

<b>Country</b>	<p><b>Central Africa:</b> The Republic of the Congo, the Democratic Republic of the Congo, the Central African Republic, the Republic of Cameroon, the Gabonese Republic, the Republic of Equatorial Guinea, the Republic of Chad, the Republic of Burundi</p> <p><b>West Africa:</b> <b>The Republic of Benin</b>, The Republic of Senegal, the Republic of Côte d'Ivoire, the Republic of Mali, Burkina Faso, the Togolese Republic</p> <p><b>East Africa:</b> The Republic of Djibouti</p>
<b>Request ID#</b>	2019000036
<b>Title</b>	<i>Request for technical assistance for a study on forest biomass energy conversion</i>
<b>NDE</b>	<i>Badevokila Joseph, position, organization, END Congo@gmail.com Brazzaville - CONGO</i>
<b>Proponent</b>	<i>Please add name, position, organization, email and address</i>

**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)*

**Agreement:**

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

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

Name:  
Title:

Date:

Signature:

**Proponent** (signature of the Proponent is optional)

Name: Ndoma Ngoye Raymond  
Title: Secrétaire Exécutif, COMMISSION DES FORETS D'AFRIQUE CENTRALE (COMIFAC)

Date:

Signature:

**UNFCCC Climate Technology Centre and Network (CTCN)**

Name: Rose Mwebaza  
Title: Director, CTCN  
Date: 22 Nov 2019  
Signature:





### Background and context

*Bioenergy can be categorized in three main ways as bioresources, biofuel and bioresidue. The traditional biomass resources are firewood, agricultural and animal wastes, which has been used since time immemorial to supply energy needs for domestic and industrial use. Regard on its traditional biomass such as firewood and charcoal production is generally characterized as less productive and efficient without due appreciation of its economic value (FAO 2009).*

*Sub-Saharan Africa falls short in comparison with other regions of the developing world in terms of the proportion of the population relying on traditional biomass for cooking, with serious environmental and health implications for the people. Access to electricity averages around 25% in sub-Saharan Africa today, which also compares poorly with other developing regions, and there is very low access to thermal energy and mechanical power for productive uses/income generation (Hammond et al 2010).*

*The Central Africa macroeconomic indicators such as, economic growth in the region was sluggish from 2016 to 2017. Estimated average growth for the region in 2017 was 0.9 percent, barely up from 0.1 percent in 2016 and noticeably below the estimated African average of 3.6 percent. Low commodity prices accounted for much of the sluggishness of growth. The outlook for the region is positive, however, as commodity prices trend upward and domestic demand grows. Sound macroeconomic management and an improved institutional environment are expected to help maintain Central Africa's growth resilience in 2018–19.*

*Most of the African population, particularly in rural areas, depends on traditional biomass for cooking and heating (UNDP 2003). This condition is not likely to change, and it is approximate that in 2030 more than 700 million people will rely on traditional biomass such as firewood, and charcoal (IEA 2006).*

*Moreover, a lot of people in the region depend on forest resources for firewood or charcoal production. This is an unsustainable practice for the environment because a large percentage of the regional forest has been lost, and the opportunity for the emergence of a new natural forest is highly constricted. It has been exacerbated in the form of destruction of natural wood plants and shrubs in their early state of succession because young trees can easily be harvested in view of the tedious labor involved in cutting down trees by women and children (Mohammed et al 2013).*

*The Fuelwood collection and charcoal production is the main degradation driver, 48%. This emphasizes that local small-scale activities (fuelwood collection, charcoal production and livestock grazing in forests) are the most deforestation and degradation drivers relevant in large parts of Africa. The identification of drivers of deforestation and forest degradation is encouraged in Climate Change political agenda impulse by UNFCCC. The countries that have this information must include it in the development of national strategies and action plans for REDD+ (Hosonuma et al 2012).*

*Africa's biomass energy resources vary geographically and are not uniformly distributed. Biomass energy use depends on several issues including geographical location, land use patterns, preferences, cultural and social factors. Income distribution patterns also contribute to variations in biomass energy use, with poorer African countries relying on traditional forms of biomass, and wealthier African countries using more modern biomass energy technologies (Karekezi et al, 2008). Moreover, an important driving factor in determining the potential of forestry biomass, along with available*

*residues and waste, is the level of other competing uses. The estimation of these parameters is generally associated with a high degree of uncertainty*

*Central Africa has abundant biomass resources from agriculture and forestry. Woody biomass is the main source of energy in Sub-Saharan Africa. Some 93 percent of rural households and 58 percent of urban households depend on it in some way. The forest sector of wood production, silviculture can improve the food security and nutrition of households in forest-dependent communities in Africa in important ways: i) the harvesting of wild edible plants, nuts, condiments, mushrooms, tubers, leaves, and fruits; ii) supply energy, especially for cooking; iii) complement other supplies of animal proteins; iv) generate income and employment; and v) provide ecosystem services (AfDB 2018).*

*Nearly all households in the countries of the Congo basin, as well as other African regions, still use energy wood as their main source of fuel for cooking and heating. According to the Food and Agriculture Organization Global Forest Resources Assessment (FRA, 2005), the demand for energy wood in COMIFAC countries in 2005 was estimated at 1,317,000 m<sup>3</sup> of wood in the rough, or 441,572 tonnes of firewood, and it took 611,995 tonnes of wood to produce 73,734 tonnes of wood charcoal.*

*The potential economic impact of charcoal production industry is important to the Central African countries, for example the economic value of the charcoal industry alone in Sub-Saharan Africa could exceed \$12 billion by 2030, employing nearly 12 million people. Moreover, Biomass energy is renewable, carbon neutral, and cost effective compared to coal, hydro, wind, and natural gas energy. Biomass power plants could contribute to power generation in Africa and have economic potential in the global energy industry as well (AfDB 2018).*

*More than 1.6 billion people in the world depend on forest resources for their livelihoods. Of these, 1.2 billion people live in developing countries and use forests to generate food and income; that also applies to Central Africa (Dubois 2003). A way to reduce this importance of the fuelwood/charcoal is given to the people a range of fuels and technologies to meet their energy requirements. Richer households generally use modern energy sources such as electricity and gaseous fuels, while poorer households largely depend on traditional biomass (Lucas et al 2015).*

*The forest sector in Africa is not homogeneous, there are multiple species of trees (such as ayous, okoume, and sapelli), producers (artisans, small and large companies), and products (logs, sawn wood, plywood, veneers). Also, there are multiple markets (domestic, regional/continental, international), applications (construction, pulp, furniture, energy), and procedures for transforming forest products. The factors of diversity in the forest sector are one of challenges, moreover, poor integration among them, and generally weak infrastructure and coherence between links in the value chain from timber production to the various value-added improvements contribute to the poor economic performance of the sector in Congo Basin countries (AfDB 2018).*

*According to AfDB (2018), It is time for a new analysis that evaluates the main challenges to transformation of the Congo Basin forest sector into a sustainable source of diversification, economic resilience, and green and inclusive growth. This analysis must also consider cross-regional dimensions. As regards the the scope of this technical assistance response plan one of the sectors to focus on is the forest biomass residues of current forest industry operation, because currently residues are not used in any application and they have potential to supply part of the needs of*

*biomass for cooking and heating.*

*It is important to evaluate economical variables involved in the use of wood residue. In general in developing countries the income obtained from the sale of waste is not attractive to sawmills and the production is more costly than their market value. The current situation could be described as an excessive reliance on nonrenewable oil and mining resources. It is time for a new analysis that evaluates the main challenges to transformation of the Congo Basin forest sector into a sustainable source of diversification, economic resilience, and green and inclusive growth (AfDB 2018).*

*Moreover, the value chain had change little in terms of the quantity of wood process and technology, the capacities remain limited to primary processing, and most of the processing is done by informal firms and artisanal workers, with very little investment or industrial added value (FAO, ITTO and ATIBT 2013).*

*However, artisanal sector is now being recognized as a vital part of forestry development. The artisanal sector is a larger downstream source of direct and indirect local employment than the formal sector, and its benefits are distributed more equally at the local level. The links between international companies, local small and medium-size enterprises (SMEs), and the artisanal sector need to be strengthened (AfDB 2018).*

*The Congo Basin forest is a carbon reservoir of global significance in regulating greenhouse gases. These forests store approximately a quarter of the total carbon sequestered in the world's tropical forests, thus mitigating the climate impact of greenhouse gas emissions. Congo Basin countries need to identify ways to realize the large financial dividends from this immense ecological capital. The potential of the forest sector is beyond the wood industry, it could generate welfare from energy production, and carbon markets too.*

*The development of modern bioenergy systems therefore offers opportunities for investment and infrastructure improvements in agriculture and forest sectors, which opens opportunities to diversify production and thus to stimulate socio-economic development. The countries most engaged in the formulation of policies and development plans need to guide the development and ensure the sustainability of the bioenergy sector.*

## **1. Problem statement**

*The Central and West African countries proposing this request for TA indicate that the use of traditional biomass charcoals and firewood is and has been a direct cause of deforestation and forest degradation in this area. One factor that increases deforestation is the high population density. The growing demand for biomass is due to the combined effect of the following three underlying causes:*

- 1- Population growth;*
- 2- The absence of alternative energy sources appropriate for low-income populations;*
- 3- Inefficient production and use of wood charcoal.*

*The production rates of charcoal artisanal kilns are very low from 10% to 15% because the techniques used are archaic and charcoal burners lack the appropriate skills. The introduction of very simple processing procedures would make it possible to achieve efficiency levels of 35% to 40%.*

*The households in the countries of the Congo basin, as well as other African regions, still use wood energy as their main source of fuel for cooking and heating. According to the Food and Agriculture Organization Global Forest Resources Assessment (FRA, 2005), the demand for energy wood in COMIFAC countries in 2005 was estimated at 1,317,000 m<sup>3</sup> of wood in the rough, or 441,572 tonnes of firewood, and it took 611,995 tonnes of wood to produce 73,734 tonnes of wood charcoal.*

*Alternative energy sources are either going through a stage of symbolic experimentation and not being promoted (solar energy) or are being produced in low quantities (electricity, fossil fuels). The objective of current projects is to cover the estimated present demand, but not to anticipate the needs which will result from a gradual cessation of the use of firewood for everyday needs.*

*It is estimated that only 55% of urban households and 25% of rural households could have access to electricity by 2025. The use of firewood and wood charcoal will continue to be essential in the coming decades, both in cities and in rural settings.*

*Beyond being converted into wood charcoal and briquettes for households, forest biomass could also be converted into wood charcoal for industry (e.g., steel mills, cement factories). Another possibility could be a more ethical combination centred on electric power generation using biomass or pyrolysis gases obtained from carbonization. The latter option would make it possible to convert forest biomass into wood charcoal, briquettes, and electricity.*

*Overall project objective:*

*The objective of the technical assistance request is to identify the options for economical industrial conversion of forest residual biomass through projects with a significant positive climatic and social impact.*

*Other objectives:*

- i. To convert forest and sawmill waste through the production of wood charcoal and briquettes*
- ii. To increase forest cover through the restoration and creation of industrial forests in order to guarantee raw-material supply*
- iii. To produce electricity through biomass energy conversion and/or cogeneration*
- iv. To improve living conditions for the forests' riparian populations*
- v. To help to encourage eco-industrialization in the forestry sector*
- vi. To contribute to the development of the COMIFAC Convergence Plan and national REDD+ strategies in order to establish the basic conditions for eligibility for carbon-market benefit projects and ecosystem services payment projects*
- vii. To support the establishment of the nationally determined contributions (NDCs) of the COMIFAC countries and of other west Africa countries involved in the implementation of the present TA request*
- viii. To identify the options for attracting innovative funding for project implementation*
- ix. To ensure gender mainstreaming in the chain of activities related to the production of wood charcoal, and so forth*

*The project's impacts are financial, economic, social, climate-related, environmental and industrial.*

*The technical-assistance outcomes should promote a project to establish a sustainable industrial chain for forest biomass energy conversion using planted forest as raw material and forestry biomass and sawmill waste. This strategy will be strengthened through the operation of private forests planted in order to reduce pressure on native forests and increase the final uses options, for example a cogeneration plant which uses pyrolysis gases and waste.*

*Regarding on climate change, the projects identified will enable the significant reduction of greenhouse gas emissions thanks to more efficient charcoal production, waste conversion, increased forest cover, and decreased deforestation rates. It will ultimately contribute to carbon stocks and to the promotion of the circular economy and the achievement of the Sustainable Development Goals. The afforestation and reforestation component should be considered an integral part of the project and will also support the implementation of REDD+ and adaptation to climate change.*





<p>ii) Monitoring and evaluation plan iii) CTCN Impact Description iv) Closure and Data Collection report</p>	■								■
<p><b>Output 2:</b> <i>Identification of the source of forest residues in the forest supply chain. Identification of hot spots of wastes in the supply chain in order to map the sites where the greatest amount of waste is generated</i></p>		■							
<p>Activity 2.1: <i>Mapping the forest supply chain in the selected countries.</i> During this initial activity it is fundamental that countries NDEs support the data collection phase. The NDE should act as focal point for the country in this process to help the local consultant to obtain all the needed info in order to assess the biomass potential. Other studies and works that may have been already prepared should be mentioned and provided to the consultant. The selected implementing organization will closely liaise with the country to make sure that the mapping task is satisfactorily completed. Due to the large number of countries involved, it is suggested that a NDE from central Africa and a NDE from West Africa will act as focal points for the sub-regions in order to facilitate the communication task of the consultant. i) Mapping actors involved in the supply chain ii) Mapping flows of wood and their wastes iii) Georeferencing of the links where wood waste is generated in the supply chain</p>		■	■						
<p>Activity 2.2: Quantification of the waste generated in each site of the supply chain i) Define calculation formulas for the quantification of wood waste in each link of the wood supply chain. ii) Prioritize chain links where there is greater potential to generate bioenergy products by quantity, costs and current uses.</p>			■						
<p>Activity 2.3: Assess the feasibility of a pilot project: it must include the assessment of wood energy plantations (new forests) to support the sustainability of raw material identified and to increase the conservation potential (the assessment must show factors such as conditions for access to financing, forest species, land size focus in a medium-size, and others factor related, for a given country with the best feasibility conditions)</p>			■						
<p><b>Deliverable 2:</b> 2.1 A report with the information collected that explains how supply chains work and at what points the greatest amount of wood waste is generated 2.2 A map that presents the geographical location of the hot spots of wood waste generation in the mapped supply chains. 2.3 A report about the projects feasibility analysis and the prioritization methodology to selected the pilot project</p>			■						
<p><b>Output 3:</b> <i>Determine the requirements for and availability of technologies for converting the identified biomass resources. The thermochemical characteristic of the forest biomass differs from others, this means that bioenergy technologies to be selected must be specific for feasible solutions according to the specific context of each country.</i></p>				■					





<b>Output 1:</b> Development of implementation planning and communication documents						
Activity 1.1-Activity 1-3: Formulation of i) Detailed work plan, ii) Monitoring and evaluation plan, iii) CTCN Impact Description.	Please allocate 1-3 working days for each of the mandatory reports under Activity 1.1.				7,500	9,000
Activity 1.4 A Closure and Data Collection report					5,000	6,000
<b>Output 2:</b> Identify the generation of forest residues in the forest supply chain.						
Activity 2.1: <i>Mapping the forest supply chain</i>	<i>Environmental economist, supervise the supply chain study 60 working days SIG specialist, georeferencing of hot spots, 15 working days Supply chain consultant, data collection, 60 working</i>	<i>One travel to each selected country, to supervise the data collection and kick-start the TA</i>	<i>Forest supply chain, At least one meeting to present the study results and validate it, 3 working days 25 participants</i>	<i>Buy a GPS one for each selecting country, for georeferenced each link of the wood supply chain</i>	40,000.00	50,000.00

	<i>days</i>					
Activity 2.2: Quantification of the waste generated in each site of the supply chain	<i>Bioenergy forest specialist 20 working days Supply chain consultant, data collection and measurements of wasted forest biomass, 30 working days</i>				15,000.00	20,000.00
Activity 2.3: Assess the feasibility of pilot project	<i>Environmental economist, 20 days, Bioenergy forest specialist 10 days, and Environmental specialist 30 days. Evaluation of project pilot in technical and financial feasibility and impacts</i>				20,000.00	30,000.00
<b>Output 3:</b> Determine the requirements for and availability of technologies for converting the identified biomass resources						
Activity 3.1: Identify the energy demands	<i>Bioenergy forest specialist 10 working</i>				3,000.00	5,000.00

	<i>days</i>					
Activity 3.2: Determine the most appropriate conversion technologies	<i>Bioenergy forest specialist 10 working days</i>				5,000.00	8,000.00
Activity 3.3: Design the project that best suits local countries conditions	<i>Environmental economist 30 working days Bioenergy forest 30 working days Local consultants, 20 working days</i>	<i>travel to countries as needed</i>	<i>Bioenergy project options for waste forest biomass At least one meeting to present the study results and validate it, 3 working days. 25 participants</i>		26,000.00	34,000.00
<b>Output 4: Assess sustainability</b>						
Activity 4.1: Define the environmental factors and analyzing them	<i>Environmental specialist, 30 working days</i>	<i>At least one travel to each selected country of 3 days, to data collection</i>			6,000.00	8,000.00
Activity 4.2: Define the economic factors and analyzing them	<i>Environmental economist, 30 working days</i>	<i>At least one travel to each selected country of 3 days, to data collection</i>			6,000.00	8,000.00
Activity 4.3: Define the social factors and analyzing them. This includes a specific gender mainstreaming analysis	<i>Environmental economist, 30 working days</i>	<i>At least one travel to each selected country of 3 days, to data collection</i>			9,000.00	12,000.00
<b>Output 5:</b>						

<i>Support the selection and the implementation of pilot process</i>						
Activity 5.1: Pilot project prepared	<i>Project coordinator, 90 working days</i>	<i>At least two travel to each selected country of 3 days, to data collection</i>			<i>30,000.00</i>	<i>45,000.00</i>
Activity 5.2: The pilot project evaluated	<i>Environmental specialist, 30 working days</i>	<i>At least one travel to each selected country of 10 days, to data collection</i>			<i>25,000.00</i>	<i>35,000.00</i>
<b>Output 6:</b> A final workshop will be organized to present the activities of the technical assistance.						
Activity 6.1: Implementer and Countries organize the workshop	<i>Project coordinator, 5 working days Local consultants 5 days</i>				<i>30,000.00</i>	<i>35,000.00</i>
<b>Estimated range of costing for the entire Response Plan</b>					<i>232,500.00</i>	<i>305,000.00</i>

#### 4. 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.*

<b>Experts required</b>	<b>Brief description of required profile</b>
<i>Please use the same titles for all experts as applied in section 4.</i>	<i>Please provide a short description of expertise and experience needed (education, sectors of expertise, years of experience, country experience, language requirements, etc.).</i>
<i>Environmental specialist</i>	Experience in bioenergy projects and their social and environmental impact study, his is important to carry out an impact evaluation. Master's degree. Language: French and English
<i>Environmental economist</i>	Experience in forestry, energy, project formulation and evaluation, energy public policy analysis and supply chain. Master's degree. Language: French and English
<i>Bioenergy forest specialist</i>	Experience in forest biomass, evaluation and formulation of projects and in bioenergy supply chains
<i>SIG specialist</i>	Experience in mapping and algorithms to estimate logistics feasibility
<i>Consultant (forest engineer, business administration)</i>	Experience in conducting surveys, tabulation, project analysis, data collection, forest waste quantification
<i>Project coordinator</i>	Experience in project coordination in bioenergy sector
<i>Gender specialist</i>	Experience in gender mainstreaming assessment in the energy and biomass value chain in Africa



## **5. Intended contribution to impact over time**

*The development of modern bioenergy systems therefore offers opportunities for investment and infrastructure improvements in the forest sectors, that's open opportunities to diversify production and thus to stimulate socio-economic development and other impacts such as:*

- *Reduce GHG emissions for forest degradation*
- *The use of forest residues, improved forest site conditions for regeneration and planting*
- *Increased employment*
- *Reduce demand for imported fossil fuels*
- *Diversify energy supply mix*
- *Economic growth*
- *Reduce the discarded forest residues*
- *convert of forest sector by the production of wood charcoal and briquettes*
- *Increase forest cover through the restoration and creation of industrial forests in order to guarantee raw-material supply*
- *Production of electricity from sustainable sources such as forest biomass energy conversion and/or cogeneration*
- *Creation a system of forest eco-industrialization in the sector*
- *Contribution to the development of the COMIFAC Convergence Plan and national REDD+*
- *Facilitation and support the establishment of the nationally determined contributions (NDCs)*
- *Identification of innovative funding for project implementation*
- *Low cost production of wood charcoal and briquettes*

## **6. Relevance to NDCs and other national priorities**

*The Paris Agreement constitutes a landmark achievement in the international response to climate change, as developed and developing countries alike have committed to do their part in the transition to a low-emissions and climate-resilient future.*

*In the countries of the Central and west, east African, there are many challenges such as deforestation, degradation, and change of use, with this technical assistance a series of information can be generated to analyze the challenges and opportunities of the development of climate-smart actions in two sectors such as the forestry and energy.*

*This can facilitate the realization of climate plans that involve adaptation and mitigation measures in the mentioned sectors that would be the basis for Nationally Intended Contributions (NDC) and other relevant national prioritized efforts (TNAs, TAPs, NAPs, NAMAs, etc.)*

## **7. 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)*

*There is one ongoing project in the republic of Congo. The TA will complement the work already done on this project with the possibility of using this as a benchmark, thereafter:*

*Proposed activities:*

- *EIA*
- *Pilot project (based on a small-scale production to assess most appropriated (semi) artisanal retorts technology to be transferred in order to improved the carbonization yield). This pilot project doesn't involve the industrial aspect of the whole project.*

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

*The technical assistance, the countries, and stakeholders will have the necessary information to identify the best opportunities for policy development and the generation of enabling conditions for investments in bioenergy.*

*Therefore, follow-up actions must be carried out by private groups interested in investments and groups such as organizations and NGOs, to promote the development of enabling conditions, to overcome the possible barriers encountered in the studies.*

*Among other the follow-up actions can be mentioned:*

- *Add to the conformation of the REDD + Plan of each country, the topic of the potential of residual forest biomass as an energy source in the forest industry sector, and as a mitigation action.*
- *Set up national dialogue tables to propose a NAMA in the bioenergy issue*

*In one country, build a small-scale pilot project to assess what could be the most appropriated improved kilns*

*(maximum 2500 characters including spaces)*

**9. Gender and co-benefits:**

<p>Imbedded in design of the activities:</p>	<p><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></p> <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>Gender and co-benefits intended as result of the activities:</p>	<p><i>The production of solid bioenergy fuels from wood residues could increasing rapidly, due mainly to the establishment of forest eco-industrialization. This results in potential socio-economic benefits, particularly in terms of forest employment.</i></p> <p><i>The collection of firewood and other sources for cooking tasks traditionally entrusted to women and children, but with energy sources such as charcoal and low-cost briquettes, these tasks would no longer be necessary this will improve the living conditions of women, as well as their health because of the lower smoke pollution in their homes.</i></p> <p><i>Women could be involved as a workforce in the packaging process, the salesforce and also wholesale of charcoal</i></p> <p><i>They will also lead the product quality control and also the R&amp;D process, ...</i></p>

**10. 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
Forest, land and energy authorities	Promote new bioenergy sources Assess the potential and conditions in acquiring land in order to create new forest
Forest owners	Improving the health of their forests and protecting them against fires by collecting the biomass that previously remained on the site. Assessing or proposing a type of commercial contract to be applied when selling it as raw material to charcoal makers or biomass to energy industry
Industries	Improving the use of resources by using all the wood that enters its facilities and minimizing waste pollution Assessing/establishing the needed quality of charcoal for industry, cemeteries, and other that demand charcoal
Project promoters	Assisting the further identified project promoters and

### 11. 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	Industrial scale wood fuel could result in potential socio-economic benefits, particularly in terms of forest employment.
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	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	Industrial scale wood fuel will lower costs of production and improve its access
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	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	
	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	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Industrial scale wood fuel and organization of artisanal producers will provide viable and

		sustainable wages for rural populations
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	Planted forests as source of raw material will also strengthen the adaptation option, land restoration
	13.2 - Integrate climate change measures into national policies, strategies and planning	The information generated could be the base of new policies that promote the modern bioenergy sources from wood as a substitute of traditional biomass
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	
	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	Industrial scale wood fuel will reduce the GHG emissions from current inefficient wood fuel production
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	Industrial scale wood fuel will reduce the pressure on forest and thus help to forest recovering
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	The project implementation will benefit from strong partnership to support a appropriated echnology transfer scheme

### 12. 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"/>	X
<input type="checkbox"/> 2. Sectoral roadmaps and strategies	X	<input type="checkbox"/>
<input type="checkbox"/> 3. Recommendations for law, policy and regulations	<input type="checkbox"/>	X
<input type="checkbox"/> 4. Financing facilitation	X	<input type="checkbox"/>
<input type="checkbox"/> 5. Private sector engagement and market creation	X	<input type="checkbox"/>
<input type="checkbox"/> 6. Research and development of technologies	X	<input type="checkbox"/>
<input type="checkbox"/> 7. Feasibility of technology options	X	<input type="checkbox"/>
<input type="checkbox"/> 8. Piloting and deployment of technologies in local conditions	X	<input type="checkbox"/>
<input type="checkbox"/> 9. Technology identification and prioritisation	X	<input type="checkbox"/>

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

### 13. 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.*

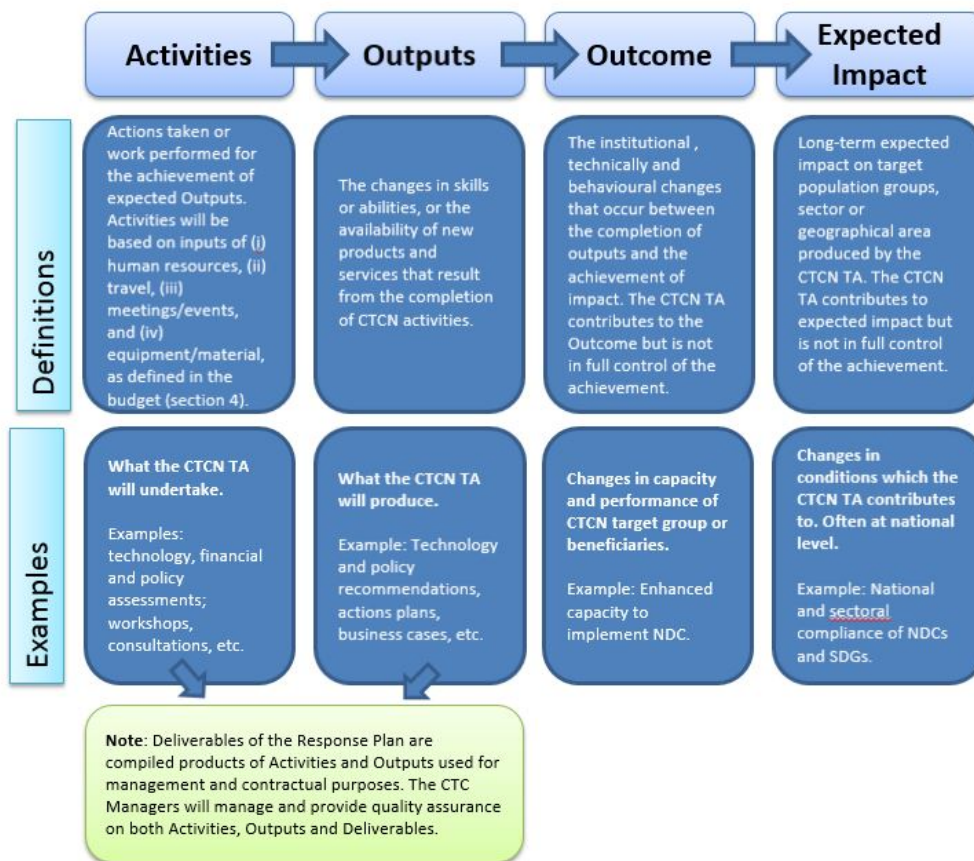
**Annex 1: Guidance note for designing a Response Plan (to be deleted when submitting the Response Plan)**

**1. 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.

**2. 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.



### 3. 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 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.

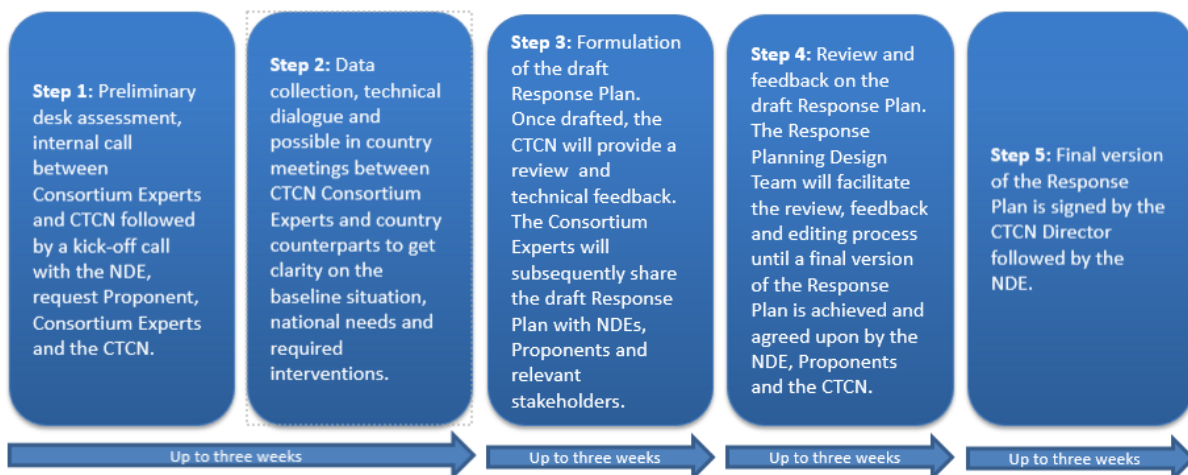
The role of CTCN Consortium experts is to lead the design of the Response Plan. The NDE will provide overall guidance on national context and priorities whereas the request Proponent will provide more detailed information on the sector, barriers and requested assistance. The Climate Technology Manager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

### 4. 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:



### 5. 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 considering 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.