

Country	Vietnam
Request ID#	
Title	Feasibility study of ‘Waste to Energy (Livestock Manure to Biogas and Organic Fertilizer)’ for rural communities in Vietnam, using anaerobic digestion technology
NDE	<p>Name: Chu Thi Thanh Huong Position: Deputy Head, Division of GHG emission reduction and ozone layer protection Organization: Department of Climate Change (DCC), Ministry of Natural Resources and Environment (MONRE) Phone: +84-946543030 Email: chuthanhhuong@gmail.com Address: 10 Ton That Thuyet, Hanoi, Vietnam</p>
Proponent	<p>Name: Duong Tat Thang Position: General Director Organization: Department of Livestock Production, Ministry of Agriculture and Rural Development (MARD) Phone: +84903466100 Email: thangdt.cn@mard.gov.vn / duongtatthang@gmail.com Address: No16 Thuy Khue, Hanoi, Vietnam</p>

Summary of the CTCN technical assistance

The summary should provide a brief description of the problem (barrier to climate technology deployment) and how the technical assistance will address it (brief summary of outputs and activities). Please also briefly indicate national actors involved and the anticipated timeline. Please note this summary will be used for public communication purposes so it is important that it is well written. (maximum 1250 characters including spaces)

Expansion of the livestock industry in Viet Nam led to the increase of waste generated, and it has been causing environmental issues, managing livestock manure has been a rising issue in Vietnam. As of 2021, the total solid waste generated from livestock industry is estimated to 61.2 million tons and the total liquid waste about 63 million m3. Also, it has been identified that 28% of the household raising livestock do not take any treatment measure before discharging the livestock manure(1) . As improperly treated/discharged waste leads to contamination of soil and water, this is an obvious threat to residents’ public health and hygiene. Also, as a result of the recent ASF epidemic in Vietnam, demand for safer and cleaner livestock products are on a rise(2), which adds on to the pressing needs and urgency of the strengthened livestock manure management practice put in place.

On mitigation aspect, improperly managed livestock manure generates fair amount of short-lived climate pollutants (SLCPs), mainly in the forms of CH4 and N2O. As it negatively affects National GHG Inventory, Vietnamese government has been taking actions to collect and treat millions tonnes of organic waste in livestock production to make organic fertilisers(3). However, there are still difficulties and challenges left in applying relevant technologies. To face the challenge, Vietnamese government has once again prioritized (i) applying management and technology solutions in husbandry, and (ii) applying technology to treat and reuse by-products and waste in livestock production in the National Determined Contribution (2020), as did before in National Technology Needs Assessment (2012 and 2020), asking for international support in its implementation.

To address the two issues stated above, the request aims to develop a Biogas pilot facility that feeds on livestock manure and other agricultural wastes to generate heat energy, electricity, and also organic fertilizer as its by-product. The plant is expected to generate the following benefits:

- Reduction in CH₄, N₂O emissions by strengthened management of livestock manure;
- Prevention in soil, water contamination and improvement in settlement environment for residents by strengthened management of livestock manure;
- New stream of income for local government, who will be the owner and operator of the facility, with the sales of heat, electricity and organic fertilizer;

Circular use of resource (waste to energy) achieved and productivity in local agriculture improved with the use of organic fertilizer.

To tackle the livestock manure management issue, the Animal Husbandry Law (2018) and the Environmental Protection Law(2014) have imposed the following requirements to the concentrated livestock areas: (i) Ensure environmental hygiene for residential areas; (ii) Collection and treatment of liquid and solid waste and compliance with waste management regulations; (iii) Animals' barns must be cleaned periodically; ensuring disease prevention and control; (iv) Dead animals caused by epidemics must be managed in accordance to the regulations on hazardous waste management and disease prevention. Similarly, the following regulations have assigned responsibilities to relevant actors.

- Vietnam National Technical Regulation No. 62 - MT:2016/BTNMT on livestock wastewater standard is enacted with Circular No. 04/2016/TT-BTNMT (QCVN: 62). The content of this regulation stipulates the maximum allowable value of wastewater pollution parameters in animal husbandry when discharging into wastewater receiving sources; responsibilities of state management agencies on environment in guiding, inspecting and supervising the implementation of this regulation.

In addition to the legal mandates mentioned above, efforts to diffuse and distribute adequate technology has also been put in place. Anaerobic treatment using biogas plant system was identified as priority technology in Vietnams Technology Needs Assessment (2012-2020) and also in research to develop/finalize Animal Husbandry Law (2018) . According to the research, applied rate of biogas facility using pig manure as its feed (Household level) is about 12.7% as of 2021, and applied rate of biogas facility using each pig and cow manure (Farm level) are individually about 53% and 19.89% as of 2021. The goal was set to increase its applied rate by 20%, by 2030. To secure financial support to act towards its goal, MARD has been actively communicating with IFC/WB to secure funding on Biogas program for livestock industry .

As described above, national government of Vietnam has been taking legal/institutional actions to resolve soil/water resource contamination issue while contributing to national mitigation goal, but as stated in its NDC(2020), there are still difficulties and challenges left in applying relevant technologies. Some of the specific barriers to the selected technology identified by the requesting party are as below:

- 1) Most of husbandry in Vietnam are small and not concentrated, which make the collecting process challenging .
- 2) No incentive mechanism put in place to encourage the management and recycling of livestock manure.
- 3) Lack of experts, know-how to operate the facility and lack of equipment to develop the facility.
- 4) Limited awareness on the community level regarding the benefits of livestock manure management and use of organic fertilizers in the context of agricultural production, living

improvement, environmental protection, and climate change adaptation and mitigation.

As such, guidance, and assistance from CTCN will guide MARD and its affiliated entities on how to better strengthen institutional mechanism on livestock waste management and how to better enhance awareness of the public on the benefits of livestock manure management and Waste-to-Energy (WtE) technology.

Agreement:

(If possible, please use electronic signatures in Microsoft Word file format)

**National Designated Entity to the UNFCCC
Technology Mechanism**

Name: Chu Thi Thanh Huong

Title: Deputy Head, Division of GHG emission reduction and ozone layer protection, Department of Climate Change (DCC), Ministry of Natural Resources and Environment (MONRE)

Proponent (signature of the Proponent is optional)

Name: Duong Tat Thang

Title: General Director, Department of Livestock Production, Ministry of Agriculture and Rural Development (MARD)

Date:

Signature:



Date:

Signature:



UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rajiv Garg

Title: CTCN Director (a.i.)

Date:

Signature:



10 July 2023

1. Background and context

Please provide a brief description of the background and context for the CTCN Response Plan. Please include national and sectoral information using recognized and publicly available sources. (maximum 2500 characters including spaces).

With the livestock industry growing, managing livestock manure has been a rising issue in Vietnam. For the period from 2016 to 2020, the average amount of livestock solid waste increased by about 3.0% per year and by the end of 2021, the solid waste generated from livestock accounts to 90 million tons/year. Also, it has been identified that 47% of the household raising livestock do not take any treatment measure before discharging the livestock manure¹. As improperly treated/discharged waste leads to contamination of soil and water, this is an obvious threat to residents' public health and hygiene. On a commercial level, the environmental pollution issue deepens. Nghe An, Viet Nam's typical livestock-oriented province, showed 5-5.5%/year growth of livestock heads in recent years and have been facing environmental pollution issues. For instance, industrial-scale pig farm waste caused severe water quality degradation of the Trang Den Lake in Nam Dan district linked to the Dai Thanh Loc Limited Company (Dac, 2020). Lake water turned black, alongside reports of strong odours from the pollution of pig slurry. On mitigation aspect, improperly managed livestock manure generates fair amount of short-lived climate pollutants (SLCPs), mainly in the forms of CH₄ and N₂O, which negatively affects National GHG Inventor.

With this background situation, Viet Nam is interested in the Waste-to-Energy (WtE) technology with livestock manure digestion (biogas generation) process, which would achieve more managed waste disposal, decrease volume of waste, expanded adoption of renewable energy and waste recycling. Biogas technology has been high on priority as stressed in Viet Nam's Technology Needs Assessment (2012), and as stated in Viet Nam's updated NDC (2020), 'collecting and treating millions tonnes of organic waste in livestock production to make organic fertilisers', 'developing biogas to replace coal for cooking in rural areas' have been put in practice for both mitigation and adaptation purposes.

To strengthen livestock waste management and to facilitate deployment of biogas generation technology, both legislative and practical measures have been put in place. In particular, the Law on Environmental Protection in 2020 (effective from January 1, 2022), specifically stipulates the handling of livestock waste, while the Law assigns the Ministry of Agriculture and Rural Development guide the collection and treatment of livestock waste and agricultural by-products for reuse for other purposes. In addition, the Government's Decree No. 13/2020/ND-CP detailing the Law on Livestock (Chapter VI stipulates the treatment of livestock waste including articles 30, 31, 32); Decree No. 08/2022/ND-CP of the Government detailing a number of articles of the Law on Environmental Protection (Article 51: Using livestock waste as organic fertilizer, irrigation water for crops or other purposes); Circular No. 12/2022/TT-BNNPTNT dated 26/20/2021 guiding the collection and treatment of livestock waste and agricultural by-products for other purposes (Article 4 - Collection of livestock waste; Article 5 - Treatment of livestock waste).

Also, several projects promoting the use of biogas digester have been implemented. For the period of 2013 to 2019, \$ 84 million was funded from Asian Development Bank to support low carbon agriculture. As of December 2017, the LCASP project has supported the construction of more than 50,000 small-scale biogas projects, 19 medium and 2 large scale projects. Earlier than that, The Vietnam Biogas Program was founded in 2003 with the funding from Netherlands Ministry of

¹ MARD(2019), Support for Ministry of Agriculture and Rural Development (MARD) of Vietnam to finalize the Animal Husbandry Law

Foreign Affairs. The program facilitated the construction of 158,500 domestic biogas digesters, from its inception until March 2017.

2. Problem statement

Founded on the national and sectoral context as detailed in the section above, please include a brief problem statement clarifying the main problems and barriers for climate change mitigation and/or adaptation in terms of climate technologies that the CTCN Response Plan will address and overcome. (maximum 1250 characters including spaces).

Over the past time, the system of legal documents and policies on environmental protection for livestock waste management has improved. However, according to the assessment of localities, the synchronous implementation from central to local levels is still limited in livestock waste management. In addition, the guiding documents on livestock solid waste management are not specific and detailed, leading to difficulties for livestock owners, farm owners and livestock establishments to apply. Also, awareness of environmental protection, roles and responsibilities in livestock solid waste management of farm owners, livestock establishments and individual breeding households is not sufficient; Many livestock households and livestock establishments have not taken the initiative to pay attention and attach importance to understanding, applying and implementing activities of collecting, treating and reusing livestock solid waste in accordance with the law.

On technical level, most of husbandry in Vietnam are small and not concentrated, which make the collecting process challenging. Also, lack of experts and lack of know-how on how to operate the facility, lack of equipment to develop the facility are also the issues.

To address the above stated barriers, the assistance to be provided to central government (Department of Livestock Production, Ministry of Agriculture and Rural Development (MARD)), and local municipalities of candidate sites. This Technical Assistance will focus on developing an improvement proposal for governmental support schemes and relevant regulations, and implementing capacity building programs for local stakeholders, both for policy making/implementing entities and local residents. Capacity building program for local residents/farmers will mainly focus on raising awareness on the importance and benefits of livestock manure management and use of organic fertilizers in the context of agricultural production, living improvement, environmental protection, and climate change adaptation and mitigation.

Anaerobic Digestion, one of the Waste-to-Energy (WtE) technology options for agriculture/livestock sector, can not only contribute to reduction, proper management of organic waste, but to mitigate GHG emission by avoidance of methane release into the atmosphere. In addition, heat, electricity and organic fertilizer produced from the biogas plant contributes to universal access to energy as well as to the achievement of circular use of resources.

To ensure technical, logistical efficiency and effectiveness, the technical assistance set series of activities such as: developing criteria to select the most practical site, conducting field research/investigation to assess the candidate sites against the criteria, conduct pre-feasibility study to analyze technical effectiveness and economic feasibility, develop and implement capacity building program for O&M workers for the pilot complex.

<ul style="list-style-type: none"> ii) Monitoring and evaluation plan iii) CTCN Impact Description iv) Closure and Data Collection report 										
<p>Output 2: Site Selection for the Establishment of a Biogas Generation Pilot Complex (Guidance: <i>Outputs are new products and/or services that are produced by the implementers of the technical assistance, through completion of activities, and within the control of the CTCN technical assistance.</i>) To select the most feasible site, (i) Development of criteria for site selection, (ii) Field research/investigation of the target sites against the criteria developed (iii) Selection of final two target site based on the results of the field research will be done</p>										
<p>Activity 2.1: Development of criteria for Site Selection Criteria will be developed considering technical suitability, access to input materials(manures), securing demand and sales potential for outputs (electricity, heat, fertilizers).</p>										
<p>Activity 2.2: Selection of the two final target sites based on field research/investigation Two final candidate sites were selected and Site investigation is conducted for each target sites in order to identify the optimal candidate sites, considering the number of livestock farms, the number of livestock heads per farm, the amount of manure, etc.</p>										
<p>Deliverable 2: i) Site Selection Criteria for Establishment of a Pilot Complex ii) Field Research/Investigation Report iii) Final two target site</p>										
<p>Output 3: Central, Local Government and affiliated Institutions Analysis and Network Building for Establishment of a Pilot Complex To develop corporation basis for pilot complex establishment, (i) identification of central, local governments and affiliated institutions and (ii) building network will be done. Based on tie identified and built network, (iii) review of currently on-going governmental support programs and (iv) development of an improvement proposal will be done.</p>										
<p>Activity 3.1: Governmental Stakeholder Analysis and Network Building With support from local consultant and local engineering company, local stakeholder identification, analysis and network building will be done.</p>										
<p>Activity 3.2: Review of governmental support programs and Development of an Improvement Proposal Review relevant governmental support programs, legislations and roadmap will be done and a detailed</p>										

<p>implementation strategy as a part of the improvement proposal will be developed. The improvement proposal will be reflected to the draft plan of the pilot complex. Also, Letter of Interest for the follow-up project will be secured.</p>						
<p>Activity 3.3: Communicate the proposal with the relevant stakeholders The Improvement Proposal will be communicated with relevant stakeholders through capacity building events or their communication channels/events.</p>						
<p>Deliverables 3: i) Governmental Stakeholder Analysis and Networking Result ii) Governmental Support Program Review Result and Improvement Proposal iii) Letter for Interest (LoI) for the project from central and local government</p>						
<p>Output 4: Pre-Feasibility Study (Economic Feasibility, Environmental Impact Analysis, Risk Analysis) on the Biogas Generation Plant To establish biogas generation plant pilot complex that is suitable for the target site's condition of location and environment, technical/economic feasibility, environmental impact and risks will be analyzed through pre-feasibility study.</p>						
<p>Activity 4.1: Technical-Economic Feasibility Study To analyze the technical feasibility, physical and chemical composition of the manure, capacity of the pilot complex, return on input rate, transmission capacity, need for measuring meters, and other technical factors will be reviewed with the support from local engineering company. To analyze the economic feasibility of the pilot complex, expected expenses (e.g., construction and operation expenses, financial cost, manure collecting fee, etc.) and revenue streams (e.g., livestock waste treatment fee, biogas generated, by-product (fertilizer) produced, possibility of Carbon Credit issuance, etc.) will be reviewed.</p>						
<p>Activity 4.2: Develop a Draft Plan to Establish a Pilot Complex & Conduct Environmental Impact Analysis Based on the feasibility study conducted, draft plan to establish a pilot complex will be developed. To analyze environmental impact, local regulations and laws relevant to collection and use of manure, solid fuel's content of water, possibility of air pollutant generation, environmental benefits of the technical assistance, and other environmental impact factors will be analyzed with the support from local engineering company.</p>						
<p>Deliverables 4: Result of the Feasibility Study i) Pre-Feasibility Study Report (Technical, Economic) ii) Draft Plan to Establish a Pilot Complex iii) Result of Environmental Impact Analysis</p>						

<p>Output 5: Local Community Stakeholder Analysis & Network Building Operate capacity building program to facilitate participation, and improve awareness, of the local residents</p>								
<p>Activity 5.1: Local Community Stakeholder Analysis & Network Building Based on local government's interest and target sites, stakeholder analysis targeting local residents and livestock farms will be conducted and network building activities will be done. With the support from local consultant and local engineering company, (i) technical, environmental issues of the target site will be identified, and (ii) enabling framework to resolve the issue and relevant technical demand will be identified.</p>								
<p>Activity 5.2: Development of Capacity Building Program to Improve Awareness Capacity building programs will be developed (i) to improve awareness and understanding of the technology, (ii) to communicate the importance, its role and composition of the Project Steering Committee. Based on the draft plan for the pilot complex, LOI for the follow-up project will be secured project demands, related to demonstration and follow-up funding, will be identified</p>								
<p>Deliverables 5: i) Result of Local Community Stakeholder Analysis and Network Building ii) Capacity Building Program (Program and Implementation of the Program) iii) Communication/Knowledge Products for the Capacity Building</p>								

4. Resources required and itemized budget:

Please provide an indicative overview of the resources required and itemized budget required to implement the CTCN technical assistance, including for M&E-related activities, using the table below. Important to note that minimum 1% of the budget should explicitly target gender specific activities related to the technical assistance (please see section 10 for further information on gender). Once the Response Plan is completed, a Response Implementation partner(s) will be selected by the Climate Technology Centre (CTC). A detailed activity-based budget for the CTCN assistance will be finalized by the CTCN and selected Implementer.

Activities and Outputs	Input: Human Resources (Title, role, estimated number of days)	Input: Travel (Purpose, national vs. international, number of days)	Inputs: Meetings/events (Meeting title, number of participants, number of days)	Input: Equipment/Material (Item, purpose, buy/rent, quantity)	Estimated cost	
					Minimum	Maximum
Output 1: Development of implementation planning	2 Senior consultant Sector: Energy / Agriculture / ODA Role: Document development Input days: 10 days		Inception workshop: Online or in-person meetings and expert interviews Purpose: information gathering for drafting work plan Participants: Stakeholders, experts # of Participants: 15 ppl Closure workshop: Online or in-person meetings and expert interviews Purpose: Share the		Please accumulate the costing at Activity and Output level and provide an estimated costing range for each activity and the total Response Plan	17,000 USD 19,000 USD

					result of TA project and provide capacity building Participants: Stakeholders, experts # of Participants: 15 ppl				
Activity 1.1: Formulation of i) Detailed work plan.	2 Senior consultants Sector: Energy / Agriculture / ODA Role: Document development Input days: 3 days				Inception workshop: Online or in-person meetings and expert interviews Purpose: information gathering for drafting work plan Participants: Stakeholders, experts # of Participants: 15 ppl	6,500 USD	7,100 USD		
ii) Monitoring and evaluation plan,	2 Senior consultant Sector: Energy / Agriculture / ODA Role: Document development Input days: 3 days					3,000 USD	3,600 USD		
iii) CTCN Impact Description	2 Senior consultant Sector: Energy / Agriculture / ODA Role: Document development Input days: 2 days					2,000 USD	2,400 USD		

<p>iv) Closure and Data Collection report</p>	<p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Document development Input days: 2 days</p>		<p>Closure workshop: Online or in-person meetings and expert interviews Purpose: Share the result of TA project and provide capacity building Participants: Stakeholders, experts # of Participants: 15 ppl</p>		<p>5,500 USD</p>	<p>5,900 USD</p>
<p>Output 2: Site Selection for the Establishment of a Biogas Generation Pilot Complex</p>	<p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Criteria development and site selection Input days: 8 days 2 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Criteria development, site investigation and site selection Input days: 8 days</p>	<p>Local travel / Site visit (Senior Engineer) Purpose: site investigation Destination: candidate sites # of days: 3 days per site (candidate site) * 2 sites</p>	<p>Online or in-person meetings and expert interviews Purpose: information gathering for criteria development; information gathering for site evaluation Participants: Stakeholders, experts # of Participants: 30 ppl in total</p>		<p>25,400 USD</p>	<p>28,600 USD</p>

<p>Activity 2.1: Development of criteria for Site Selection</p>	<p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Drafting criteria Input days: 2 days</p> <p>2 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Review of criteria Input days: 2 days</p>		<p>Online or in-person meetings and expert interviews Purpose: information gathering for criteria development Participants: Stakeholders, experts # of Participants: 15 ppl</p>		7,500 USD	8,300 USD
<p>Activity 2.2: Selection of the two final target sites based on field research/investigation</p>	<p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Site selection Input days: 6 days</p> <p>2 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Site investigation, site selection Input days: 6 days</p> <p>4 Senior consultant</p>	<p>Local travel / Site visit (Senior Engineer) Purpose: site investigation Destination: candidate sites # of days: 3 days per site (candidate site) * 2 sites</p>	<p>Online or in-person meetings and expert interviews Purpose: information gathering for site evaluation Participants: Stakeholders, experts # of Participants: 15 ppl</p>		17,900 USD	20,300 USD
<p>Output 3: Central, Local Government</p>		<p>Local (Governmental)</p>	<p>In-person meetings and</p>		46,200	52,100

and affiliated Institutions Analysis and Network Building for Establishment of a Pilot Complex	Sector: Energy / Agriculture / ODA Role: Input days: 10 days	Stakeholder Meeting Purpose: Network building, communication and capacity building Destination: stakeholding entities # of days: 6 days	expert interviews Purpose: Network building; information gathering for drafting improvement proposal; Network building, communication and capacity building Participants: Stakeholders, experts # of Participants: 60 ppl in total	USD	USD
Activity 3.1: Governmental Stakeholder Analysis and Network Building	2 Senior consultant Sector: Energy / Agriculture / ODA Role: Stakeholder Analysis and Network building Input days: 10 days		Online kick-off meetings and interviews Purpose: Network building Participants: Stakeholders, experts # of Participants: 15 ppl	13,500	15,500 USD
Activity 3.2: Review of governmental support programs and Development of an Improvement Proposal	3 Senior consultant Sector: Energy / Agriculture / ODA Role: Review of governmental programs and development of improvement proposal Input days: 5 days		Online or in-person meetings and expert interviews Purpose: information gathering for drafting improvement proposal Participants: Stakeholders, experts # of Participants: 15	12,500	14,000 USD

<p>Activity 3.3: Communicate the proposal with the relevant stakeholders (through capacity building event or other communication channels)</p>	<p>4 Senior consultant Sector: Energy / Agriculture / ODA Role: Stakeholder communication Input days: 6 days</p>	<p>Local (Governmental) Stakeholder Meeting Purpose: Network building, communication and capacity building Destination: stakeholding entities # of days: 6 days</p>	<p>ppl Communication / Capacity Building Event Purpose: Network building, communication and capacity building Participants: Stakeholders # of Participants: 30 ppl</p>	<p>20,200 USD</p>	<p>22,600 USD</p>
<p>Output 4: Pre-Feasibility Study (Economic Feasibility, Environmental Impact Analysis, Risk Analysis) on the Biogas Generation Plant</p>	<p>3 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Technical Feasibility Study; Environmental Impact Analysis; Development of Draft Plan to establish Pilot complex Input days: 16 days 1 Senior economist Sector: Feasibility Study / Cost analysis Role: Financial Feasibility Study</p>			<p>38,400 USD</p>	<p>44,800 USD</p>

	<p>Input days: 3 days</p> <p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Development of Draft Plan to establish Pilot complex Input days: 5 days</p>					
<p>Activity 4.1: Technical/Economic Feasibility Study</p>	<p>3 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Technical Feasibility Study Input days: 8 days</p> <p>1 Senior economist Sector: Feasibility Study / Cost analysis Role: Financial Feasibility Study Input days: 8 days</p>	<p>Local travel / Site visit (Senior Engineer) Purpose: Technical Feasibility Analysis Destination: candidate sites # of days: 4 days per site (candidate site) * 2 sites</p>			<p>19,200 USD</p>	<p>22,400 USD</p>
<p>Activity 4.2: Develop a Draft Plan to Establish a Pilot Complex & Conduct Environmental Impact Analysis</p>	<p>2 Senior engineer Sector: Biogas / Energy / Agricultural waste / Environmental Impact Analysis Role: Environmental</p>	<p>Local travel / Site visit (Senior Engineer, Senior consultant/developer) Purpose: Developing draft plan Destination: candidate</p>			<p>19,200 USD</p>	<p>22,400 USD</p>

<p>Impact Analysis; Development of Draft Plan to establish Pilot complex Input days: 8 days</p> <p>2 Senior consultant Sector: Energy / Agriculture / ODA Role: Development of Draft Plan to establish Pilot complex Input days: 8 days</p>	<p>sites # of days: 4 days per site (candidate site) * 2 sites</p>				<p>37,600 USD</p>
<p>Output 5: Local Community Stakeholder Analysis & Network Building</p>	<p>Local (Residents) Stakeholder Meeting Purpose: Network building, communication and capacity building Destination: target site # of days: 10 days</p>	<p>Training workshop : Communication / Capacity Building Event Purpose: Network building, communication and capacity building Participants: Local Residents # of Participants: 70 ppl</p>		<p>33,000 USD</p>	<p>37,600 USD</p>

<p>Activity 5.1: Local Community Stakeholder Analysis & Network Building,</p>	<p>Sector: Biogas / Energy / Agricultural waste Role: Barrier analysis on technology transfer and drafting of enabling framework Input days: 4 days 1 Senior consultant Sector: Energy / Agriculture / ODA Role: Stakeholder(Local residents) Analysis, Network Building Input days: 4 days 1 Local engineer Sector: Biogas / Energy / Agricultural waste Role: Barrier analysis on technology transfer and drafting of enabling framework Input days: 4 days</p>	<p>Local (Residents) Stakeholder Meeting Purpose: Network building, communication and capacity building Destination: target site # of days: 4 days</p>			<p>15,000 USD</p>	<p>17,800 USD</p>
<p>Activity 5.2: Development of Capacity Building Program to Improve Awareness</p>	<p>3 Senior consultant Sector: Energy / Agriculture / ODA Role: Operation of Stakeholder(Local residents) Capacity</p>	<p>Local (Residents) Stakeholder Meeting Purpose: Network building, communication and capacity building Destination: target site</p>	<p>Training workshop : Communication / Capacity Building Event Purpose: Network building,</p>		<p>18,000 USD</p>	<p>19,800 USD</p>

	Building Program; Securing LOI and funding opportunities Input days: 6 days	# of days: 6 days	communication and capacity building Participants: Local Residents # of Participants: 70 ppl		
Estimated range of costing for the entire Response Plan					
				160,000 USD	182,100 USD

5. Profile and experience of experts

Based on the required Human Resources identified in section 4 (Resources required and itemized budget) please provide a description of the required profile of all involved experts for the implementation of the CTCN Response Plan.

Experts required	Brief description of required profile
<p>Please use the same titles for all experts as applied in section 4.</p>	<p>Please provide a short description of expertise and experience needed (education, sectors of expertise, years of experience, country experience, language requirements, etc.).</p>
<p>Senior Engineer (Economist or Commercial Engineer)</p>	<p>Industrial, chemical, environmental or mechanical engineer, M.Sc., with specialisation in the waste sector, knowledge and experience with anaerobic digestion, biogas and waste-to-energy, waste quantification and characterisation, technological innovation, climate change, SDGs and NDC with a minimum of seven years of experience. Fluency in English is required</p>
<p>Local Engineer (Economist or Commercial Engineer)</p>	<p>Industrial, chemical, environmental or mechanical engineer, M.Sc., with specialization in the waste sector, knowledge and experience with anaerobic digestion, biogas and waste-to-energy, waste quantification and characterisation, technological innovation, climate change, SDGs and NDC with a minimum of three years of experience. Fluency in English is required, Based in Vietnam</p>
<p>Senior Consultant (Policy Expert)</p>	<p>Consultant / Policy expert with experience in the evaluation and development of industrial and environmental policies (technological innovation, waste management, climate change, NDCs, public-private-partnerships, etc.), and gender inclusion, with a minimum of seven years of experience. Experience working in Vietnam is highly required. Fluency in English is required.</p>
<p>Economist or Commercial Engineer</p>	<p>Economist or commercial engineer, M.Sc., with experience in the development of economic feasibility studies, knowledge and experience in the waste and energy sector, as well as with project management, technological innovation, climate change, SDGs and NDC with a minimum of seven years of experience. Fluency in English is required.</p>

6. Intended contribution to impact over time

*Please provide a brief description of the intended contribution to **impact** over time of the **outcome and outputs** provided by this technical assistance on resilience to climate change and/or carbon abatement. To the extent possible, please quantify the intended impact contribution, for example by indicated estimated number of people potentially impacted over time, GDP contribution of the focus sector, carbon emissions by the focus sector, etc. This intended contribution to impact is what will happen if the objective (as articulated in section 3) is met. Please ensure relevant complementarity with text in sections 7 to 12. (maximum 1250 characters including spaces)*

Objectives of the TA requested

- Transferring and receiving technology for Organic Fertilizer production by Livestock Waste. Pilot application for farm and household scale in Dak Lak province and Hai Phong city.
- Strengthening the institutional and policy framework to promote the application of transferred technology for Organic Fertilizer production by Livestock Production Waste for farm and household scale in Vietnam.
- Increase stakeholder awareness and capacity on using Organic Fertilizer by Livestock Production Waste for agricultural production, living improvement, environmental protection, and responding to climate change.
- Establish the institutional basis for the technical support of Organic fertilizer and Biofuel technology using livestock waste.
- Improving sustainability through increased productivity and disposal /management of agricultural by-products
- Enhancing the capacity of stakeholders in agriculture sector, improving the awareness to understand the project concept, and expected effect.
- Implement to develop the CTCN TA request and/or Response Plan. After completing CTCN TA, the developed project concept would be possible to apply other Korean ODA fund, Concept note and Preparation Project Preparation Facility (PPF) of Green Climate Fund (GCF) and so on.

7. Relevance to NDCs and other national priorities

Please identify relevance and contribution from the technical assistance to the Nationally Intended Contributions (NDC) and other relevant national prioritized efforts (TNAs, TAPs, NAPs, NAMAs, etc.). (maximum 2500 characters including spaces)

NDC (updated 2020)

https://unfccc.int/sites/default/files/NDC/2022-06/Viet%20Nam_NDC_2020_Eng.pdf

In the INDC of Vietnam sent to UNFCCC prior to the COP 21 in Paris (later called NDC), Vietnam committed that with its domestic resources, by 2030 Viet Nam will reduce GHG emissions by 8% compared to BAU, in which Emission intensity per unit of GDP will be reduced by 20% compared to the 2010 level, The contribution could be increased to 25% if it receives international support through bilateral and multilateral cooperation as well as through the implementation of new mechanisms under the Global Climate Agreement (Sources: INDC of Vietnam submitted to UNFCCC in Sept. 2015).

Technology Needs Assessment (TNA)

‘Anaerobic manure digestion to produce biogas fuels’ TNA Mitigation p.45/169
‘Organic fertilizer from agricultural residues/by-products’ TNA Adaptation p.35/189

National Action Plan (NAP)

On the 28, October 2016, the Prime Minister issued **Decision 2053/2016/QĐ-TTg** on approval of **the Action Plan to implement the Paris Agreement on Climate Change**. The plan contains 68 priority tasks, covering five pillars: mitigation of greenhouse gas emissions (16 tasks); adaptation to climate change (22 tasks); resources preparation (13 tasks); transparency system (MRV system with 11 tasks); and institutional and policy development (6 tasks) being implemented in the period from 2016-2020 and 2021-2030.

8. Linkages to relevant parallel on-going activities:

*Please identify relevant previous and ongoing public and private sector **initiatives, projects or programmes** that the CTCN assistance will specifically build on and contribute to. To the extent possible, please **add practical and operational details** on the linkages between existing activities and the CTCN assistance. (maximum 2500 characters including spaces)*

To tackle the livestock manure management issue, the Environmental Protection Law(2014) has imposed the following requirements to the concentrated livestock areas: (i) Ensure environmental hygiene for residential areas; (ii) Collection and treatment of liquid and solid waste and compliance with waste management regulations; (iii) Animals’ barns must be cleaned periodically; ensuring disease prevention and control; (iv) Dead animals caused by epidemics must be managed in accordance to the regulations on hazardous waste management and disease prevention. Similarly, the following regulations have assigned responsibilities to relevant actors:

- Vietnam National Technical Regulation No. 62 - MT:2016/BTNMT on livestock wastewater standard is enacted with Circular No. 04/2016/TT-BTNMT (QCVN: 62). The content of this regulation stipulates the maximum allowable value of wastewater pollution parameters in animal husbandry when discharging into wastewater receiving sources; responsibilities of state management agencies on environment in guiding, inspecting and supervising the implementation of this regulation.
- Vietnam National Technical Regulation No.08 - MT: 2015/BTNMT on surface water quality enacted with Circular No. 65/2015/TT-BTNMT (QCVN: 08) stipulates the limit value of parameters of surface water quality and responsibilities of state management agencies on environment in guiding, inspecting and supervising the implementation of this regulation.

In addition to the legal mandates mentioned above, efforts to diffuse and distribute adequate technology has also been put in place. Anaerobic treatment using biogas plant system was identified as priority technology in Vietnams Technology Needs Assessment (2012) and also in research to develop/finalize Animal Husbandry Law (2019)². According to the research, applied rate of biogas facility using pig manure as its feed (Household level) is about 10.32% as of 2018, and applied rate of biogas facility using each pig and cow manure (Farm level) are individually about 26.25% and 19.89% as of 2018. The goal was set to increase its applied rate by 20%, by 2030. To secure financial support to act towards its

² MARD(2019), Support for Ministry of Agriculture and Rural Development (MARD) of Vietnam to finalize the Animal Husbandry Law

goal, MARD has been actively communicating with IFC to secure funding on Biogas program for livestock industry³.

9. Anticipated follow up activities after this technical assistance is completed:

Please describe the expected future use of the outputs and deliveries produced by this technical assistance, after the CTCN implementation is completed, towards contributing to the anticipated impacts over time articulated in section 6. For example, what organizations or stakeholders will use the outputs of the technical assistance after it is completed, for what purpose, at what scale and scope the outputs and deliveries will be applied, when and what will be the next steps undertaken, etc. (maximum 2500 characters including spaces)

Capacity Building

- Provide **capacity-building programs** to train the O&M workforce targeting local residents
- Support organizing **Local Community Committee** to communicate capacity-building needs
- Provide **field visit programs** liaising with Korean Waste-to-Energy facilities (Yeongcheon, Asan and Gimhae)

Co RD&D

- With the pilot complex operating and BKT Vietnam supporting the local management and capacity building, a **concrete cooperation basis** for Viet-Kor RD&D will be formed
- With the data accumulating from the pilot complex operation, further **specified needs for RD&D** will be identified.
- Identified RD&D needs will feed into potential follow-up projects

Funding Opportunities

- **Korean ODA Fund**
 - Ministry of Agriculture, Food and Rural Affairs
 - Korea Agriculture Technology Promotion Agency
- **Korean Technical Assistance Fund**
 - Ministry of Science and ICT
 - Korea Environmental Industry & Technology Institute
- **Green Climate Fund**
 - Korea Development Bank’s PPF

* Using the PPF, Viet-KoR Joint Venture can be established to propel RD&D and other necessary localizing activities

10. Gender and co-benefits:

Imbedded in design of the activities:	<i>A gender mainstreaming analysis is mandatory to include for all technical assistances. A gender expert will be assigned to carry out an assessment and evaluation regarding gender mainstreaming during the implementation of the TA.</i>
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³ MARD(2022), ICF commits to support Vietnam in developing green low carbon agriculture

	<p><i>In addition, please describe all support to gender aspects, women’s equality and other co-benefits embedded into the Response Plan (please include a reference to the actual activities and outputs as described in section 3).</i></p> <p>The project aims to include and prioritize female residents' participation in the development and operation of the pilot complex. Along the implementation of the activities under this technical assistance, the role of women and youth within the current organic waste supply chain will be analyzed, integrate gender and youth related factors into the decision making process for the biogas plant that is to be built and identify requirements and opportunities for women and youth that arise with the new biogas plant.</p>
<p>Gender and co-benefits intended as result of the activities:</p>	<p><i>Please describe all gender aspects, women’s equality and other co-benefits expected as a result of the CTCN technical assistance.</i></p> <p>During the implementation of the TA project, female residents' participation in the development and operation of the pilot complex will be prioritized, and it will result in enhancement of gender inclusion of the target site.</p> <p>Besides the expected result of implementation of waste management improved and contribution to Vietnam’s mitigation goal, requested technical assistance, and further deployment of the selected technology will (1) provide new stream of revenue to local governments (from selling heat, electricity and organic fertilizer produced from the plant), (2) Provide clean, locally sourced energy and organic fertilizer to the residents, and (3) Improve settlement environment, hygiene of the community.</p> <p>Also, using the network built through the implementation of the pilot study, follow-up projects to further facilitate the deployment of the suggested technologies can be designed upon the completion of the pilot study. Possible funding sources for the follow-up activities are as follows: Bilateral fund from the TA implementing country, Multilateral fund (e.g., GCF, MDBs), PPF, etc.</p>

11. Main in-country stakeholders in implementation of the technical assistance activities:

Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.

In country stakeholder	Role in implementation of the technical assistance
<p>Ministry of Natural Resources and Environment of Vietnam</p>	<p>NDE</p>
<p>Ministry of Agriculture and Rural Development (MARD), Department of Livestock Production</p>	<p>Provide supports to promote the implementation of the proposed project.</p> <p>Provide supports to connect to relevant ministries and organization for relevant secondary information/data/documents at the national level.</p> <p>Provide focal points from Dak Lak and Hai Phong Department for Agriculture and Rural Developments (DARD)</p> <p>Revise and provide supports to finalize preferential mechanisms, institutional and policy frameworks to</p>

	<p>promote the use of Organic Fertilizer by Livestock Waste for farm and household scale and at different levels in Vietnam.</p> <p>Lead the national workshops and meeting if necessary.</p> <p>Monitor and evaluate the implementation of proposed project.</p>
Vietnam Academy for Water Resources (VAWR) under MARD	<p><i>Requested Applicant</i></p> <p>Focal point for proposed project implementation.</p> <p>Work closely with national and local stakeholders during proposed project implementation.</p> <p>Collect information/data/documents and conduct surveys.</p> <p>Organize training courses, workshop, meeting at all levels.</p> <p>Lead the Activity 3.1., 3.2., 3.3., 5.1. and 5.2.</p>
Institute for Agricultural Environment (IAE) under MARD	<p>Participate in collecting information/data/documents and conduct surveys.</p> <p>Participate in training courses, workshop, meeting at all levels.</p> <p>Lead the Activity 5.1. and 5.2.</p>
Dak Lak and Hai Phong Department for Agriculture and Rural Development (DARD)	<p>Ensure the participation of stakeholders at provincial level during the project implementation.</p> <p>Provide relevant information/data/documents if requested.</p> <p>Lead the workshops and meeting at local level.</p> <p>Provide consultancy idea to select case study areas.</p> <p>Provide supports to revise and finalize proposed structure and non-structure measures to promote the application of technology and the use of Organic Fertilizer by Livestock Waste at local level.</p> <p>Facilitate data collection and provide supports for field surveys</p>
Selected local authorities in Dak Lak province and Hai Phong city.	<p>Ensure the participation of local stakeholders during the project implementation.</p> <p>Provide relevant information/data/documents as requested.</p> <p>Facilitate data collection and provide supports for field surveys.</p> <p>Provide other supports if requested.</p>

12. SDG Contributions:

Instructions: Please complete the grey section below for a maximum of three SDGs that will be advanced through this TA. A complete list of SDGs and their targets is available here:

<https://sustainabledevelopment.un.org/partnership/register/>.

Goal	Sustainable Development Goal	Direct contribution from CTCN TA (1 sentence for top 1-3 SDGs)
1	End poverty in all its forms everywhere	

2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	O
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	O
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	O
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	O
	7.3 - By 2030, double the global rate of improvement in energy efficiency	
	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	O
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	O
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	<i>All TAs should indicate relevance to Goal 13 and at least one target below (13.1 to 13.b).</i>
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	
	13.2 - Integrate climate change measures into national policies, strategies and planning	
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	O
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. Classification of technical assistance:

Please indicate primary type of technical assistance. Optional: If desired, indicate secondary type of technical assistance.

<i>Please tick off the relevant boxes below</i>	<i>Primary</i>	<i>Secondary</i>
<input type="checkbox"/> 1. Decision-making tools and/or information provision	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 2. Sectoral roadmaps and strategies	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 3. Recommendations for law, policy and regulations	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> 4. Financing facilitation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 5. Private sector engagement and market creation	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 6. Research and development of technologies	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> 7. Feasibility of technology options	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> 8. Piloting and deployment of technologies in local conditions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 9. Technology identification and prioritisation	<input type="checkbox"/>	<input type="checkbox"/>

Please note that all CTCN technical assistance contributes to strengthening the capacity of in country actors.

14. Monitoring and Evaluation process

Upon contracting of the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. The monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) NDE about overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer about the knowledge and learning gained through delivery of technical assistance; and (iii) the CTCN Director about timeliness and appropriateness of the delivery of the activities and outputs.

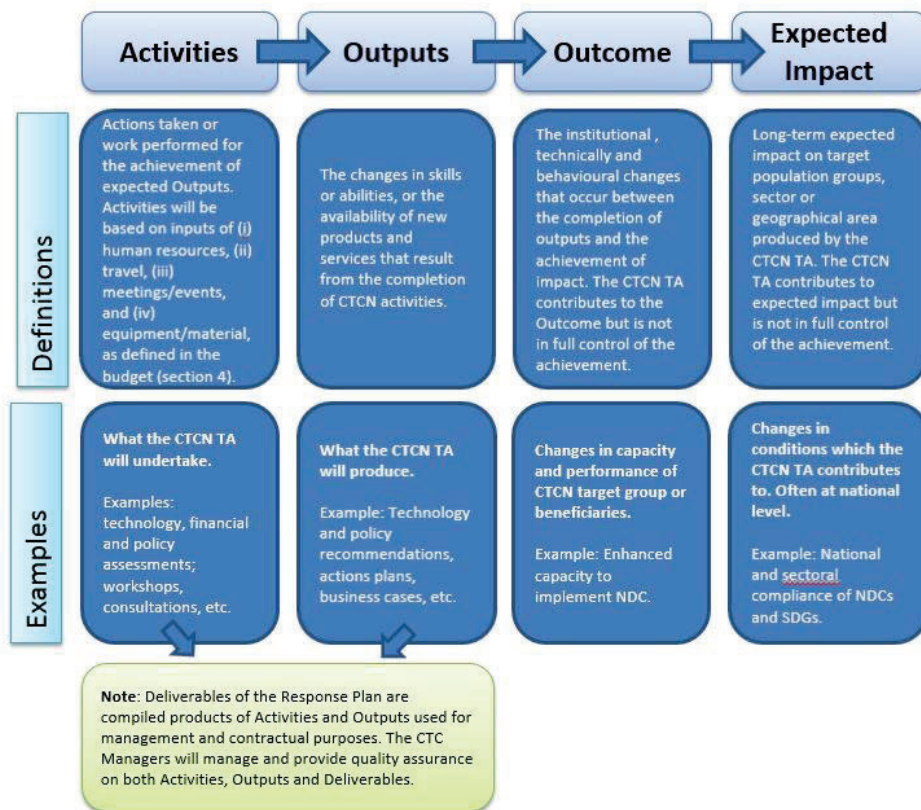
Annex 1: Guidance note for designing a Response Plan (to be deleted when submitting the Response Plan)

15. Objective of the Response Plan

The Response Plan is developed by CTCN specialists in response to a country request for technical assistance. It constitutes the Terms of Reference of the CTCN technical assistance that will be provided to the country and it provides the formulation of and subsequent basis for the monitoring and evaluation of the Response Plan implementation, as well as its expected outcomes and anticipated impacts.

16. Results chain and Logical Framework Approach to be defined in the CTCN Response Plan

The result chain is the causal sequence that stipulates the necessary flow of actions and processes to achieve desired objectives and results – beginning with inputs, moving through activities and outputs, and culminating in individual outcomes. The outcome will contribute to the desired impact in the society. The Logical Framework Approach is an analytical process used to support objectives-oriented project planning and management. It provides a set of pre-defined concepts which are used as part of an iterative process to aid structured and systematic analysis and management of the CTCN technical assistance.



17. Role of the Response Planning Design Team

The Response Planning Design Team is selected by the Climate Technology Centre (CTC). The composition of the team depends on each particular request but may include the National Designated Entity (NDE), the request Proponent, Climate Technology Manager of the CTCN, experts from the CTCN Consortium, UNIDO and UNEP experts from regional offices and other experts as needed.

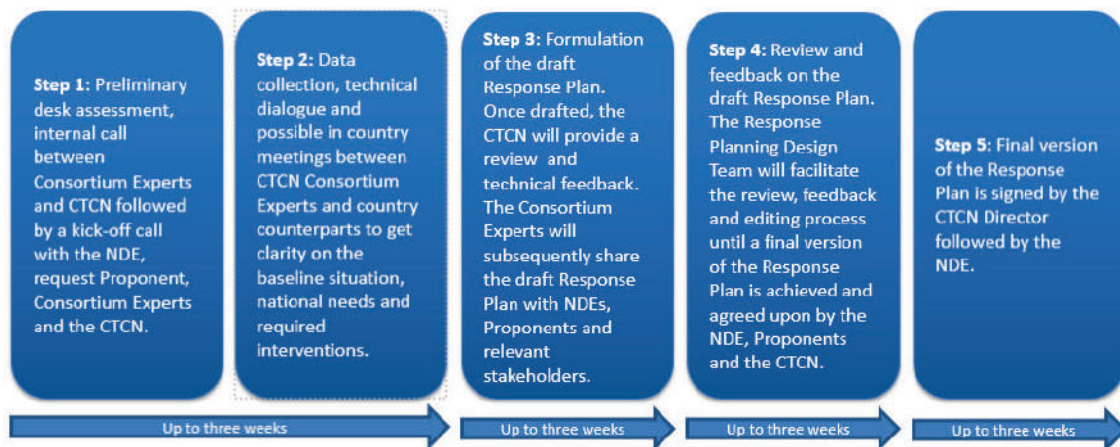
The role of CTCN Consortium experts is to lead the design of the Response Plan. The NDE will provide overall guidance on national context and priorities whereas the request Proponent will provide more detailed information on the sector, barriers and requested assistance. The Climate Technology Manager of the CTCN will provide quality assurance of timeliness and appropriateness of the Response Plan.

The Response Planning Design Team will draft all sections of the Response Plan template building on the information contained in the CTCN Request, based on expertise on the given topic and potentially further data collection, as required. This will be done by the CTCN Consortium Experts in consultation with the NDE, request Proponent and relevant stakeholders. The Response Plan has to be agreed to and approved by the NDE and the CTCN Director. This Response Plan will serve as the basis to identify, select and engage an expert institution from the Climate Technology Network or Consortium to lead the implementation of the CTCN Response Plan in the requesting country.

To the extent possible, staff from UNEP and UNIDO Regional, Sub-Regional and/or National Offices should be involve in all stages of formulation of the Response Plan to maximize synergies and avoid overlap with ongoing initiatives, as well as ensure relevance to regional and national context.

18. Process for designing the Response Plan

The Response Planning process should be completed over a period of up to 60 working days (12 weeks). Indicative steps and related timelines are laid out below:



19. Design Considerations

In order to maximize the impact of the technical assistance provided by the CTCN and provide an effective M&E process, the Response Plan should integrate as much as possible the considerations below:

Climate Technology focus: The Response Plan should have a clear focus on climate technologies, and identify activities that enable the identification, development, deployment or diffusion of one or several specific technologies (including equipment, techniques, knowledge and skills).

Barrier removal / Problem solving: The activities should contribute to address the specific problem statement identified in the Request. The barriers identified should be those hampering the identification, development, deployment or diffusion of one or several climate technologies or climate actions. Therefore, it may be necessary to limit the CTCN Response Plan to a set of activities for technical assistance commonly agreed with the NDE (and Proponent when needed) compared to the original request submitted. The CTCN will liaise with NDEs and Proponent in case the scope of the technical assistance deviates from the original request.

Use of the CTCN assistance by stakeholders: The Response Plan should identify clearly how the products of the CTCN assistance will be used in the short term once support is delivered, by who and when, to ensure it will lead to specific impacts in the country. The activities should engage the stakeholders that will use the concrete results of the assistance to deploy the technologies, including from the private sector, the public sector, research institutions, etc.

Within the scope of CTCN resources: The cost of the technical assistance provided by the CTCN cannot exceed USD 250,000 per Response Plan. Therefore, it may be necessary to prioritize activities and limit the CTCN Response Plan to a set of priority activities commonly agreed with the Proponent and the NDE to remain under this value. Under section 4 of the Response Plan template, an indicative activity based budget should be presented. The proposed budget is indicative and should present an estimated costing range per activity, output as well as a total costing range for the delivery of the Response Plan. Once the Response Plan is finalised and published for tendering, interested parties will provide competitive offer against the indicative budget.

CTCN activities and outputs should be linkable to monitoring and evaluation indicators: All proposed activities and outputs must be linkable to monitoring and evaluation indicators that are specific, measurable, achievable, relevant, and time-bound. The monitoring and evaluation process and corresponding indicators will be developed by the Lead Implementer as part of the work plan and will allow the CTCN technology Manager to monitor the timeliness and appropriateness of the implementation.

Synergies with existing efforts: The Response Plan should focus on activities that are not already being fully supported or that are in the process of being fully supported by another national, regional or international organization. Synergies and complementarity also require that the CTCN assistance is not duplicating past activities. It is possible in the Response Plan to indicate co-financing from the government, the Proponent or another stakeholder, that will maximize the effectiveness of the CTCN assistance.

Gender mainstreaming: The CTCN mission is to build or strengthen developing countries' capacities to identify technology needs, to facilitate the preparation and implementation of technology projects and strategies taking into account gender considerations. The Response Plan must therefore describe how gender considerations will be included and monitored within the proposed activities, and any gender co-benefits that will be gained as a result of implementing the CTCN technical assistance.