provides overall guidelines for establishing a gender mainstreaming strategy.

175. UNIDO has extensive experience in promoting and achieving gender sensitive impact, even in countries where gender inequality is systemic. Viet Nam's Law on Gender Equality (2016) provides a foundation for proactive gender mainstreaming activities. The project will strive to ensure women empowerment through (i) specific training and mentoring to promote women innovators, entrepreneurs, startups; and (ii) the design of specific prizes and follow-up support programmes for innovative startups that will have a significant impact on women's entrepreneurial development and job creation, etc.

176. Women entrepreneurs are expected to lead, contribute to and benefit from all the project components and activities, participate and facilitate in post accelerator support, as well as in successful competition and acceleration programmes, thus fostering the empowerment of women. To mainstream gender into this project, a gender baseline analysis is planned during PPG phase to identify entry points for defining gender-responsive project outcomes, outputs as well as targets, a baseline and gender-responsive related activities. These will be summarized in a gender mainstreaming action plan.

177. UNIDO's Guide on Gender Mainstreaming Energy and Climate Change Projects will be used as a framework and guide for the gender analysis of the project in order to ensure that the project is in line with both UNIDO and GEF requirements. Based on the guidelines, attention will be paid to:

? Gender-sensitive recruitment at all levels where possible, especially in selection of project staff.

? Gender responsive TORs will be used to mainstream gender in the activities of consultants and experts.

? In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged.

? Furthermore, whenever possible existing staff will be trained and their awareness enhanced regarding gender issues.

178. The gender analysis during the preparatory phase (PPG) will identify the specific circumstances of women, and will provide a basis on how the priorities and needs of these groups will be integrated in the implementation of the project. This analysis will also incorporate the experience of countries under the previous Global Cleantech Innovation Programme (GCIP) for SMEs for a better understanding of the barriers faced by female entrepreneurs and so design effective mitigation tools.

179. Initial analysis of the project has identified the following gender specific targets to be monitored and evaluated throughout the project implementation period. These will be reviewed during the PPG. The project will take the following suggested approach to gender mainstreaming:

Application stage for Challenge and Competitions:

180. Collection of gender disaggregated data through application forms: Number of women-led enterprises, % of women in the applying team;

Targeted outreach:

181. While the target groups of the project would be both men and women engineers and business persons, but importantly also ways in which to bring the two groups together, the project will include activities which specifically target women especially under Outcome 1.2. Institutions promoting GEEW (e.g. women chambers, women universities, etc.) will be outreached for establishment of the women's hub /chapter/network platform which will further convey messages and create networks in the country for enhancing gender equality in the relevant fields of cleantech innovation by itself constituting a part of the cleantech ecosystem. Setting a target on the % of women-led enterprise applications as one of the indicator to track the progress of gender equality in cleantech innovation.

Selection of both men and women semi-finalists, mentors and judges:

182. Stringent selection criteria will be defined that provide equal opportunities for both women and men. The objective would also be to involve women in the mentoring process so that more role models could be created, thus mitigating the impact of this inequality in the future. Targeted additional training could be made available to train women mentors and judges. Target: % of women-led enterprise semi-finalists, # of women mentors and judges.

Project output specifically focusing on GEEW

183. The project as a design incorporated a specific outcome of ?1.2 Gender equality is supported and strengthened by the CIEE in Viet Nam?. To achieve this outcome, specific activities targeting women are planned including creation of a hub for women to engage in CIEE in Viet Nam, implementation of special mentoring programme for women cleantech entrepreneurs. and conducting campaign for awareness raising on women's role and engagement in cleantech ecosystem.

184. Based on the fact that women are yet to be under represented and limited their access to resources in clean tech sector, the project will effectively increase women's engagement into the CIEE in Viet Nam by incorporating the specific outcome and activities targeting women.

Special Awards:

185. Special consideration will be given to the creation of a prize to recognize women entrepreneurs or a product/service with the most potential positive impact on GEEW.

186. The project design will acknowledge the differences between women and men considering distribution of economic activities and social roles in the cleantech innovation space, in line with GEF 7 Programming Strategy.

Supporting Youth

187. In addition to gender dimensions, GCIP has also been able to support youth entrepreneurship and employment as an added benefit in GCIP partner countries. GCIP's main goal is to strengthen the cleantech innovation ecosystem of our partner countries, and GCIP supports cleantech startups by providing business and entrepreneurship training and mentoring. As cleantech is a relatively new industry sector worldwide, and at nascent stages in many of GCIP partner countries, the entry barrier for youths is low compared to other more established markets where lack of experience in that sector may prove to be a (both actual and perceived) disadvantage. Defining the product market, sales tactics, financing options for commercialization etc. for cleantech businesses are not transferrable from other industries and therefore experience in other sectors may not necessarily be an advantage. This means youth entrepreneurs are on a level playing field with older / more experienced entrepreneurs. Through the training and mentoring curriculum offered by GCIP, youth entrepreneurs develop necessary business skills specific to the cleantech sector, and are placed on an equal footing with older generations in the cleantech space.

188. Youths are more likely to be interested in mission/impact driven business models, as opposed to profit driven business models. This means the goals of GCIP are

more attractive to youths that seek to establish businesses that offer environmental solutions. Therefore, interest from youths to participate in GCIP is higher.

189. It is important to engage youths in the cleantech sector, as youths experience environmental problems differently due to behavioral and lifestyle differences compared to other generations. Many cleantech solutions are developed based on personal experiences, and therefore fully engaging the youth will be important in addressing environmental challenges comprehensively. To promote application from early-stage R&D cleantech solutions, GCIP has focused on engaging universities and students. This has the added benefit that youths are naturally the target group of GCIP communications and advocacy efforts. GCIP is also indirectly impacting the entrepreneurial culture of partner countries, through its communications efforts. The main message is that solutions to environmental and social challenges can be profitable business models. Also, in promotion efforts for the GCIP supported SMEs, many youth entrepreneurs are showcased, and the public is exposed to success stories of young entrepreneurs. Seeing peers as entrepreneurs may indirectly influence other youths to also consider entrepreneurship as an option.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; No

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

190. This project focuses on early-stage innovative businesses aiming at transforming them into commercial stages pursuing innovative cleantech solutions for low-carbon circular economy and sustainable development, and provides support for partnerships with the private sectors such as financial providers interested in investing in. It is expected that at least 3 business cases validated for piloting and at least 2 financial mechanisms mobilized for fully functional implementation, so the private sector engagement will be crucial part of and success factor for the project.

191. The private sector engagement is key for the success of this project and its engagement in the project will further be confirmed in stakeholder consultations in the PPG phase. The GCIP Viet Nam foresees several areas of interaction with the private sector:

a. There will be direct interactions with and support for entrepreneurs (SMEs and start-ups) offering innovative cleantech solutions. The entrepreneurs are considered as agents of change that bear the potential of instigating a market transformation. The SMEs and start-ups will be supported in the framework of GCIP Viet Nam cleantech ecosystem including accelerator, advanced accelerator, and post-accelerator supports. It is expected that at least 80 entrepreneurs will take part in this project, so the private sector engagement will be crucial part of the project. In addition, there will be active involvement of private investors, banks and other institutions that will be led by the Chamber of Commerce and Industry to ensure promotion and stimulation of clean energy technology innovations in targeted industrial sectors.

b. The private sector companies intention to provide, and support access to, private equity investment to selected enterprises supported by GCIP Viet Nam will be confirmed during the PPG phase.

c. Corporate partnerships will be formed to connect GCIP Viet Nam participants with various companies with the aim to create joint venture opportunities across borders, to facilitate market expansion and product co-development. This has already been successfully piloted with the Korean Financing Technology Corporation (KOTEC) with collaborations established between Korean SMEs and GCIP alumni from Morocco, Pakistan, Thailand and Turkey. Similar partnerships are expected under this project

d. The GCIP Viet Nam will also partner with corporations that seek to identify and invest in innovative cleantech.

e. Moreover, the GCIP Viet Nam will target financing institutions, venture capitalists, and angel investors in its communications and outreach activities that seek to raise awareness and strengthen the knowledge of opportunities and risks associated with investments in cleantech. In addition, Investor Connect events will be organized to connect potential financiers with entrepreneurs and to facilitate investments

f. The GCIP Viet Nam will also cooperate with industry and business associations to leverage their know-how, capital and interest in cleantech innovations, as well as to build their capacity.

g. In addition, industry experts will be engaged as mentors, trainers, judges, and Executive in Residence (EIR) to support the GCIP Viet Nam Accelerator, Advanced Accelerator, and Post-Accelerator

h. In line with GEF strategy on private sector engagement, the project capitalizes on the growing interest by national and international private actors in the sustainability agenda and creates the conditions for SME driven creation and transformation of cleantech markets. This ultimately harnesses the ingenuity and creativity of SMEs and "crowds-in" private sector investments to deliver environmental benefits beyond business as usual.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental 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 (table format acceptable)

General risk analysis

Risk	Rating	Mitigation
Institutional Risk ? Lack of absorptive capacity by the national counterpart	Low	Capacity building of the national counterpart will be an ongoing process throughout the project implementation period to ensure that staff are comprehensively trained, and sustainability of the programme is ensured
Institutional Risk ? Insufficient administrative and organizational capacity of the project executing entity (PEE) for successful execution of the project	Low	An organizational assessment (a micro assessment under the Harmonized Approach to Cash Transfers framework) will be conducted during the PPG phase to evaluate potential execution risks. The results showed the risks to be low in all areas under consideration.

Risk	Rating	Mitigation
Institutional Risk ? Insufficient technical capacity of PEE for successful execution of the project	Low	PEE will be nominated by the GEF OFP in consultation with key stakeholders as the most appropriate national agency to execute the project, and as a technology incubator agency with a strong track record in cleantech therefore it is assumed that it has the pertinent mandate and technical capacity for successful achievement of the project objective and associated outputs and activities.
Institutional Risk ? Lack of effective coordination between various project partners	Low	Proper coordination will be ensured through the establishment of the Project Steering Committee (PSC) and ad-hoc working groups will be formed if necessary
Operational Risk ? On-going global restrictions due to global shock S (e.g., COVID-19)	Medium/high	In case of travel and/or group meeting restrictions, the GCIP Viet Nam trainings and meetings/events will be organized on-line
Sustainability Risk ? Lack of ownership of project results and inability to source funding to continue the activities in the medium and long term	Low	A GCIP Viet Nam sustainability and exit strategy will be developed based on a framework delivered by the GCIP Global, and it will among other include specific considerations related to a formal project handover process and the point in time when UNIDO's exit takes place (based on targets achieved by the GCIP Viet Nam
Political Risk ? Lack of political support to mainstream innovative cleantech	Low	The project is supported by the Government of Viet Nam, and different ministries will be involved in the design of the project
Market Risk ? Failure of businesses supported by GCIP Viet Nam	Medium	The GCIP guidebooks (for Accelerator, Advanced Accelerator, and Post-Accelerator) will be comprehensive documents that articulate the GCIP approach to promoting cleantech innovation and entrepreneurship in developing countries. As such, they will help ensure that the businesses supported have real market potential. In particular, the GCIP Viet Nam methodologies, guidelines, tools will define eligibility requirements and selection criteria for the participants.

Risk	Rating	Mitigation
Finance risk - Incentive and financial support system are insufficient	Low	The outreach and communications activities will be targeted at, among others, financing institutions, venture capitalists, and angel investors. Moreover, the strong GCIP brand, and the ongoing activities, knowledge and lessons from GCIP global are expected to build confidence of national and international financiers. The PSC will include at least one representative of a financing institution or an investor.
Coordination Risk: Lack of effective coordination between various project partners/stakeholders	Low	A proper coordination will be sought through the PSC and the established working groups.

Risk	Rating	Mitigation
Climate Change Risk	Medium	<p>According to the Third National Communication[1], estimated temperature rise in the country ranges from 0.6-0.8°C (low GHG scenario) or 0.8-1.1°C (high GHG scenario) by middle of the century and 1.9-2.4 in the North/1.7-1.9°C in the South (low GHG scenario) or 3.3-4.0°C in the North and 3.0-3.5°C in the South (high GHG scenario). The projected temperature rise is significant in both scenarios. As a consequence, several climatic changes are expected including increase of annual rainfall from 5% to 20% all over the country. Extreme events are also expected especially in the storm season. Frequency of huge storms and typhoon may increase. There may be increase of the number of extreme cold days may increase in the Northern mountainous provinces and decrease of the Red River Delta and North Central coast. Drought may become more severe. In addition, the country's coast line faces the risk of sea level rise. The estimated sea level rise ranges from 14-32cm (low GHG scenario) or 17-35cm (high GHG scenario) by middle of the century and 17-35cm (low GHG scenario) or 49-103cm (high GHG scenario). This will induce the risk of inundation in several coastal provinces and cities including HCMC. For example, 17.8% of the HCMC will face the risk of inundation. Depending on the conditions of each region and impacts of different factors, subjects and levels of vulnerability vary, with the most vulnerable sectors being agriculture and food security, natural ecosystems, biodiversity, water resources, public health, shelters and technical infrastructure. In relevance to the project intervention, intensified risks of flood in conjunction with sea level rise are observed especially at the urban municipalities in coastal cities as they have the high population density and urban/spatial planning that do not integrate natural disaster risk mitigation and climate change adaptation to cover areas where most assets, infrastructure and vulnerable groups are located. The cities where project activities and events will take place, namely Hanoi, Da Nang and HCMC, also experienced major floods in the past decade[2]. It is observed that the extreme events, especially floods, may have impacts on the project physical settings including buildings and places where the project activities and events will take place. Solid waste collection and treatment systems in many coastal zones will be affected by flooding as dumping sites and landfills may be inundated causing landfill leaks and spills waste to surrounding areas, polluting the environment and adversely affecting public health, increasing vulnerability of coastal communities. On the other hand, in terms of cleantech</p>

Risk	Rating	Mitigation
Environmental Risks	Low	It is recognized that some technologies that could potentially be supported by GCIP, such as ICT could lead to GHG emissions, unless powered entirely by renewable energy. Similarly, technologies related to energy storage can have harmful environmental impacts if not managed effectively. Therefore, any cleantech innovation supported by GCIP Viet Nam will need to meet strict environmental screening criteria. In addition, an Environmental and Social Management Plan (ESMP) will be prepared to mitigate the environmental (and social) risks.
Social/ Gender Risk:	Low	To ensure gender inclusiveness of all project activities, UNIDO methodology for gender assessment and gender responsive communication showing the benefits of gender equality for both women and men will be applied. To mainstream women and youth entrepreneurship, adequate and gender responsive communication strategy will be implemented, and sensitization workshops will be organized. A full gender analysis will be carried out and its recommendations were incorporated into the project design and implementation.

COVID-19 risk analysis

Risk	Rating	Mitigation
Technical expertise is not readily available due to the pandemic	Low	Necessary efforts will be made to identify alternative technical experts in case it is required. Planning will be flexible enough to reschedule activities onsite that require specific expertise
Possible re-instatement of COVID-19 containment measures limits available capacity or effectiveness of project execution/ implementation	Medium	The capacity of stakeholders, and especially the beneficiaries, for remote-work and online interactions will be strengthened by securing access to commercially available conferencing systems. The current design of the curriculum for entrepreneurs is based on online interactions and deliverables, using webinars and web platforms, and therefore COVID-19 is not expected to pose a significant risk to the conduct of the acceleration cycles

Risk	Rating	Mitigation
Some project supporters, co-financiers or beneficiaries may not be able to continue with project execution/implementation	Low	The situation will be closely monitored in order to find alternate supporters or co-financiers, or to readjust the list of beneficiaries if needed.
Price increases for procurement of goods/services	Medium	The project team will undertake efforts needed to find alternative providers and make sure that competitive pricing is obtained.

COVID-19 opportunity analysis

Opportunity	Opportunity level	Opportunity optimization measures
New business opportunities created in response to COVID-19 related restrictions and measures	High	Response to COVID-19 restrictions, such as remote working arrangements and no-contact business modalities will require solutions that can be turned into new business models. These opportunities will be analyzed at the national level and shared with the GCIP Viet Nam entrepreneurs. Examples of former GCIP alumni responding to new business opportunities by providing innovative solutions during the pandemic are summarized here: https://www.unido.org/stories/cleantech-innovators-take-covid-19 .
New business opportunities to build back better for business continuity and economic recovery post-COVID-19	High	By design, the GCIP Viet Nam engages private sector to promote and scale up cleantech products and services, and business models with resilience to climate change (e.g. circular business models). Information on relevant new business opportunities as well as policy/regulations will be added to the GCIP Viet Nam curriculum so that the entrepreneurs are fully informed of the market and policy trends

[1] https://unfccc.int/sites/default/files/resource/Viet%20Nam%20-%20NC3%20resubmission%2020%2004%202019_0.pdf

[2] <https://onlinelibrary.wiley.com/doi/full/10.1111/jfr3.12689>

[3] <https://onlinelibrary.wiley.com/doi/full/10.1111/jfr3.12689>

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

Institutional setup

-

192. Implementation will be done by UNIDO and involves project identification, preparation of project concept, preparation of detailed project document, project approval and start-up, project implementation and supervision, M&E and project completion and evaluation. Execution will be done by a national counterpart and include the management and administration of the day-to-day activities.

193. Execution of the project on the ground will be the responsibility of Project Executing Entity (PEE). Although the PEE will be identified during the PPG, it is expected that Ministry of Natural Resources and Environment (MONRE) will play a pivotal role in the execution of the project. Depending on the necessity as per the PEE(s) identified, the Harmonized Approach to Cash Transfer (HACT) assessment will be conducted during the PPG.

194. PEE will designate internally, or recruit directly, project management personnel to form the Project Management Unit (PMU) to execute the activities of the national project. As a minimum, the PMU will consist of the National Project Coordinator (NPC) and a Project Assistant (PA). The PMU will be responsible for the day-to-day management of the project execution, monitoring and evaluation of project activities as in the agreed project work plan. The PMU will coordinate all project activities being carried out by project national experts and partners. Through the procurement processes in the execution entity, the project will sub-contract qualified service providers for the execution of certain activities as they are needed.

195. In addition, a Project Steering Committee (PSC) will be established under the Chairmanship of, for example, MONRE. Representatives from relevant government ministries and other relevant critical stakeholders related with the different project components will be members of the PSC. The PMU will act as the Secretariat of the PSC and the PSC will provide strategic guidance according to national imperatives and market needs.

196. A schematic representation of the project implementation arrangement is shown in Figure 6 below.

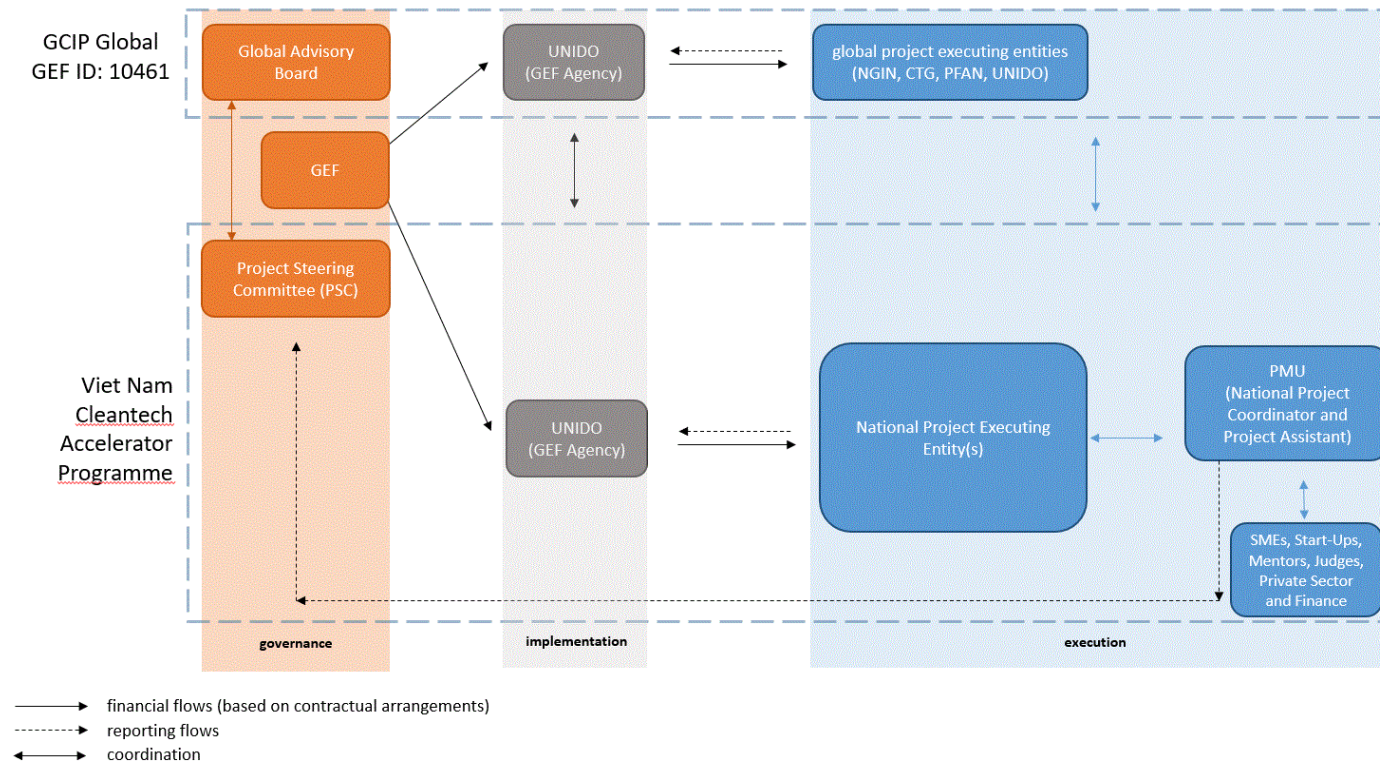


Figure 6: The project implementation arrangement

Coordination with other relevant GEF-financed projects and other initiatives

197. The project is in line with, UNDAF, SDGs and One UN Framework in Viet Nam. Regarding the latter, the project actively contributes to the objectives of the One-UN Programme within the thematic areas of environmental sustainability and poverty reduction through productive uses.

198. UNIDO has already a concluding GEF 4 project entitled ?Introduction of BAT and BEP methodology to demonstrate reduction or elimination of unintentionally produced POPs releases from the industry in Vietnam? and implementing GEF 5 project entitled ?Implementation of Eco-industrial

Park Initiative for Sustainable Industrial Zones in Vietnam? and ?Minamata Convention Initial Assessment in Vietnam?.

199. The national project will benefit from the globally developed methodologies under the Global Framework 10408, decision support tools, training systems, learnings and access to investors. Engagement with the global framework is integrated into all components of the project and will include all stakeholders. It includes the following main activities:

200. Methodologies, guidelines, tools for acceleration, and training systems: These will be developed and harmonized at the global level and the national project will focus on adapting these to the national circumstances. Experiences in applying the tools and systems across other national projects will be used to improve the tools. The global accelerators and global forums under the global framework, will help national enterprises to bring their innovations to the global stage and link with entrepreneurs and accelerators from other countries to explore opportunities for joint co-innovation, joint ventures and mobilizing investments.

a) Enterprise?s growth support, investment facilitation and cross border growth support: Through global project, national cleantech SMEs will be supported to expand their businesses to other countries. In addition, the global framework will provide investment facilitation services to national enterprises so that they can be linked to investors (impact, venture, angels, and commercial) in EU and global levels. Furthermore, the global framework will provide support to the national project in establishing market enabling frameworks to promote investments in cleantech.

b) Targeted training, innovation policy support, knowledge management, and peer-to-peer networking and learning: The global framework will provide methodologies for training national institutions, development of policies on cleantech innovation and entrepreneurship, and document best-practices. By linking policy makers, institutions, financiers and entrepreneurs across countries, the global framework will facilitate knowledge exchange and documentation of best-practices and peer-to-peer networking and learning.

c) Program standards, communication and advocacy, and monitoring and evaluation: to promote coherence and coordination across all GCIP countries, the global framework will develop program guidelines that will be applied by the countries. Through the global web platform that will be developed by the global framework, communications and advocacy will be promoted across countries. In addition, the global framework will develop methodologies for impact tracking and monitoring and evaluation that will then be applied across countries.

201. The national project will engage with the global framework to ensure synergies, knowledge sharing, learning, consistence and efficiency as well as additional support to enable national SMEs to scale globally. The outputs and outcomes from the national project will contribute to the overall programme impact through the number of cleantech innovations, entrepreneurs and SMEs supported, finance mobilized and the resulting green growth, jobs created and GHG emission reductions.

202. The project will also seek to collaborate with the UNFCCC Climate Technology Centres Network (CTCN) and the Private Financing and Advisory Network (PFAN), which are UNIDO hosted initiatives with expertise in supporting the technology innovation value chain. PFAN will play integral role to bridges the gap faced by entrepreneurs and investors by helping entrepreneurs build their businesses and present them in a language which investors will understand and be interested in. It will also help investors find and recognize the potential of these businesses. By sharing the common vision of accelerating clean technology dissemination and effort for tackling climate change, the GCIP project will seek for cooperation with PFAN e.g. offering workshops, introducing PFAN and its systematic interventions at the series of events held under the project, exchange of advisors and experts in order to facilitate cross-fertilization between GCIP and PFAN. Since PFAN will collaborate with GCIP also under the GCIP Global framework this will help increase conformity among the GCIP projects and create synergies among them.

Legal Context

203. The Government of the Socialist Republic of Vietnam agrees to apply to the present project, mutatis mutandis, the provisions of the UNDP Standard Basic Assistance Agreement signed and put into effect on 21 March 1978.

Transfer of assets

204. Full or partial title and ownership of equipment purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the UNIDO Project Manager in consultation with project stakeholders.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions?

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

205. The low carbon and circular economy as well as acceleration of SMEs is aligned with national priorities stipulated in the major national strategies and development plans and others. Viet Nam submitted updated Nationally Determined Contribution (NDC) in 2020 which pledges that the country will reduce its total GHG emissions by about 9% compared to the BAU scenario by 2030 which is equivalent to 83.9 million tons of CO₂eq. The target can be increased to 27% by 2030 which is equivalent to 250.8 million tons of CO₂eq with international supports received through bilateral, multilateral cooperation as well as through the implementation of market and non-market mechanisms under Article 6 of the Paris Agreement, and in line with the socio-economic conditions and international conventions to which Viet Nam is signatory. In 2016, by Decision No. 2053/QĐ-TTg, Viet Nam adopted the Action Plan for Implementation of the Paris Agreement on climate change for the period of 2016-2020 which aims to: 1) review existing regulations and develop a Decree on the roadmap and modality for GHG emission mitigation; (2) develop a carbon market within the country; piloting the system, policies and market tools for mitigation of GHG emissions in potential sectors; and (3) develop and implement GHG mitigation and green growth proposals in accordance with national conditions for implementation of NDC. The law on Environmental Protection, No.72/2020/QH14, adopted by the National Assembly in 2020 supports environmental protection including climate change actions and the provisions also include submission of the updated NDC. In addition, according to the Law on Environmental Protection, MoNRE is working on building regulations, roadmaps and mechanisms to encourage the pathway towards low carbon circular economy.

206. Viet Nam submitted its Third Biennial Updated Report (BUR3) in 2021. In addition, the country's Third National Communication (NC3) was submitted to UNFCCC in 2019. Considering population growth and urbanization together with the economic growth, the GHG emissions from waste sector is estimated to be increased towards the future and thus BUR3 and NC3 regard appropriate and controlled waste management as one of the key development agenda of the country towards future.

207. Viet Nam adopted National Climate Change Strategy (NCCS) as in Decision 2139/QĐ-TTg in 2011[1] setting a comprehensive target to harmonize its economic growth decoupled with GHG increased emissions while ensuring people's prosperity. The country also adopted National Green Growth Strategy (NGGS) as in Decision No. 1393/QĐ-TTg in 2012. With a vision towards 2050, NGGS sets a Viet Nam's strategic objective to achieve a low carbon economy, reduction in emissions and increase in the possibility to absorb GHG by setting mandatory and important targets in socioeconomic development. The concept of green growth is envisaged to ensure fast, efficient and sustainable growth while making a significant contribution to the implementation of the national climate change strategy. It sets out the targets of reducing carbon intensity in energy sector, promote GDP growth by promoting share of green production as well as greening lifestyles including through sustainable production and consumption, and waste management. Accordingly, Viet Nam aims to

promote development and utilization of science and modern technologies which are suitable to Viet Nam's circumstances.

208. The concept of green growth and low carbon economy is also shared among other development strategies such as Sustainable Development Strategy for 2011-2020 as in Decision No. 432/QD-TTg in 2021[2] and Industrial Development Strategy through 2025, vision toward 2035 as in Decision No. 879/QD-TTg in 2014. This is also reflected in the country's 5 year socio-economic development plans. Accordingly, relevant ministries are taking actions including promotion of innovations. For example, MOST identified measures to increase the innovation policy and deployment throughout the country by enhancing competitiveness at the company and products level, narrowing of space to support business entities in Viet Nam as well as to advance internalization of international rules and practice related to innovation management and promotion. SME Law established in 2018 was to support and integrate domestic SMEs into global value chains as well as to make use of the increasing FDI into the country where SMEs play a major role in country but still not efficiently played in the country's industrialization due to multiple constraints.

[1]

<http://www.chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10051283>

[2]

<http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10050825>

8. Knowledge Management

Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

209. A knowledge base will be developed in terms of information management, sharing best practices and lessons learned, as well as engagement in effective information exchange among GCIP countries. The proposed project will share the results and knowledge, to be disseminated through participation in regional meetings, conferences and Cleantech platform. As the project progresses and implementation results become tangible and demonstrable, the knowledge management system will be used to develop benchmarks for clean tech innovations in Viet Nam and to develop case-studies for promotional activities. Therefore, the knowledge management postulates main framework of this programme and facilitates to capture findings, institutionalizing learning and knowledge sharing across participant countries by making the structure of the programme accessible and replicable, as well as bringing selected finalists from around the world to showcase their innovations at the Global Cleantech

Forum. This facilitates the transfer, innovation and dissemination of low carbon technologies, a key challenge under the Framework Convention on Climate Change.

210. A key aspect in knowledge management will be the creation of a national pool of mentors and judges, by the 'training the mentors' approach, to enhance the sharing of best practices and business skills among participants and stakeholders in a structured manner. The national pool of mentors/judges will be created and trained to provide entrepreneurs required skills to enable their participation in this programme, and ultimately to bring their innovations to be commercialized at the market. Mentors and judges will broaden the impact of the programme by providing one-on-one training for entrepreneurs and alumni of the programme. The PMU will be established and be responsible for including various stakeholders to ensure that the selection process for entrepreneurs is inclusive and impactful in identifying the right candidates for the programme.

211. GCIP Viet Nam will further build upon the experiences and lessons learned at the global level. This will contribute to creating a vibrant platform and network members. It can represent a key partner for the implementation and delivery of this programme and also facilitates the transfer, innovation and dissemination of green technologies, a key challenge under the Framework Convention on Climate Change. The new trends in innovation cleantech areas and integration of lessons learned, based on completed and ongoing GCIP projects, will be incorporated. Through organization of trainings, workshops, roundtable, expert group meetings, and printing materials as well as through the Cleantech platform, the knowledge sharing will be strengthened as the programme expands into new countries and cleantech areas. These combined set of outreach activities will ensure recognition of and support for the programme beyond the competition cycle. In order to ensure sustainability of this project beyond project duration and to attract more interest, the national coordinators will be tasked to ensure the visibility of the programme and accessibility of key findings through the Cleantech Platform. This will provide the opportunity to reach out to future entrepreneurs and investors, while raising public awareness on clean energy technologies and ultimately contribute to the climate change mitigation. A number of regional and international events to bring project teams and semi-finalists together will be organized, as stated in the outputs. The project will strive to create a vibrant and sustainable Cleantech ecosystem through partnerships with various stakeholders, holding expert meetings with partners and SME associations to review successes in the various competition cycles and establish commitments to moving forward.

212. For its sustainability and fostering further innovation in the region, the inclusive and sustainable methods will be also discussed, in order to identify and apply tangible solutions to existing challenges in the country. These results will be made accessible to the public through the Cleantech platform and accelerator programme.

213. All project reports will be shared with the relevant counterparts and disseminated through their institutional websites and UNIDO's open data platform. All knowledge management material will be gender mainstreamed. For instance, gender responsive training and advocacy material will not perpetuate gender stereotypes through presenting women only in their traditional roles.

214. A knowledge management, communication, and advocacy strategy framework will be developed by UNIDO with a particular focus on a) Promoting visibility of GCIP and communicating its impacts achieved at national and global levels; b) Increasing awareness of the catalytic role of cleantech in addressing climate change and environmental issues; c) Showcasing cleantech innovations from the GCIP alumni and enhancing their visibility and credibility.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

215. A preliminary environmental and social risk screening was conducted according to the UNIDO Environmental and Social Safeguards Policies and Procedures (AI/2017/04). The screening categorized the project as 'B'. Category B projects are likely to have less adverse impacts on human populations or environmentally important areas than those of Category A projects. An Environmental and Social Management Plan (ESMP) will be developed during the PPG phase.

216. In addition, as mentioned in the risk analysis section above, the project observe middle level of climate change risks especially associated with likelihood of extreme weather events including floods in conjunction with sea level rise. During the PPF phase, the climate related risks and mitigation measures will further be elaborated.

Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
ES screening_GCIP Viet Nam	

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): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Mr. Thuan Duc Nguyen	Director	Viet Nam Environment Protection Fund, Ministry of Natural Resources and Environment of Viet Nam	6/30/2021

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

While the project is targeted at beneficiaries (entrepreneurs and all relevant CIEE stakeholders, such as universities, policy makers, financiers, and R&D institutions) from all over the country, the main project events will be conducted in the capital city of Hanoi, as well as some outreaching and capacity building events in Da Nang and Ho Chi Minh cities in Viet Nam. This is due to the benefits resulting from a relatively dense concentration of relevant stakeholders there, and well developed infrastructure. The project boundary will not overlap any other country's territory. The geo-coordinates and location for these cities are as following:

- 1) Hanoi: 21.02722° S, 105.83508° E
- 2) Da Nang: 16.05492° S, 108.20293° E
- 3) Ho Chi Minh: 10.82095° S, 106.62851° E

