

## Technology concept submission form

### Guidelines:

- Technology concept submission form should be completed by an applicant organisation in collaboration with the national focal points to the CTCN (National Designated Entity, NDE) and the Adaptation Fund (Designated Authority) of the country. Please see updated contact list of the NDEs and the Designated Authorities through web-links as below:
  - NDE: <http://unfccc.int/ttclear/support/national-designated-entity.html>
  - Designated Authority: <https://www.adaptation-fund.org/apply-funding/designated-authorities/>
- The form must be signed by the NDE before official submission to UNEP-CTCN.
- The form can be submitted as a Word file containing a digital signature or as a signed and scanned PDF file in combination with an un-signed Word file.
- For the technology concept submitted by multiple countries, all the NDEs of the respective countries shall sign identical forms before official submission to UNEP-CTCN.

<b>Country or countries:</b>	REPUBLIC OF SOUTH AFRICA
<b>Title of the technology concept:</b>	<i>Tree Monitoring for Climate Adaptation in the City of Mbombela</i> The technology seeks to monitor the tree planting program to account for species type, growth and health and the contribution towards carbon sequestration made by each tree planted. There is cooperative governance in tree planting in all spheres of government yet limitations in monitoring tree health and growth. Consequently, statistical information available is based on assumptions. The City of Mbombela thus require assistance in developing a GIS based tree monitoring tool to bridge this gap given the amount of resources made available for tree planting each year.
<b>NDE:</b>	Department of Science and Technology
<b>Applicant:</b>	City of Mbombela Martin Pearson Manager: Parks <a href="mailto:Martin.Pearson@mbombela.gov.za">Martin.Pearson@mbombela.gov.za</a> 1 Nel Street, Mbombela 1200

<b>Geographical scope:</b>
<input checked="" type="checkbox"/> Community level <input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> National <input type="checkbox"/> Multi-country
The project is at municipal level. It covers the City of Mbombela, which is 7139km <sup>2</sup> in extent. However, it can be duplicated to the entire Ehlanzeni District and province.

**Problem statement related to climate change** (up to one page):

The City of Mbombela has a tree planting program initiated with a view to prevent species extinction, carbon storage / sequestration efforts undertaken in the country. Every year a target is set for tree planting which does take place but there is no system to determine which trees survived and their growth and health over the years. Consequently, the municipality is unable to provide concrete statistics for its carbon savings through tree planting. In addition, the tree planting program puts emphasis on planting threatened tree species, with this challenge the municipality cannot conclusively account for its contribution towards replanting these trees. Climate change itself affect tree growth and health and if left un-monitored may lead to species extinction and habitat degradation. The impact of climate change and the city's adaptation efforts necessitated the planting of drought resistant trees. The biggest challenge however is the inability to account for the existence, health and growth of the trees over time.

**Past and on-going efforts to address the problem** (up to half a page):

The City of Mbombela (COM) has been planting trees in the rural townships including new settlement established such as RDP housing projects. This has been done in conjunction with the Department of Environment, Forestry & Fisheries (DEFF). These are community based projects where community members are used to implement the project with the COM and DEFF overseeing & guiding the projects. The community members are paid a stipend for this work.

The water sector is the most vulnerable sector to climate risks in the municipality. An alien species control plan is in place to guide the municipality in its invader species control program. These two programs are interlinked in that where alien vegetation has been removed, indigenous vegetation is planted including trees. This does not only save the water resource, it also contributes to biodiversity enhancement and improve the ecological infrastructure.

A wetlands inventory has been developed for the municipality and priority wetlands identified. These are wetlands prioritized for rehabilitation and they include wetlands identified as important for disaster risk reduction and climate resilience, water resource management and biodiversity maintenance.

**Specific technology<sup>1</sup> barriers** (up to one page):

All spheres of government are involved in tree planting. For instance, Arbor Week activities are driven nationally by the Department of Environment, forestry and Fisheries. During this week all provinces and municipalities are involved in tree planting at a massive scale. However, there is no technology to monitor tree growth and health. The municipality is required in terms of its Climate Change Strategy to implement its climate actions to contribute towards the commitments made by the country to reduce its GHG emissions. Since the trees are not monitored, the reports are based on assumption and therefore inaccurate.

**Sectors:**

<sup>1</sup> *“any equipment, techniques, practical knowledge and skills needed for reducing greenhouse gas emissions and adapting to climate change” (Special Report on Technology Transfer, IPCC, 2000)*

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Please indicate the main sector(s) related to the technology concept:

- |   |  |   |  |
|---|--|---|--|
| <input type="checkbox"/> Agriculture                    | <input type="checkbox"/> Coastal zone management | <input checked="" type="checkbox"/> Disaster risk reduction | <input checked="" type="checkbox"/> Food security                  |
| <input checked="" type="checkbox"/> Forests             | <input type="checkbox"/> Human health            | <input type="checkbox"/> Marine and fishery                 | <input checked="" type="checkbox"/> Rural development (resilience) |
| <input type="checkbox"/> Urban development (resilience) | <input type="checkbox"/> Water management        |   |  |

Please add other relevant sectors:

Street Trees and the replacement of aging and incorrect tree species for planting along streets.

**Cross-sectoral enablers and approaches:**

Please indicate the main cross-sectoral enablers and approaches:

- |  |  |   |   |
|--|--|---|---|
| <input type="checkbox"/> Communication and awareness | <input type="checkbox"/> Economics and financial decision-making | <input checked="" type="checkbox"/> Governance and planning | <input checked="" type="checkbox"/> Community based |
| <input type="checkbox"/> Disaster risk reduction     | <input checked="" type="checkbox"/> Ecosystems and biodiversity  | <input type="checkbox"/> Gender                             |   |

**Technology concept requested (up to one page):**

GIS-based system to monitor each and every tree from the day it is planted. The system should monitor tree growth over the years and quantify the carbon it is able to sequester over the years and also have a GIS component. This estimate should be species-type based.

The overall objective is to plant trees in the rural areas including RDP housing projects which including fruit trees. This would also include plant along streets and in Parks.

The anticipated groups of activities would be tree planting municipal wide, establishing municipal nurseries municipal wide for the production and supply of trees for the tree planting projects.

The anticipated project activities would be to plant and take care of trees and the monitoring the survival and tree growth rate using suitable species for the municipal areas.

**Expected timeframe:**

12 months

**Anticipated gender and other co-benefits from the technology concept:**

*The City of Mbombela is 70% rural and most of its households are female headed. The food gardens around the city are owned and managed by women. These are direct beneficiaries of the tree planting program as they are paid stipends to plant trees. The benefits are cross cutting such as Biodiversity, Economic, Social and food provision re: fruit trees. In addition, the cultural aspect is covered through indigenous knowledge which they share with the project team in relation to the types of species they require, the rationale and their general observations of tree species changes over the years.*

*For more information you can find guidelines on the CTCN's website here:*

<https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development>

Further reading on gender can be found on the CTCN website here:

<https://www.ctc-n.org/technology-sectors/gender>

**Key stakeholders:**

*Please list the stakeholders who will be involved in the implementation of the micro-grants project and describe their role during the implementation (for example, government agencies and ministries, academic institutions and universities, private sector, community organisations, civil society, etc.).*

Stakeholders	Role to support the implementation of the micro-grants project
National Designated Entity	
Designated Authority	
Applicant	City of Mbombela
Please add as many stakeholders and lines as required.	Private sector – supply of trees. Non-Governmental Organizations – tree planting, education and awareness at community level Academic institutions – Research National Government – Supply of trees and reporting Provincial Government – Tree planting and reporting District Municipality – Tree planting and reporting Community Based Organisations – identification of areas for afforestation/reforestation and education and awareness Traditional Councils – Provision of land for afforestation/reforestation, indigenous knowledge and education and awareness.

**Alignment with national priorities (up to 2000 characters including spaces):**

<b>Reference document</b> (please include date of document)	<b>Extract</b> (please include chapter, page number, etc.).
Nationally Determined Contribution (NDC)	<b>Nationally Determined Contribution South Africa</b> Goal 4 – Develop an early warning, vulnerability and adaptation monitoring system for key climate vulnerable sectors and geographic areas for the period 2020 to 2030, and reporting in terms of the National Adaptation Plan with rolling five-year implementation periods (Page 4).

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	<p>PROPOSED UPDATED NATIONALLY DETERMINED CONTRIBUTION – SOUTH AFRICA 2021</p> <p>The National Climate Change Adaptation Strategy (NCCAS) which was approved by Cabinet in 2020 for implementation identifies priorities, which are also informed by the Global Framework on Climate Services (GFCS). The priority sectors are identified as, biodiversity and ecosystems; water; health; energy; settlements (coastal, urban, rural); disaster risk reduction, transport infrastructure, mining, fisheries, forestry and agriculture. The NCCAS identifies interventions that are used as the basis for meeting South Africa’s obligations to meet and outlined adaptation goals. The interventions address both highly vulnerable sectors as well as geographic areas (Page 10).</p>
<p>Technology Needs Assessment</p>	
<p>National Adaptation Plans</p>	<p><b>National Development Plan 2030 – 2010</b></p> <p>South Africa is a country which is rich in biodiversity, hence signifying needs for interventions to be protected. The National Development Plan 2030, Chapter 5 highlights the need to promote biodiversity and conservation for the natural assets (Page 201). The public sector has a role to play in ensuring optimal investment in ecological infrastructure collaborating with the private sector. City of Mbombela falls within the important biodiversity municipalities, with threatened biodiversity. The municipality realises a need to adapt with the fourth industrial revolution through incorporating adaptive technology into managing biodiversity assets (Page 215).</p> <p><a href="https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf">https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf</a></p> <p><b>National Climate Change Adaptation Strategy – 2020</b></p> <p>Promote the expansion of tree cover, forests and forest plantations in order to maintain the production of wood raw materials, and help reduce temperatures in cities, amongst other benefits. This will involve identifying stakeholders that can play a role in the establishment and increase of tree cover and promotion of wood use in local (housing/furniture/other) structures. Other actions will include identifying areas where tree planting can occur, identifying suitable tree species especially drought resistant species, and long-term planning including risk management, and water catchment planning amongst others. These activities will ensure equitable benefits for women and men, including the most vulnerable groups (Page 29).</p> <p><a href="C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\Final NCCAS.pdf">C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\Final NCCAS.pdf</a></p>

<p>Add others here as relevant</p>	<p><b>Mpumalanga Province Climate Change Adaptation Strategy – 2016</b></p> <p>Biodiversity in Mpumalanga is vulnerable to climate change impacts. Given the large number of people who depend on natural resources for their livelihoods, this is a threat both to human populations as well as the biodiversity of Mpumalanga’s ecosystems. Preserving Mpumalanga’s ecosystems in the face of climate change pressures is key, especially in light of the fact that Mpumalanga’s tourism industry is extremely dependent on the health and robustness of the province’s natural resources, its animal life, and its ecological systems (Page 28).</p> <p><a href="C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\Adaptation Strategy Booklet.pdf">C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\Adaptation Strategy Booklet.pdf</a></p> <p><b>City of Mbombela Climate Change Strategy – 2018</b></p> <p>The COM recognises the importance of climate change response and its role in the future sustainable social and economic development of the municipal area. The COM acknowledges the multi-faceted threats and opportunities that climate change poses to its economy, vulnerable communities and unique ecosystems. As such, the COM provides a commitment in its Vision to ensure the municipality’s resilience to climate change in the future, as per its municipal mandate. The climate change vision for the COM is: “A municipality resilient to climate change, committed to sustainable development and greening solutions and principles to drive future economic and community development in both the rural and urban sectors of the City of Mbombela (Page 27).</p> <p><a href="C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\480102 CoM Climate Change Strategy Final 20180126.pdf">C:\Users\khethiwe.malaza\Documents\FundingAPPs\2020\Supporting docs\480102 CoM Climate Change Strategy Final 20180126.pdf</a></p> <p><b>City of Mbombela Environmental Management Framework – 2021</b></p> <p>A programme to cultivate rare and endangered vegetation species should be initiated in City of Mbombela (COM) and the community should be included.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Prepare and implement an Invasive Species Monitoring, Control and Eradication Plan.</li> <li><input type="checkbox"/> Implement environmental awareness and education programmes in CoM.</li> <li><input type="checkbox"/> Implement a greening programme in urban and rural areas in CoM to provide shade, erosion protection, and beautification.</li> <li><input type="checkbox"/> Sustainable exploitation of the wide range of tourism opportunities on offer in CoM, including leisure tourism, hiking, adventure sports and scenic viewing.</li> <li><input type="checkbox"/> Support community – public – private partnerships around conservation.</li> <li><input type="checkbox"/> Promote wildlife economy and green jobs.</li> </ul>

- Encourage biodiversity stewardship amongst landowners (Page 106).

<C:\Users\khethiwe.malaza\Documents\Environmental Framework\NEMA\Reports\Updated EMF.pdf>

**Development of the technology concept** (up to 2000 characters including spaces):

*Please describe how the technology concept was developed at the national level and the process used by the NDE and the Designated Authority to approve the technology concept before submitting it (who initiated the process, who were the stakeholders involved and what were their roles?) and describe any consultations or other meetings that took place to develop and select the technology concept, etc.*

The initiator of the process was the City of Mbombela. They responded to a call for proposals issued by the NDE-RSA.

Upon receipt of the proposal the NDE-RSA did an initial assessment to determine alignment with national priorities. This was followed by a meeting of the NDE-RSA Advisory Committee. The Advisory Committee consists of representatives from the following national Government Departments:

- Department of Forestry, Fisheries and Environment – Climate Change Mitigation; Climate Change Development and International Mechanisms
- Department of Water and Sanitation – Climate Change
- Department of Science and Innovation – Earth Systems Science; Multilateral Environmental Agreements

The role of the Advisory Committee is to review the applications and advise the NDE-RSA on whether they do indeed meet national imperatives or will add to the national efforts to respond to climate change.

**Background documents and other information relevant for the technology concept:**

Nationally Determined Contribution South Africa  
National Development Plan 2030 – 2010  
National Climate Change Adaptation Strategy – 2020  
Mpumalanga Province Climate Change Adaptation Strategy – 2016  
City of Mbombela Climate Change Strategy – 2018  
City of Mbombela Environmental Management Framework – 2020

**Consultation with the Designated Authority of the country:**

*Please indicate whether the technology concept has been developed in consultation with the Designated Authority of the country.*

- The Designated Authority of the country has been engaged in the design of the technology concept and will be involved in the further process leading to the implementation of the micro-grants project.

**Monitoring and evaluation:**

By signing this form, I affirm that processes are in place in the country to monitor and evaluate the micro-grants project funded by the Adaptation Fund through UNEP-CTCN. I understand that these processes will be explicitly identified in the Project Concept Note (response plan of the micro-grants project) and that they will be used in the country to monitor the implementation of the micro-grants project.

I understand that, after the completion of the micro-grants project, I shall support UNEP-CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

**Signature:**

NDE name:

Date:

Signature:

**THE COMPLETED FORM SHALL BE SUBMITTED THROUGH A WEB-LINK AS BELOW:**

<https://www.ctc-n.org/adaptation-fund-climate-innovation-accelerator-afcia-unesp-ctcn>

UNEP-CTCN is available to answer all questions and provide guidance on the application process.