



Response Plan

Development of a Mechanical-Biological Treatment (MBT) pilot project of the Waste NAMA

Request identification number: 2014-004/COL-03

Requesting country: Colombia

Most relevant sector: Waste

Other relevant sectors: N/A

1. Project Summary (half a page)

The assistance that will be provided will consist of two parts – an initial, “Quick Response” as well as a longer, more detailed technical assistance (“Response Project”) – to help the city of Cali deploy an alternative MSW treatment plant that will contribute to reducing GHG emissions to net-zero level in the waste sector overall. Within the framework of the “Quick Response”, which shall be concluded within six months at most, the CTCN assistance foresees an evaluation of existing technical studies for a MBT (Mechanical-Biological Treatment) plant as well as studies related its operationalization and the integration of the waste pickers working in the informal sector. Based on the initial assessment, further studies will be undertaken to refine the technology to be applied as well as the business model to be deployed. Potential sources of financing shall also be identified.

The three main outputs therefore encompass: (i) the verification of the feasibility of the selected technology, (ii) the elaboration of the deployment structures for the selected, alternative MSW management plant for Cali taking into consideration the needs of key stakeholder groups (e.g. waste pickers working in the informal sector) and (iii) the elaboration of the business model for the selected, alternative MSW management plant as well as the development of a plan to access financing and the securing of initial sources of funding. The main expected outcome of the assistance to be provided being that it helps to prove the technical and financial feasibility of an alternative, MSW (Municipal Solid Waste) treatment plant and helps to facilitate the implementation of such a plant.

Main in-country partners are the Ministry of Environment and Sustainable Development – Climate Change Division, Cali’s Municipal Administration (Alcaldía de Santiago de Cali) through the Departamento Administrativo de Gestión del Medio Ambiente (DAGMA) and the team responsible for the Policy for Solid Waste Management based in the Municipal Planning Department in Cali; as well as the Ministry of Housing, Cities and Territory. Furthermore, close cooperation with various universities (Universidad Autónoma de Occidente, Universidad de Valle and Universidad ICESI), national CSOs such as the Fundación Carvajal and CEMPRE as well as governmental institutions such as the Corporación Autónoma Regional del Valle del Cauca and the Social Wealth Secretariat of Santiago de Cali are envisaged.

The Response Project will be further elaborated once the initial results from the Quick Response are available.

2. Project Description

2.1 Objectives of CTCN Assistance (outcomes and outputs)

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Overall objective

To mitigate GHG emissions by providing technical assistance for the deployment of an alternative, MSW treatment plant in the city of Cali in the form of a pilot project for the Solid Waste NAMA in Colombia.

Outcomes

In the short-term, it is expected that CTCN assistance (CTCNa) will help prove the technical and financial feasibility of an alternative, MSW treatment plant and help facilitate the implementation of such a plant.

In the long-term, it is expected that the CTCNa contributes to the modernization of MSW in Colombia, while contributing to the reduction of GHG emissions (mainly CH₄ from landfills). Please also see section 2.9 for further details.

Outputs

Due to the nature and scope of the request, it shall be addressed in a two-step process. That is, an initial Quick Response will be carried out prior to a Response Project. Both approaches will be further described in this response plan.

Within the framework of the Quick Response, the feasibility of the proposed alternative MSW management technology for Cali is to be verified and initial sources of funding are to be secured. The three main outputs expected under the **Quick Response** are:

- The feasibility of the selected technology i.e. MBT for the pilot MSW management plant in Cali is to be verified.
- The deployment of the selected, alternative MSW management plant for Cali is to be elaborated with a particular emphasis on the institutional, commercial and management structures to be put in place taking into consideration the needs of key stakeholder groups (e.g. waste pickers working in the informal sector)
- The business model for the selected, alternative MSW management plant for Cali is to be further elaborated, a plan to access financing developed and initial sources of funding are to be secured.

Within the framework of the Response Project, technical assistance will be provided for more specific issues related to the pilot plant in Cali as well as capacity building for the operational management of the plant. In addition, various additional studies will be carried out to facilitate replication and up-scaling of alternative MSW management options to other cities in Colombia. Three main outputs expected under the **Response Project** are:

- More specific issues (technical, commercial, institutional) identified during the implementation of the Quick Response will be addressed. The identification of the issues and the form of address shall be determined towards the final stages of the implementation of the Quick Response.
- Capacity building measures (especially for the operation of the selected plant) are to be developed and implementation started.
- Technical studies to determine the most feasible waste treatment technology for two additional pilot cities shall be carried out to facilitate replication and up-scaling.

2.2 Planned Activities

Output	Indicator	Activity	Sub-activity	Deliverables	Responsibility
1. Feasibility of selected technology for the pilot plant in Cali verified.	Feasibility study that meets national criteria for obtaining environmental permits as well as fulfills investors' criteria Baseline: (0) Target: (1)	1.1 Desktop review and assessment of available studies. 1.2 Active technical guidance to new studies being conducted at national universities or by other relevant organizations. 1.3 Technical (sub-) studies for aspects not covered by other studies.	1.1.1 Review and gap analysis of existing studies. 1.1.2 Technical validation of assumptions and recommendations. 1.1.3 Proposal for additional studies to fill identified gaps. 1.2.1 Assistance with the establishment of TORs for new studies to be conducted (if required). 1.2.2 Expert guidance during implementation of studies. 1.3.1 Development of TORs for sub-studies. 1.3.2 Conduct of sub-studies. 1.3.3 Validation workshop of final, overall results achieved (full feasibility study)	1.1.1 + 1.1.2 Assessment report including technical opinion 1.1.3 Proposals for additional studies. 1 Reviewed TORs. 2 In-person and/or virtual technical advice provided (minutes, comments), review reports 1.3.1 TORs for sub-studies. 1.3.2 Sub-studies reports 1.3.3 Agenda, participants list, workshop report	CTCN CTCN together with national universities CTCN Organization of workshop: Local government of the city of Cali and the Ministry of Environment and Sustainable Development with support of the CTCN and other relevant partners CTCN with support of the local government of the city of Cali
2. Deployment structures (institutional, commercial and management) for pilot plant in Cali elaborated.	Comprehensive guidance document (manual) regarding most feasible deployment structure for pilot plant in Cali. Baseline: (0) Target: (1) Number of people with raised awareness	2.1 Baseline assessment of existing MSW management structures in Cali. 2.2 Specialized study on informal sector waste pickers and current roles / activities in MSW management in Cali (targeting aspects not covered by previous studies). 2.3 Development of proposal for refinement of existing structures with a view to the plant to be established – special	2.1.1 Define actions (desktop review, interviews, etc.) to gain access to baseline information. 2.1.2 Analysis of available information for baseline establishment. 2.1.3 Summary of baseline information 2.2.1 Development of scope and methodology of study (taking into account previous work undertaken) for review by national actors. 2.2.2 Analysis of sector via pre-defined methodology 2.2.3 Summary of analysis conducted 2.3.1 Analysis of results from 2.1 and 2.2 and any other relevant information. 2.3.2 Development of proposals for the refinement of existing structures and/or the development of new	2.1.1 List of planned actions and summaries, protocols, etc. of results obtained 2.1.2 + 2.1.3 Summary report 2.2.1 Outline of study including scope and methodology to be applied 2.2.2 + 2.2.3 Summary report 2.3.1 Summary report 2.3.2 Proposals for refinement of and/or development of new structures.	CTCN with support of the local government of the city of Cali, the Ministry of Environment and Sustainable Development and other relevant partners (especially at city level) CTCN together with the Municipal Planning Department

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	<p>regarding needs of key stakeholder groups (specifically, the informal sector)</p> <p>Baseline: at least 3 multipliers, including men and women Target: at least 15 multipliers, including men and women</p>	<p>emphasis on the informal sector waste pickers.</p> <p>2.4 Workshop(s) with key stakeholder groups to validate proposals.</p> <p>2.5 Integration of results from studies and workshop into the finalization of the elaboration of the deployment structures.</p>	<p>structures on the basis of available information</p> <p>2.4.1 Structure of workshop(s) and participants decided. 2.4.2 Workshop(s) to review proposals with various stakeholders.</p> <p>2.5.1 Technical studies and workshop results are integrated into one draft guidance document (manual) for review and finalization with relevant national actors. 2.5.2 Report presented to local government of the city of Cali and the Ministry of Environment and Sustainable Development for validation and approval.</p>	<p>2.4.1 Workshop agenda(s) and participant list(s), workshop invitations 2.4.2 Workshop report</p> <p>2.5.1 Final guidance document (manual) on deployment structures for pilot plant 2.5.2 Approval document(s)</p>	<p>Local government of the city of Cali and the Ministry of Environment and Sustainable Development with support of the CTCN and other relevant partners CTCN</p> <p>Local government of the city of Cali and Ministry of Environment and Sustainable Development</p>
<p>3. Business model and financing for pilot plant developed.</p>	<p>Viable business plan developed</p> <p>Baseline: (0) Target: (1)</p> <p>Co-financing letters obtained</p> <p>Baseline: (0) Target: (1 or more, amounting to at least USD 1.5 mlln)</p>	<p>3.1 Business model for pilot plant defined.</p> <p>3.2 Access to financing secured.</p>	<p>3.1.1 Review and evaluation of existing information regarding the most suitable business model for the pilot plant. 3.1.2 Based on the results of 3.1.1 as well as other studies undertaken as part of CTCNa, further refinement/redevelopment of business plan for review by national actors. 3.2.1 Mapping of potential sources of finance. 3.2.2 Based on 3.2.1, development of various options to approach financing (access to finance plan). 3.2.3 Selection of most appropriate option(s) in close consultation with national actors. 3.2.4 Contact established with financing institutions in line with 3.2.3. 3.2.5 Co-financing letters for the pilot plant in Cali negotiated and secured.</p>	<p>3.1.1 Brief assessment report 3.1.2 Draft business plan</p> <p>3.2.1 Overview document (mapping) 3.2.2 Plan to access finance including at least three definite proposals for short- to mid-term financing 3.2.3 Agreed approach documented 3.2.4 Contact lists available and email/letters 3.2.5 Co-financing letter(s) amounting to at least USD 1.5 million</p>	<p>CTCN in close consultation with local government of the city of Cali and Ministry of Environment and Sustainable Development as well as potential investors/lenders/donors CTCN</p> <p>Local government of the city of Cali and Ministry of Environment and Sustainable Development</p>

The planned activities for the response project will be further defined once initial results from the Quick Response are available.

2.3 Main partners

The following provides a brief overview of main partners that the response team expects to engage with during the implementation of the response. It is likely that this list will be further amended / expanded during the course of the Quick Response. A revised list shall be provided prior to the implementation of the Response Project.

Stakeholder	Role
Ministry of Environmental and Sustainable Development – Climate Change Division	NDE and proponent, acting as a facilitator and coordinator of planned activities and coordinates closely with CTCN.
Municipal Administration through the Departamento Administrativo de Gestión del Medio Ambiente – DAGMA (Cali) and the team responsible for the Policy for Solid Waste Management based in the Municipal Planning Department	Main client. As the pilot project is to be hosted in the city of Cali, close cooperation with the CTCN response team for each individual activity is envisaged.
Ministry of Housing, Cities and Territory	One of the proponents of the Solid Waste NAMA. As synergies with the NAMA are to be explored as best possible, close cooperation with regards to the overall response is envisaged.
Universities (especially, Universidad Autónoma de Occidente, Universidad de Valle and Universidad ICESI)	Main contributors to the work being undertaken as part of the CTCNa.
Financing institutions (e.g. FINDETER, GEF)	The engagement with national, regional and / or international financial institutions as well as bi- or multilateral donor organization is a key component of the response plan and will be essential for the successful deployment of the pilot plant.
National and international CSOs (e.g. Fundación Carvajal, CEMPRE)	As the informal sector active waste pickers are considered one of the main beneficiaries of an alternative MSW treatment technology, the needs and concerns of this group need to be considered carefully. Particularly attention will be paid to engaging those organizations that work with and/or for waste pickers. Engagement with other relevant national and/or international CSOs is also foreseen.
Other governmental institutions (e.g. Corporación Autónoma Regional del Valle del Cauca, Social Wealth Secretariat of Santiago de Cali)	Depending on the deployment structure for the pilot plant to be implemented, various other government bodies and agencies may become engaged, including those working directly with waste picker organizations.
Private sector	Financing from private sector investors presents one of the options to finance the pilot plant. Hence close interaction not only for the financing but also for services related to the implementation of the pilot plant is foreseen.
Center for Clean Air Policy (CCAP)	Main organization involved in the design of the Solid Waste NAMA and hence close coordination is foreseen with regards to the type of technical assistance provided as well as the sharing of information.

2.4 Implementation framework

A coordination mechanism will be established; it is expected that representatives from the Ministry of Environmental and Sustainable Development – Climate Change Division (NDE), the Administrative Department of Environmental Management in Cali, the Ministry of Housing, Cities and Territory as well as other relevant organizations will be included.

The NDE will act as facilitator and coordinator of the activities planned. In recognition of national capacities and the need for knowing national circumstances in order to work more efficiently, national institutions will provide information for mapping exercises (Activity 3) and perform assessments of the baseline situation (Activity 2). They will also participate in the planned workshops and may be invited to also join coordination meetings. International experts will be invited to provide their

technical know-how for reviewing existing reports (Activity 1), during workshops and in the analysis of the technological, human and financial requirements for establishing an alternative MSW treatment pilot plant.

CTCN will provide a response coordinator to accompany the process and represent the involved national institutions in the country in relation to this response plan.

2.5 Risk assessment

Risks associated with the proposed response plan are analyzed below. It is expected that this table is reviewed prior to elaboration of the Response Project.

Risks	Likelihood	Impact	Remedial actions
1. Delay to implement on-going improvements to MSW sector would affect CTCNa.	Low	Low	The Government of the Colombia is strongly committed to implementing alternative MSW management options as well as to this response plan. It is considered a key element to progress towards a more sustainable MSW sector while reducing the related GIIG emissions. Hence, a delay with respect to on-going improvements that could affect the implementation of the response plan and CTCNa overall is not expected.
2. Lack of trust or interest among beneficiaries would reduce the pace of market introduction of alternative MSW treatment technologies.	Low	Medium	Careful consideration and broad acceptance of the necessary deployment structures are essential for the successful implementation of alternative MSW treatment technologies. Activity 2 of the Quick Response is undertaken to help with assuring that particularly the concerns and needs of the waste pickers working in the informal sector are fully integrated into the set-up of a future pilot plant. In carrying out Activity 2, great emphasis is placed on working within existing structures in the sector i.e. with organizations that have previously engaged and/or are currently working with the waste pickers working in the informal sector in order to minimize any adverse impacts and assure acceptance of any measures proposed. Additional awareness-raising and capacity building activities under the Response Project will be necessary to mitigate any potential risk from beneficiaries.
3. Lack of appropriate technical assistance would affect the success of the alternative MSW treatment technology.	Low	High	Alternative MSW treatment technologies particularly MBT technology are still considered innovative and experimental in many regions. Hence it is important that the technical assistance provided carefully assesses the suitability of the proposed options from a technical viewpoint as well as taking into consideration the local circumstances. Only then confidence in the technology can be sustained amongst a broad group of stakeholders (incl. investors) in the long-term. The envisaged CTCNa is split into a Quick Response as well as a Response Project to assure that all concerns can be fully addressed over a reasonable timeframe, thus minimizing any potential negative impacts.
4. Lack of securing finance for the alternative MSW treatment pilot plant would affect its successful deployment after termination of the CTCNa.	Medium	High	In order for the pilot plant to be deployed successfully and replication of alternative MSW treatment options to be promoted, it is critical for financing to be secured. The envisaged CTCNa foresees several activities to facilitate access to appropriate financial institutions and donors and secure their commitment. However, due to an ever-changing investors' landscape, such commitment would need to be verified prior to actual implementation of the pilot plant.
5. The outcomes of the Project would be affected by climate change	Low	Low	Adverse impacts due to climate change are not expected. Planned investments are not likely to be located in zones that are vulnerable to sea level changes nor are the waste streams to be utilized expected to vary significantly with climatic changes. Furthermore, as the project aims to actively mitigate GHG emissions, it is expected that climate

Risks	Likelihood	Impact	Remedial actions
			change implications, from e.g. methane that escapes and is not captured, are negligible.

2.6 Synergies

The response will coordinate closely with the activities being undertaken as part of the Solid Waste NAMA. The Solid Waste NAMA has been designed to transform the waste sector from being dominated by methane-emitting landfills to treatment alternatives that reduce emissions to zero and provide many co-benefits. In assessing each participating city, a full suite of alternative technologies to landfilling will be considered. The NAMA thus aims to (i) ensure alternative technologies are given competitive tariffs; (ii) alleviate private sector hesitance to invest in new technologies by providing financial incentives that effectively counter perceived risks of new technologies; (iii) provide informal waste pickers with a sustainable livelihood as well as (iv) reduce other adverse environmental impacts of landfills through the avoidance of new landfills. As the Solid Waste NAMA shares many identified policies, programs, and actions with the Waste Sector Mitigation Action Plan (SMAP), close coordination with this will also be achieved. Given the synergies between the various undertakings, the CTCNa is likely to contribute to Colombia's overall strategy for sustainable solid waste management as well as to its low carbon development strategy.

In addition, it should be noted that the CTCN will be working simultaneously on several requests received from Colombia and hence an active interchange of experiences is also expected on this level.

2.7 Timeline

Activity	2015						
	Month: 1	2	3	4	5	6	7
Activity 1.1: Desktop review and assessment of available studies							
Sub-activity 1.1.1: Review and gap analysis of existing studies.							
Sub-activity 1.1.2: Technical validation of assumptions and recommendations.							
Sub-activity 1.1.3: Proposal for additional studies to fill identified gaps.							
Activity 1.2: Active technical guidance to new studies being conducted at national universities or by other relevant organizations.							
Sub-activity 1.2.1: Assistance with the establishment of TORs for new studies to be conducted (if required).							
Sub-activity 1.2.2: Expert guidance during implementation of studies.							
Activity 1.3: Technical (sub-) studies for aspects not covered by other studies.							
Sub-activity 1.3.1: Development of TORs for sub-studies.							
Sub-activity 1.3.2: Conduct of sub-studies.							
Sub-activity 1.3.3: Validation workshop of final, overall results achieved (full feasibility study)							
Activity 2.1: Baseline assessment of existing MSW management structures in Cali.							
Sub-activity 2.1.1: Define actions (desktop review, interviews, etc.) to gain access to baseline information.							
Sub-activity 2.1.2: Analysis of available information for baseline establishment.							
Sub-activity 2.1.3: Summary of baseline information							
Activity 2.2: Specialized study on the informal sector waste pickers and current roles/activities in MSW management in Cali (targeting aspects not covered by previous studies).							
Sub-activity 2.2.1: Development of scope and methodology of study (taking into account previous work undertaken) for review by national actors.							
Sub-activity 2.2.2: Analysis of sector via pre-defined methodology							

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Sub-activity 2.2.3: Summary of analysis conducted							
Activity 2.3: Development of proposal for refinement of existing structures with a view to the plant to be established – special emphasis on informal sector waste pickers.							
Sub-activity 2.3.1: Analysis of results from 2.1 and 2.2 and any other relevant information.							
Sub-activity 2.3.2: Development of proposals for the refinement of existing structures and/or the development of new structures on the basis of available information							
Activity 2.4: Workshop(s) with key stakeholder groups to validate proposals.							
Sub-activity 2.4.1: Structure of workshop(s) and participants decided.							
Sub-activity 2.4.2: Workshop(s) to review proposals with various stakeholders.							
Activity 2.5: Integration of results from studies and workshop into the finalization of the elaboration of the deployment structures							
Sub-activity 2.5.1: Technical studies and workshop results are integrated into one draft guidance document (manual) for review and finalization with relevant national actors.							
Sub-activity: 2.5.2 Report presented to local government of the city of Cali and the Ministry of Environment and Sustainable Development for validation and approval.							
Activity 3.1: Business model for pilot plant defined.							
Sub-activity: 3.1.1 Review and evaluation of existing information regarding the most suitable business model for the pilot plant.							
Sub-activity: 3.1.2 Further refinement/redevelopment of business plan for review by national actors.							
Activity 3.2: Access to financing secured.							
Sub-activity 3.2.1: Mapping of potential sources of finance							
Sub-activity 3.2.2: Based on 3.2.1, development of various options to approach financing (access to finance plan)							
Sub-activity 3.2.3: Selection of most appropriate option(s) in close consultation with national actors							
Sub-activity 3.2.4: Contact established with financing institutions in line with 3.2.3							
Sub-activity 3.2.5: Co-financing letters for the pilot plant in Cali negotiated and secured							

2.8 Indicative budget

The total budget dedicated by CTCN for the Quick Response is USD 50,000. For the Response Project additional funding will be made available, amounting to a maximum of USD 250,000. Further details on the indicative budget for the Quick Response are outlined below.

Activity	Labour CTCN (\$)¹	Travel (\$)¹	Other Direct Costs (\$)¹	Total (\$)¹
Activity 1.1: Desktop review and assessment of available studies.	2,500	0	0	2,500
Activity 1.2: Active technical guidance to new studies being conducted at national universities or by other relevant organizations.	1,500	0	0	1,500
Activity 1.3: Technical (sub-) studies for aspects not covered by other studies.	6,500	2,000	0	8,500
Activity 2.1: Baseline assessment of existing MSW management structures in Cali.	2,000	500	0	2,500
Activity 2.2: Specialized study on the informal sector waste pickers and current roles / activities in MSW management in Cali (targeting aspects not covered by previous studies).	7,000	2,500	0	9,500
Activity 2.3: Development of proposal for refinement of existing structures with a view to the plant to be established – special emphasis on informal sector waste pickers.	2,500	0	0	2,500

¹ This includes the costs for local contracts for among others the preliminary studies and workshops.

Activity 2.4: Workshop(s) with key stakeholder groups to validate proposals.	4,500	0	6,000	10,500
Activity 2.5: Integration of results from studies and workshop into the finalization of the elaboration of the deployment structures	2,500	0	0	2,500
Activity 3.1: Business model for pilot plant defined.	5,000	1,000	0	6,000
Activity 3.2: Access to financing secured.	3,000	1,000	0	4,000
TOTAL	37,000	7,000	6,000	50,000

2.9 Expected long-term results

In the long-term, it is expected that the CTCNa contributes to the modernization of MSW in Colombia, while contributing to the reduction of GHG emissions (mainly CH₄ from landfills). At the moment, most of Colombia's waste is landfilled, leading to significant GHG emissions. If through the assistance provided by the CTCN, the uptake of alternative MSW waste management and treatment options can be actively promoted – not only in the pilot city but eventually also other cities in the country and potentially region – there is a significant scope for climate change mitigation. A quantification of the expected GHG emission reductions will be undertaken as part of the monitoring of the implementation of this response plan.

In addition to a reduction of Colombia's GHG emissions, the CTCNa is also expected to contribute to an improvement of the solid waste sector overall in terms of its environmental (e.g. reduced leachate production leading to less threat of groundwater contamination), economic (e.g. costs savings through added value from compost and recyclables) and social (e.g. less negative health effects on communities living close to landfills) impacts. In terms of the latter, it is also expected that through the adoption of alternative MSW management processes and technologies, the informal sector (i.e. waste pickers) can be better integrated, contributing to more sustainable livelihoods and a better quality of life.

2.10 Monitoring

Project monitoring and evaluation (M&E) will be conducted in line with established procedures of the CTCN. The M&E activities are to be elaborated on the basis of the indicators defined in the logframe (section 2.2), which defines the means of verification, as well as the work plan as detailed in section 2.7. Close coordination with the M&E activities to be conducted under the NAMA will be sought. In addition, efforts will be undertaken to quantify the expected GHG benefits. The NDE will be responsible for assuring that all activities are implemented in a timely manner by all partners involved.

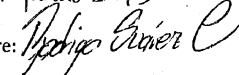
Signatures of the requesting country

NDE

Name: Rodrigo Suarez Castaño

Title: Director Climate Change

Date: 24 febrero 2015

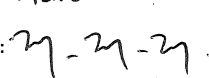
Signature: 

Request Proponent

Name: María del Mar Mozo Muriel

Title: DAGMA Director

Date: 2 marzo 2015

Signature: 

Signatures of the CTCN

CTCN Director

Name: Jukka Uosukainen

Title: CTCN Director

Date:

Signature:

Climate Technology Manager

Name: Patrick Nussbaumer

Title: CTCN Climate Technology Manager

Date: 5 Mar 2015

Signature: 