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| Country: | South Africa |
| Request Identification Number: | 201600001 |

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| Title: | The development of Technology Road Maps at Sub-national level |
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Summary of the CTCN Technical Assistance

While Climate change is a global problem influenced by an array of interrelated factors, climate change is also a local problem with serious impacts foreseen for South Africa, including for the province of KwaZulu-Natal. Acknowledging the overall vulnerability of South Africa and the local vulnerabilities which vary between provinces, there is a need for conducting local level assessments of technology needs to overcome challenges of ensuring a climate resilient low carbon development path.

The main outputs planned in the present technical assistance include: (1) technology identification and prioritization; (2) development of technology road maps; and (3) conduction of training course to increase capacity on energy efficiency and energy audits.

It is expected that this technical assistance will have a significant impact on the capacity of the province of KwaZulu-Natal to pursue a climate resilient low carbon development path, through improved access to technologies for adaptation in the water sector and for improved energy efficiency in the energy sector. The implementation of this technical assistance contributes to local and national priorities in the water and energy sector in the KwaZulu-Natal. It will have a duration of one year and will be implemented in close collaboration with the NDE of South Africa, Economic Development, Tourism and Environmental Affairs Department (EDTEA), iLembe District Municipality, South African Local Government Association – Kwa Zulu Natal, National Department of Higher Education and other key institutions.

1. Overview of the CTCN technical assistance

1.1 Technology aspects

In line with the applicant's request the sectors selected for this technical assistance are:

1. Energy sector, mitigation
2. Water sector, adaptation

As a first step a long list of relevant technologies for mitigation (energy sector) and adaptation (water sector) will be identified based on the local context for Kwazulu-Natal Province and to address the needs for a climate resilient and low carbon development paths within the region. A prioritization among these technologies will thereafter be undertaken based on criteria reflecting local conditions. For each of the priority technologies (3 for mitigation, 3 for adaptation) technology road maps will be developed, including a) thorough assessments of barriers to transfer and diffusion of the technologies, b) identification of measures to overcome these barriers, and c) development of technology road maps for each technology.

1.2 Objectives (outcomes)

The objective of this Response Plan is to elaborate technology road maps for three technologies for each of the energy (mitigation) and water (adaptation) sectors.

The main short-term objective of the assistance provided by CTCN is to analyse the feasibility and sustainability of the deployment of 3 specific technologies for energy (mitigation) and water (adaptation) sectors to allow for a low carbon and climate resilient development path in Kwazulu-Natal Province, South Africa.

The aim is also to identify and analyse local stakeholders potential to in development and deployment of these technologies.

1.3 Results (outputs expected from CTCN assistance)

The main outputs planned under the present technical assistance are the following:

- 1 The energy (mitigation) and water (adaptation) technologies are identified and prioritized based on local context and three technologies for each of these two sectors are selected for further analysis under this response plan.
- 2 A barrier analysis for each of the three technologies per sector is undertaken in order to identify potential barriers to their transfer and diffusion, including economic feasibility for the Kwa-Zulu Natal Province. The study will include an in-depth analysis of each of the technologies, the current experience with the technologies in target areas and/or in other contexts, the economic feasibility (cost-effectiveness, price of materials, operation and maintenance costs, potential providers, ability of the technology to create employment, current demand and supply etc.), the social feasibility (acceptability, attitude and perception of technology, social impact including the number of beneficiaries and accrued benefits, land-use patterns, gender and governance issues etc.), together with a risk analysis. Moreover, the analysis will include identification of required enabling framework conditions for transfer and diffusion of these technologies.
- 3 Multi-stakeholder consultations are conducted to identify potential beneficiaries and providers of the technologies for these selected water technologies.
- 4 Based on outcomes from barrier analyses and identification of required enabling frameworks, Technology Road Maps will be developed for each of the three technologies for each of the energy (mitigation) and water (adaptation) sectors
- 5 A dissemination workshop is held to share findings from development of the road maps and to capacitate relevant public institutions and private sector actors to initiate and implement the technologies. The workshop will be promoting collaboration approaches and the business case for the deployment of selected technologies.
- 6 Based on outcomes from this technical assistance, a project concept note is developed for each of the technologies (six in total) in order to use the CTCN technical assistance to catalyze larger financing (i.e. to enable piloting of technologies, supporting implementation of technologies, etc.).

- 7 Capacity building is carried out for conducting energy audits and energy needs assessment at iLembe District Municipality
- 8 Final report summarizing all activities and outputs and presenting the main conclusions and recommendations for future action.

1.4 Expected use of outputs

The outputs produced under this technical assistance will be of immediate use for the local stakeholders in Kwazulu Natal with the objective on progressing towards a low carbon climate resilient development path. One key objective of these programmes is to enable the province to integrate the Technology Road Maps in planning initiatives when appropriate. The technologies identified and analysed under this assistance will provide a knowledge base and platform for technology pilot projects which can be submitted to funds such as the Green Climate Fund (GCF). The identified technologies and feasibility studies elaborated under the present CTCN assistance will therefore be instrumental to these future pilots. The outputs, outcomes and recommendations derived from the present CTCN assistance will thereby contribute to address a significant knowledge gap and provide an important platform for these long term programmes and will also help to catalyse larger financing.

2. Description of the Assistance

2.1 Activities

Activity 1 – Description

The first activity will identify and prioritize technologies for the energy (mitigation) and water (adaptation) sectors respectively.

Activity 1 – Technology Identification and Prioritization

The first activity will identify a long list (10-12) of technologies for each of the two sectors. This will include existing technologies which have potential to be up scaled in Kwazulu-Natal Province, and also technologies which are currently not available or accessible in the province.

Activity 1.1

The technical assistance team identifies a long list of technologies for each of the two sectors. This will be done in collaboration with the proponent and relevant stakeholders. Technology fact sheets for each of the 10-12 technologies per sector will be elaborated.

Activity 1.2

The technical assistance team in collaboration with the proponent identifies nationally appropriate criteria to which the technologies should be measured against during the prioritization. Thereafter, the technologies are prioritized in a prioritization workshop including relevant local stakeholders, including private and public sectors, as well as other relevant institutions. Based on this prioritization exercise three technologies for each of the two sectors are selected for further analysis.

Activity 1 – Deliverables

| Deliverables | Delivery date |
|---|----------------------|
| <i>Long list of technologies, 10-12 per sector</i> | <i>Week 4</i> |
| <i>Technology Fact sheets, one per technology</i> | <i>Week 6</i> |
| <i>List of criteria for MCA prioritization</i> | <i>Week 8</i> |
| <i>List of relevant stakeholders for prioritization</i> | <i>Week 8</i> |
| <i>Workshop on prioritization, 2 days</i> | <i>Week 11</i> |

Activity 2 – Development of Technology Road Maps

Assess how the prioritized technologies can be implemented in the Province and how implementation circumstances could be improved by addressing the barriers and developing an enabling framework based, *inter-alia*, on undertaking of local market and other assessments, as may be required.

Activity 2.1

Experts conducts desk study where available documents (scientific articles, reports, surveys etc.) covering relevant topics related to the chosen technologies (e.g. on current experience with these in South Africa and other countries, technology briefs etc.), the national energy and water sector policy context in South Africa, the local context in Kwazulu-Natal (socio-economic context, energy sector, water sector, land-use patterns, governance etc.) etc.

This first secondary data collection phase is followed by a primary data collection phase for qualitative study. This exercise includes selection of interviewees, development of interview guides/questionnaires and interviews/focus groups with relevant stakeholders (energy and water service providers, technology providers, technology beneficiaries, etc.). List of interviewees and interview guides is included in final report as annex.

Activity 2.2

Prepare the Technology Road Maps, in collaboration with proponents and key stakeholders identified in Activity 1, which will outline essential elements of an enabling framework for technology transfer consisting of market development measures, institutional, regulatory and financial measures, and human and institutional capacity development requirements. It will also include a detailed plan of actions in order to implement the proposed policy measures and estimate the need for external assistance to cover additional implementation costs.

Activity 2.3

Conduct project concept notes for each of the (6) selected technologies. The project concept notes presents concrete actions, as a means to implementation of the technology road maps as elaborated in activity 2.2. The project concept is formulated so that it can be read and understood as a stand-alone document.

Activity 2 – Deliverables

| Deliverables | Delivery date |
|--|----------------------|
| <i>Technology Road Maps for the deployment and diffusion of priority technologies.</i> | <i>Week 35</i> |

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| <i>Project concepts for each Technology Road Map</i> | <i>Week 43</i> |
| <i>Dissemination workshop</i> | <i>Week 50</i> |

Activity 3 - Development of capacity in energy efficiency and conducting energy audits

Develop system for conducting energy audits and energy needs assessment at iLembe District Municipality

The technology roadmaps to be developed in Activity 2 will be at the level of the province and therefore will be applicable to all district municipalities in the province. This raises the need to pilot their implementation in at least one district municipality to demonstrate how the deployment of the highlighted technologies will be undertaken and what form will the upscaling of the deployment to other district municipalities will take. This will focus on the energy sector, but should be done in a way that builds capacity, through Technical Vocational Education and Training.

Activity 3.1

Develop short course for energy efficiency training and energy audits. The training course will have various components agreed with by CTCN energy efficiency experts at UNEP DTU Partnership and Umgungundlovu TVET College.

Activity 3.2

Identify a small group of students from existing courses that will be trained in this area, through whom the pilot training will be tested. These should be students in the heavy current electricity training courses. First preference will be given to students coming from iLembe District, from previously disadvantage communities, to build local skills and local job creation.

Activity 3.3

Provide training to the selected group of students.

| Deliverables | Delivery date |
|---|----------------------|
| <i>Roadmap for short course for energy efficiency training and energy audits.</i> | <i>Week 45</i> |
| <i>Group of students identified</i> | <i>Week 47</i> |
| <i>Training workshop of students</i> | <i>Week 49</i> |

2.2 Synergies and Baseline Setting

At the time of the preparation of the technical assistance, the South African government had completed a Greenhouse Gas Mitigation Technology Strategy and Implementation Plan, and was at the early stages of updated the technology needs assessment for climate change adaptation and mitigation. Energy efficiency technologies feature quite prominently in the former as GHG mitigation technologies that in the shorter term (5 to 10 years). As the update of the TNA takes shape in the months following the response plan (or parallel to it), these technologies will also be included. There

is therefore sufficient high level technology knowhow in South Africa, however this knowledge needs to filter down to municipalities where implementation actually takes place.

Another solid baseline relevant to the response plane is the advanced network of TVET colleges in South African education system. These colleges have, for many decades, been offering training to aspiring electricity technicians. This technical assistance will use this experience during its implementation.

2.3 Timeline

| Activity | Month | | | | | | | | | | | |
|--|-------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 Technology identification and prioritization | | | | | | | | | | | | |
| 1.1 Long list of technologies | ■ | | | | | | | | | | | |
| 1.2 Technology Fact sheets developed | | ■ | | | | | | | | | | |
| 1.3 List of criteria for MCA prioritization | | ■ | | | | | | | | | | |
| 1.4 List of relevant stakeholders for prioritization | | ■ | | | | | | | | | | |
| 1.5 Workshop on prioritization, 2 days | | | ■ | | | | | | | | | |
| 2 Development of Technology Road Maps | | | | | | | | | | | | |
| 2.1 Design of Technology Road Maps | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 2.2 Development of Project Concepts Notes | | | | | | | | | | ■ | ■ | ■ |
| 2.3 Dissemination workshop | | | | | | | | | | | | ■ |
| 3 Capacity on EE and energy audits | | | | | | | | | | | | |
| 3.1 Develop material | | | | | | | | | | | | ■ |
| 3.2 Identification of pilot students | | | | | | | | | | | | ■ |
| 3.3 Training workshop | | | | | | | | | | | | ■ |
| Monitoring and evaluation | | | | | | | | | | | | |
| M&E teleconference with country and international partners | | | | | | | | | | | | ■ |
| M&E short summary about lessons learned in the activities (cf section 3.4) | | | | | | | | | | | | ■ |

2.4 Expertise required

This section describes the expertise required to deliver a successful technical assistance, in order to achieve the described objectives and outcomes. The expertise expected for experts to successfully deliver this technical assistance includes:

- Technical expertise with energy and water technology transfer and diffusion in Africa.
- Demonstrated experience and in depth expertise in designing energy and water projects projects, with focus on the particularities of technology transfer and diffusion.
- Expertise and knowledge regarding the design of technology road maps in developing countries, with attention to the technical, economic and social feasibility of technologies.
- Proven experience with technology identification and prioritization using Multi Criteria Assessment.
- Familiarity with multiple stakeholder consultations and workshop facilitation
- Previous experience with providing technical assistance to government institutions at multiple levels in the country/region.

- Proficient analytical and writing skills.

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| Activity 1 | Technology identification and prioritization |
| <i>Expert 1</i> | <i>Water(adaptation) and energy(mitigation) expert(s)</i> |
| <i>Expert 2</i> | <i>MCA expert</i> |
| <i>Event 1</i> | <i>Prioritization workshop (20 participants)</i> |
| <i>Materials</i> | <i>Technology Fact sheets</i> |
| <i>Others</i> | <i>Consultations meetings</i> |
| Activity 2 | Development of Technology Road Maps |
| <i>Expert 1</i> | <i>Design of Technology Road Maps, adaptation</i> |
| <i>Expert 2</i> | <i>Design of Technology Road Maps, mitigation</i> |
| <i>Expert 1</i> | <i>Development of Project Concepts Notes, adaptation</i> |
| <i>Expert 2</i> | <i>Development of Project Concepts Notes, mitigation</i> |
| <i>Event 1</i> | <i>Consultation Meetings</i> |
| <i>Event 2</i> | <i>Dissemination workshop (50 participants)</i> |
| Activity 3 | Capacity on EE and energy audits |
| Expert 3 | Develop road map for short course on energy efficiency and energy audits |
| Expert 3 | Identify students for training course |
| Expert 3 | Conduct training course |

2.5 Main partners

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|---|---|
| <i>NDE</i> | <i>Coordination of the project</i> |
| <i>National Department of Energy</i> | <i>Policy guidance and direction</i> |
| <i>National Department of Water and Sanitation</i> | <i>Policy guidance and direction</i> |
| <i>National Department of Science and Technology</i> | <i>Policy guidance and direction, TNA</i> |
| <i>National Department of Higher Education</i> | <i>Driver of TVET colleges</i> |
| <i>Water Research Commission</i> | <i>Technical Assistance given to WRUAs during implementations of pilots in the Green Growth programme</i> |
| <i>Kwa Zulu-Natal – Cooperative Governance and Traditional Affairs</i> | <i>Administration of local government infrastructure development programmes</i> |
| <i>South African Local Government Association – Kwa Zulu Natal</i> | <i>Administration of local government infrastructure development programmes</i> |
| <i>Kwa Zulu Natal Public Works</i> | <i>Responsible for providing accommodation and property management services to all the other ministries of the South African government</i> |
| <i>Economic Development, Tourism and Environmental Affairs Department (EDTEA)</i> | <i>Co-applicant</i> |

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| <i>iLembe District Municipality</i> | <i>Co-applicant</i> |
| <i>Province Government</i> | <i>Support and participate in research</i> |

2.6 Indicative budget

| Activities | Estimated Budget (USD) |
|-----------------------------------|-------------------------------|
| Activity 1 | 20 000 |
| Activity 2 | 50 000 |
| Activity 3 | 10 000 |
| Measures, evaluation and learning | 5 000 |
| Total | 85 000 |

Implementation of this Response Plan will be led by the Climate Technology Centre (including selection, contracting, supervision and monitoring of implementation partners) in close coordination with the corresponding National Designated Entity and relevant national actors. Implementation will be led by an International Consortium or Network Partner of CTCN.

2.7 Gender considerations

In South Africa, as in many other countries in Africa, water investments have direct positive impacts on women's lives. For example, data from Kenya shows that inhabitants spend 1-2 hours daily for fetching water, a task which is for the most part undertaken by women. Increased and improved access to water services is therefore fundamental to promoting gender equality in these areas, permitting women to liberate time for e.g. income generating activities. Equally for energy technologies, these have different impacts on women's and men's lives, which will be incorporated into the different stages of developing the Technology Road Maps.

Gender and youth issues will be taken into consideration in the Technology Road Maps (i.e. involvement of women in local water management etc.) and will also be included in the evaluation phase.

2.8 Risk identification and risk mitigation

| Risk | Consequence | Probability | Mitigation measure |
|---|--|-------------|---|
| Lack of stakeholder buy-in | Unsustainability of technical assistance | Low | Early involvement of stakeholders; transparent communication of results and next steps. |
| Private sector actors are not identified/interested | No private sector ownership is created | Medium | Economic viability of the project/technology should be very clear. Focused and informed identification of actors, early |

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| | | | collaboration and clear communication of business case. |
| Limited awareness of technologies | | Medium | All technologies identified as suitable need to be communicated to all stakeholders |
| High initial costs of installing the technologies | Unsuitability of technologies for target areas No technology is installed | Low | Make sure that identified technologies are low costs A more inclusive, participatory process in the stakeholders' consultations and interviews |
| Security issues | Put a hold to the implementation. Unsustainability of the technology | Medium | Identify risk at the early stage of technology and sector prioritisation. Enforcing the inclusion of local communities, CBOs, NGOs of the area. |
| Cultural beliefs and practices e.g where women can't be offered leadership/ management positions | Lack of involvement of women | Medium | Capacity development & Sensitizing actors |

3. Long-term impacts of the assistance

3.1 Expected climate change-related benefits

In the long-term, the assistance provided will pave the way for the transfer and diffusion of environmentally sustainable technologies in the water and energy sectors in Kwazulu-Natal. The long-term objective that this technical assistance contributes to is thus an improved resilient of water technologies for climate vulnerable households and communities in Kwazulu-Natal province in South Africa. Outputs will thus serve to build the resilience of these population groups to water stress, by contributing to climate-proofed infrastructure as well as it will contribute to a low emission path in the province along with creating opportunity for the province to be a front runner in developing environmentally sound technologies. The technical assistance will also contribute to positive long-

term impacts such as income generation, increased productivity in agricultural systems, poverty reduction, improved health, reliably low emission energy sources, and increased gender equality.

| | CTCN climate technology impact | Anticipated contribution from CTCN assistance |
|-----------|--|--|
| 1 | Climate technologies adapted to national context are identified and prioritized to enable their deployment and/or transfer in the requesting countries | An in-depth analysis of the technical, social and social feasibility of three selected green water technologies is provided |
| 2 | New national Technology Needs Assessment (TNA) and Technology Action Plan (TAP) as a result of the response | Assistance in line with TNA |
| 3 | Progress made against mitigation objectives (i.e. energy and carbon intensity reduction) as a result of the response | Outputs under this assistance contribute to long term objective of low carbon emission path, through the identification and promotion of more sustainable low emission energy technologies |
| 4 | Progress made against adaptation or resilience objectives (e.g. climate vulnerability index improvement) as a result of the response | Outputs under this assistance contribute to long term objective of building the resilience of communities vulnerable to water stress, through the promotion of more knowledge and sustainable financing mechanisms for climate-proofed infrastructure in the water sector. |
| 5 | New mitigation or adaptation technology projects/initiatives implemented as a result of the response | Assistance is instrumental to future funding among others and this technical assistance would serve as a source for replication to other sectors. |
| 6 | New or strengthened policies/ laws developed, approved and enacted as a result of the response | Providing new background knowledge for the development of new/strengthening of existing policies/ laws |
| 7 | New policies/laws where climate change was mainstreamed as a result of the response | - |
| 8 | Country integrating climate change mitigation and/or adaptation issues into its planning and policies as a result of the response | Providing new background knowledge for the development of new/strengthening of existing policies |
| 9 | New or strengthened Public-Private Partnerships (PPP) created directly as a result of the response | Providing background for informed investments in technology deployment is key to assistance |
| 10 | New or strengthened twinning arrangement created as a result of the response | - |
| 11 | Capacities to access and attract public and private finance increase to enable financing | Providing background for informed investments in technology deployment is key |

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| | of technology deployment | to assistance |
| 12 | Post-response intervention funding attributable to the response. | A concept note for future projects based on assistance and identification of financing institutions is essential to the assistance |
| 13 | Framework and analysis of local production developed to enable deployment of national production of climate technologies | Technology Road Maps are based on local context |

3.2 Co-benefits

Please describe the anticipated economic, social, and environmental co-benefits of the CTCN assistance. Indicate in the table below how the CTCN assistance will contribute to one or more of the Sustainable Development Goals (SDG)¹.

| | Sustainable Development Goal | Contribution from CTCN assistance |
|---|--|---|
| 1 | End poverty in all its forms everywhere | Provides opportunities for income generating activities |
| 2 | End hunger, achieve food security and improved nutrition, and promote sustainable agriculture | Improved accessibility and quality of water services leads to improved hygiene |
| 3 | Ensure healthy lives and promote well-being for all at all ages | Improved accessibility and quality of water services leads to improved health |
| 4 | Ensure inclusive and equitable quality education and promote life-long learning opportunities for all | Accessibility to water encourages girl education opportunities. It also improves all aspects of livelihood including education. |
| 5 | Achieve gender equality and empower all women and girls | Gender equality is an essential co-benefit of improved access to and quality of water services and improved energy means. The accessibility to energy as well as water will also liberate women to more productive economic activities |
| 6 | Ensure availability and sustainable management of water and sanitation for all | Sustainable management of water resources through climate-proofed technologies and sustainable finance mechanisms |
| 7 | Ensure access to affordable, reliable, sustainable, and modern energy for all | Assistance will contribute to less costly, reliable and sustainable energy. |
| 8 | Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | The assistance will form basis for projects where the objective among others is to create employment. This research will also result in identification and assessment of technologies which are economically feasible for domestic, agricultural purposes and other purposes. |

¹ Please note that the SDGs as listed here reflect their current status and may be subject to change.

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| 9 | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | Support to a sustainable model for providing climate-proofed infrastructure |
| 10 | Reduce inequality within and among countries | Accessibility and sustainable management of water as well as sustainable use of energy are sustainable development goals for all nations. CTCN's assistance to South Africa in achieving these goals will bridge the inequality gap with other nations |
| 11 | Make cities and human settlements inclusive, safe, resilient and sustainable | Assistance aims at improving energy and water access and quality in poor urban settlements |
| 12 | Ensure sustainable consumption and production patterns | Promotes sustainable energy use and water resource management |
| 13 | Take urgent action to combat climate change and its impacts | Use of wind, solar power and other low emission technologies |
| 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 | Promotes sustainable water resource management as well as sustainable energy resources to avoid environmental depletion |
| 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 | Accessibility of water will reduce water related conflicts, reduce inequalities and build effective, accountable and inclusive institutions from the community level (management at CBO level) to National level (WSTF). |
| 17 | Strengthen the means of implementation and revitalize the global partnership for sustainable development | The Technology Road Maps and project concept notes will open areas of global partnership in sustainable development in the water and energy sectors. |

3.3. Post-assistance plans and actions

Immediate post-assistance plans include actions that may support the replication of the Technology Road Maps and the scaling-up of selected water and energy technologies to be deployed for other sectors in the Kwazulu-Natal Province. Immediate post-assistance plans and actions based on the recommendations and results produced under the CTCN assistance also include the direct instrumental use of the knowledge produced on the technologies. Based on the Technology Road Maps, the private sector and other stakeholders will have the potential to use the generated information to accelerate deployment of climate resilient and low carbon technologies.

Kwazulu-Natal Province will utilize the post- technical assistance to catalyse for further resource mobilization to compliment the traditional development partners to include private sector financiers.

3.4 Monitoring and Reporting of technical assistance results and impacts

Expected activities and milestones under this assistance are explicitly described in sections 1.3,3 and the performance indicators table below (see also log frame in annex). Activities progress and deliverables will be monitored closely by the Lead Implementer of this Response Plan with the collaboration of the NDE in Kenya and CTCN. The Lead Implementer is responsible for verifying project progress against timeline and associated milestones and communicates these results to the NDE and CTCN. At the end of each activity, the Lead Implementer will provide a short summary of lessons learned of the activity reflecting on the progress, successes and challenges encountered during the activity, and include recommendations on future actions needed. Every month a teleconference with country and international partners is held to communicate the state of advancement of the project, challenges, possible needs for adjustments etc. The Lead Implementer is responsible for planning these. All suggested changes to the activities, processes and/or approaches as outlined in current response plan must be accepted by the CTCN and NDE before they can be applied.

| Performance indicators of CTCN Assistance | | | | | |
|---|---|--|---|---|--|
| Response output <i>(linking to sec 1.2)</i> | How output will be used to ensure creation of result | Expected result | Expected outcome of result <i>(linking to sec 1.1)</i> | Anticipated impact that outcome will produce <i>(linking to section 3)</i> | |
| Identification and prioritization of technologies | <i>Selected technologies in water and energy sectors</i> | <i>List of technologies provided for the two feasibility study</i> | <i>Technologies chosen for feasibility studies</i> | - | |
| Barrier analysis for each of the three technologies per sector | <i>Recommendations on how to overcome barriers for technology transfer and diffusion of selected technologies</i> | <i>Two barrier analysis reports; one for water sector, one for energy sector. Reports cover three technologies each.</i> | <i>Barriers for technology transfer and diffusion identified</i> | <i>Increased focus on removal of key barriers for technology transfer and uptake in energy and water sectors in Kwa Zulu Natal, which has a population of approximately 11 million people</i> | |
| Multi-stakeholder consultations to identify potential technology beneficiaries and providers | <i>Holding of consultative meetings with different relevant stakeholders in the Water and Energy sectors</i> | <i>Identification of opportunities for overcoming identified barriers</i> | <i>Increased knowledge of means to overcome barriers.</i> | <i>Increased local awareness of climate appropriate water and energy technologies for Kwa Zulu Natal province, which covers an area of 94,361 km²</i> | |
| Technology Road Maps for each of the three technologies per sector | <i>Technology road maps will be used as a basis for the development of project concept notes</i> | <i>Road maps for technology transfer and diffusion are provided</i> | <i>Policy makers and project funders can make informed decisions on investments</i> | <i>High impact measures for technology transfer and diffusion are implemented to give access to appropriate sustainable technologies for the 11 million people in Kwa Zulu Natal</i> | |
| Dissemination workshop | <i>Conducting of dissemination workshops for both private and public actors interested in</i> | <i>Enhanced knowledge and capacity of technology actors</i> | <i>Increased knowledge of the PPP model and possibilities</i> | <i>Enhanced local capacity in PPP model implementation</i> | |

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| | <i>technologies for water and energy sectors</i> | | | |
| Project concept notes | <i>Concept note will be used as a basis for the implementation of future projects</i> | <i>Informed investment in water and energy supply</i> | <i>Increased access to sustainable water and energy supply</i> | <i>Improved livelihoods for the people in Kwa Zulu Natal through attracting funding for technology project implementation</i> |
| Final report | <i>Draft final report will be analyzed for the dissemination of output and recommendations</i> | <i>Lessons learnt and recommendations.</i> | <i>Increased investment in water and energy technologies</i> | <i>Availability and sustainable management of water resources and efficient energy supply</i> |

4. Signatures

Signatures of the requesting country

NDE

Request Proponent

Name:

Name:

Title:

Title:

Date:

Date:

Signature:

Signature:

Signatures of the CTCN

CTCN Director

Climate Technology Manager

Name: *JUKKA UOSUKAINEN*
Title: *DIRECTOR*
Date: *02/09/2016*

Name: *Jan Sjöberg*
Title: *TECHNOLOGY MANAGER*
Date: *05/09/2016*

Signature: *Jukka Uosukainen*

Signature: *Jan Sjöberg*

Annex 1: Response Logframe

| Activity (link to sec 2) | Description of sub-activities conducted by the CTCN | Output/ Deliverable (link to sec 2.9) | Expected Outcome (link to sec 3) | Main national partners involved | Objectively Verifiable Indicator (see Annex 5 guidance) | Means of Verification (data source, method of collection, responsibility and periodicity) |
|---|---|---|---|--|--|---|
| Activity 1: Technology identification and prioritization | Activity 1.1: Long list of technologies | List of selected water and energy technologies, 8-10 technologies for each sector | List of technologies provided for further elaboration | NDE, iLembe District Municipality, EDTEA | No. of technologies identified | Final list of long list of technologies Timely submission |
| | Activity 1.2 Technology Fact sheets developed | Fact sheets developed for each of the 8-10 technologies for water and energy sectors respectively | Information on technologies collected | NDE, iLembe District Municipality, EDTEA | No. of fact sheets | Technology fact sheets report |
| | Activity 1.3 List of criteria for MCA prioritization | 5-10 criteria identified | Technologies can be ranked according to criteria | NDE, iLembe District Municipality, EDTEA | No. of criteria | Justification for criteria selection report |
| | Activity 1.4 List of relevant stakeholders for prioritization | List of stakeholders identified | Experts available for prioritization workshop | NDE, iLembe District Municipality, EDTEA | No. of stakeholders | Stakeholders selection criteria/report |
| | Activity 1.5 Workshop on prioritization, 2 days | Workshop report | Technologies for each sector prioritized | NDE, iLembe District Municipality, EDTEA | Post workshop evaluation and feedback (and minutes) No. of participants | List of participants, workshop report, agenda, evaluation and feedback |
| Activity 2: | | | | | | |

| Activity (link to sec 2) | Description of sub-activities conducted by the CTCN | Output/ Deliverable (link to sec 2.9) | Expected Outcome (link to sec 3) | Main national partners involved | Objectively Verifiable Indicator (see Annex 5 guidance) | Means of Verification (data source, method of collection, responsibility and periodicity) |
|---|---|--|---|--|---|---|
| Development of Technology Road Maps | | | | | | |
| | <i>Activity 2.1 Design of Technology Road Maps</i> | Technology Road Maps for each of the 6 technologies, submitted in two sector reports | In-depth analysis of the actions and activities needed to overcome challenges faced in technology transfer and diffusion within the two sectors | NDE, iLembe District Municipality, EDTEA | Amount of data analysed; Quality of report; Diversity of sources used; Response Implementer efforts days; Recommendations; Level of detail used | Technology Road Map, Water Technology Road Map, Energy |
| | <i>Activity 2.2 Development of Project Concepts Notes</i> | Project concept notes | Informed investment and improved water and energy supply. | NDE, iLembe District Municipality, EDTEA | Quality of project concept note developed | Project concept note |
| | <i>Activity 2.3 Dissemination workshop</i> | Workshop report | Enhanced awareness and capacity of stakeholders | NDE, iLembe District Municipality, EDTEA | Post workshop evaluation and feedback (and minutes) No. of participants | List of participants, work shop report, agenda, evaluation and feedback |
| Activity 3: Capacity on EE and energy audits | | | | | | |
| | <i>Activity 3.1 Develop course material</i> | Road map for training | Training material ready for course | NDE, iLembe District Municipality | Course road map available | Training manual |

| Activity <i>(link to sec 2)</i> | Description of sub-activities conducted by the CTCN | Output/ Deliverable <i>(link to sec 2.9)</i> | Expected Outcome <i>(link to sec 3)</i> | Main national partners involved | Objectively Verifiable Indicator <i>(see Annex 5 guidance)</i> | Means of Verification (data source, method of collection, responsibility and periodicity) |
|---|--|--|--|--|--|--|
| | <i>Activity 3.2 Identification of pilot students</i> | List of participants | Invited participants | NDE, ilembe District Municipality, | Number of participants | List of participants, |
| | <i>Activity 3.3 Training workshop</i> | Trained participants | Participants have increased knowledge and capacity on EE and energy audits | NDE, ilembe District Municipality | Number of training sessions conducted | Course report, evaluation and feedback |

Annex 2: Indicative list of performance indicators

| Overall Activity | Specific Activity | Indicator |
|-------------------------|--|--|
| Capacity Building | <ul style="list-style-type: none"> ▪ development and delivery of workshops ▪ development and delivery of trainings (e.g. webinars, e-learning, ad-hoc) ▪ development and delivery of toolkits | Number of participants trained or training days received; Post training evaluation and feedback (and minutes); CTCN Knowledge Management System (KMS) users; Webinar content/minutes/feedback; e-learning content/feedback |
| Advisory | <ul style="list-style-type: none"> ▪ development of needs assessment/ studies/ reports/ etc. ▪ establishment/development of recommendations | Diversity of sources used; Response Implementer efforts days; Recommendations; Scope of dissemination; Level of detail used; Feedback; Uptake of recommendations |
| Policy development | <ul style="list-style-type: none"> ▪ development of strategy ▪ drafting of implementation plan ▪ formulation inputs to policy/ law | Strategy available and adapted to local context and national priorities; Number of interview/events conducted to developed the strategy/ plan; Strategy/Plan dissemination; Number of technologies recommended in the strategy/plan; Scope of changes recommended by the strategy/plan. |
| Project implementation | <p>Mitigation</p> <ul style="list-style-type: none"> ▪ Energy supply ▪ Energy use ▪ Industry ▪ Transport ▪ Agriculture ▪ Waste management ▪ Forestry <p>Adaptation</p> <ul style="list-style-type: none"> ▪ Water ▪ Infrastructure, transport and urban design ▪ Early warning and environmental assessment ▪ Coastal zones ▪ Agriculture and forestry | Outputs available and adapted to local context and national priorities; Level of private sector participation; Planning/Outputs distributed to decision makers with feedbacks; Integration of outputs/outcomes into planning of host country; implementation of outputs/outcomes by host country or other multi/bi-lateral organisation; Level of cooperation between Response Implementer, NDE and Response Proponent(s). |



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| Overall Activity | Specific Activity | Indicator |
|--|---|------------------|
| Development of a new partnership or strengthening of an existing one | <ul style="list-style-type: none">▪ Human health▪ Marine and fisheries ▪ Development/ Establishment of basis for Twinning▪ Development/ Establishment of basis for PPP▪ Development/ Establishment of basis for knowledge partnership | |

