ENVIRONMENTAL PROTECTION AND MANAGEMENT SERVICES (EPMS)

PROPOSAL FOR SUPPORT ON:

IDENTIFICATION, DOCUMENTATION AND DISSEMINATION OF INDIGENOUS FORECASTING TO ADAPT TO CLIMATE CHANGE WITHIN SELECTED COMMUNITIES

A project proposal submitted to CC DARE

EPMS, February, 2009.

IDENTIFICATION, DOCUMENTAION AND DISERMINATION OF INDIGENOUS FORECASTING TO ADAPT TO CLIMATE CHANGE WITHIN SELECTED COMMUNITIES

Introduction:

Climate change is now one of the most serious global threats to sustainable development and humanity will need every means and steps to address its adverse impacts that are already vivid. It is now clear that even if greenhouse gases emissions were to stop today, the impacts of the already accumulated greenhouse gases will continue to be felt over a number of years. Thus adaptation to adverse impacts of climate change is of paramount importance for Tanzania particularly in the rural areas.

Dryland communities across Africa have long stand traditional indigenous knowledge that enables them to live in a changing climate that unfortunately is scantly documented. For example, farmers in Burkina Faso believe that intense cold (below 15°C) during the dry season (November-January) corresponds to abundant rainfall during the rainy season and that if this cold period begins early or ends late, the rain will do likewise. Intense heat during the hot-dry period (February- April) is believed to predict good rainfall as well. Farmers also predict rainfall based on the production of fruit by certain local trees between April and June. Farmers believe good yields from the taanga (*Butyrospermum parkii*) and sibga (*Anogeissus leiocarpus*) trees foretell a good rainy season. Abundant fruit production by nobga (*Schlerocarya birrea*) and sabtuluga (*Lannea acida*) trees predicts a drought. When the sibga begins fruiting and the sabtuluga loses its leaves, the farmers prepare for planting. Farmers plant water-demanding crops where the kankanga, a fig-like tree, grows because it grows where the water table is close to the soil surface.

Climate variability, and in particular rainfall, has a large influence on the lives of the communities of many people in the traditional setup of Tanzania who depend on rain-fed subsistence agriculture for their livelihood. Before the advent of modern scientific methods of forecasting, the traditional communities in Tanzania were able to observe the behaviour of some animals, birds, insects and plants and use these to forecast the weather for the coming season. The traditional forecasters are still the major source of weather and climate information for farm management in the rural areas. EPMS intend to use the financial support from CC:DARE to identify traditional forecasters/farmers, and document credible indigenous forecasting indicators used in parts of Tanzania, and disseminate them and where possible make an attempt to establish their scientific interpretations. The study will involve the Sukuma, Gogo, Nyamwezi and Maasai communities and will document indigenous forecasting related to agricultural production (including livestock) in the dryland areas of Tanzania. These communities have mastered the traditional indicators, which include plants, animals, insects, birds, stars, the moon, the wind the temperature, clouds and lightning patterns. The Maasai in northern Tanzania for example, alternate the use of their natural grassland according to seasons. This requires a timely decision on when and where to move next. They predict droughts as well as weather related diseases by watching the movements of celestial bodies in combination with observing the date of emergence of certain plant species. Such early warning signals' of an approaching environmental disaster are used to determine any preventive measures, prepare for mitigation and decide on the course of the community in using the natural resources.

RATIONALE OF THE PROJECT:

This pilot study is consistent with the priorities under NAPA. Under part 3 of the NAPA, Agriculture is prioritised as number one and one of the key priority adaptation activities is "promote indigenous knowledge". This project is therefore the first attempt to document and disseminate indigenous forecasting that might be useful in addressing climate change. The project will facilitate the transfer of long-standing coping strategies/mechanisms, knowledge and experience from communities that have had to adapt to specific hazards or climatic conditions to communities that may just be starting to experience such conditions, as a result of climate change within Tanzania and other similar conditions within Africa. Best copying strategies will be communicated to the government for mainstreamed in national development plans and complement the work of the meteorological services in terms early warning for disaster preparedness.

EXPECTED OUTCOMES, OUT PUTS AND EVALUATION

Expected outcomes.

Increased awareness and use of indigenous forecasting for early warning by various communities within the study area and across the country:

The study is the first of its kind to be conducted specifically in the identified areas and in Tanzania generally. It is envisaged that the findings from this study will complement and may act as foundation/reference point for other similar studies/researches to be conducted in other parts of the country or any other developing countries particularly LDCs of similar environmental, social and economic setting in the near future. Also the study will act as stimulus for other research institutions to engage in similar activities for the benefit of the local communities. As a result of this project, local communities will be more resilience to the impacts of climate change because they will be acquainted with well documented information which will enable them to predict likely future impacts and prepare for adaptation strategies and practical responses at local level using existing indigenous forecasting. Adaptation to climate change will need a combination of efforts; and the more you increase awareness to communities on the available possible ways and means to adapt to climate change, the more you build resilience and sustainable development possibilities amidst the changing climate.

Indigenous forecasting that can be disseminated to other similar communities within Tanzania and within the African region with similar conditions identified:

It is expected that the findings from this study will be well documented and made available to different interested stakeholders including local communities using simple and easily understood language including Swahili which is a language well spoken in Tanzania, Kenya, Uganda, Rwanda, Burundi and parts of Democratic Republic of Congo (DRC). Communities living in other areas of Tanzania having similar climatic conditions will be supplied with the findings which, in no doubt, will be helpful to them. Tanzania Meteorological Agency will assist in ensuring disseminations of the findings to the wider audience within the country and to other African countries of similar setting.

Increased climate change resilience in the key sector of the economy that is the source of livelihood for the majority of the Tanzanian communities:

The study will be conducted mostly in rural areas where the majority are poor and practice rainfed subsistence farming for their livelihoods. Agriculture (which contributes about 50% of GDP) is one of the main economic activities and in recent years the sector is experiencing frequent drought threatening food security and deepening poverty amongst the rural communities. In the meantime we have communities that for many centuries and through many generations have accumulated a good wealthy of knowledge that can be of crucial importance in addressing the eminent impacts of climate change. By having such traditional forecasting knowledge documented and shared, communities will be assisted in forecasting likely future situations and respond accordingly in terms of what to plant, where, when and how

Impacts of climate change and associated vulnerabilities and adaptation strategies within the study communities through the use of a combination of modern early warning systems and indigenous forecasting are recognised, incorporated and used by Tanzania Meteorological Agency

The technical findings will be presented to Tanzania Meteorological Agency where it is expected that they will enrich the modern forecasting activities in complimentary context. Combination of both indigenous and modern knowledge in forecasting is likely to produce "likely to occur" predictions with high confidence especially to rural settings where weather stations are not found in all areas.

Expected out puts:
The following outcomes are expected:

- Well documented indigenous forecasting used by the selected communities to address climatic variability and possible climate change
- Technical paper with policy options to mainstream indigenous forecasting in plans and strategies to address climate change at national level in the context of National Adaptation Program of Actions (NAPA).
- Impacts of climate change and associated vulnerabilities and adaptation strategies within the study communities through the use of a combination of modern early warning systems and indigenous forecasting are recognised and incorporated in the district planning and poverty eradication processes.
- Trained District planners on how to use indigenous forecasting and integrate climate change in planning processes at district and village levels.
- Lesson learnt from this project documented and used for other similar studies worldwide.

Evaluation:
The project will be evaluated based on the outcomes stated above. The evaluation criteria will be set in such a way as to indicate to what extent the outcomes have been achieved. To achieve this, some indicators will be established prior to the implementation of the project so as to be used during the implementation as part of self monitoring and evaluation even before the project is concluded.

Resources permitting, in order increase the sense of responsibility, external consultant or CC: DARE experts will invited to participate in the mid term and final evaluation of the project.

DESIGN AND THE IMPLEMENTATION OF THE PROJECT:

The Project has been re-designed based on the comments on the original proposal from the CC-DARE Team. This project will be executed by the Environmental Protection and Management Services (EPMS). Implementation will involve very closely the Tanzania Meteorological Agency and in close collaboration and coordination with other CBOs based in the study areas of Dodoma, Tabora and Manyara regions where the Gogo, Sukuma, Nyamwezi and Maasai tribes, the main custodians of indigenous forecasting, are found respectively. These are semi arid areas with constant climatic variability being acerbated by climate change. EPMS (www.epmstanzania.org) has for the past ten years undertaken various projects and programmes in both major areas of climate change of adaptation and mitigation (CDM Projects). EPMS participated in the preparation of NAPA and now in the preparation of the 2nd national communication to the UNFCCC. EPMS has provided a number of credible policy advice on climate change that has helped to move the climate change agenda both at national and international level. While EPMS working closely with Tanzania Meteorological Agency will provide technical know how about the proposed project, the CBOs and NGOs in the project areas will assist to liaise with local communities within the study area and will work together to identify indigenous forecasting through various data and information collection methodologies. Such approaches will include the use of questionnaires, discussions, consultations, observations etc. EPMS with close collaboration Tanzania Meteorological Agency will oversee all activities and will be finally responsible for the final outputs and outcomes of the project. Tanzania Meteorological Agency would be required to incorporate viable indigenous forecasting tools into the suits of tools and models currently being used in the Agency to provide the services.

Stakeholders to be involved:

The following main stakeholders will be involved during the implementation of the proposed project activity:

- **The Tanzania Meteorological Agency** as the institution mandated to provide forecasting services
- **CBOs and NGOs**
  Those within the study area will be identified and involved. They will be the contact point during the study
- **Communities**
  These are the custodian of the knowledge and will be the key contact. Elders amongst them will be the target of this study. Interaction with them will be key.
- Regional/ District and village authorities and technical and extension staff
  Administratively these will be the entry point and will help EPMS in corroboration with Tanzania Meteorological Agency in identifying the study areas and key CBOs and NGOs within these areas. They will give more information on how they have been affected and efforts/strategies they have been using so far to respond to this situation.

Implementation of the project:

The Project will be executed by the EPMS and implementation will involve the Tanzania Meteorological Agency which has the mandate to provide meteorological (conventional and non-convention) forecasts.

The duration of this project will be six months and will be implemented in two phase. The first phase will be of four months and will involve identification of specific areas and awareness raising to different stakeholders at district level. It will also include the identification of the indigenous forecasting and documentation. The activities to be included during the first will involve identification of key stakeholders to be involved, conducting awareness workshops,

preparing training materials and site visit to identify and document the knowledge. The second phase which will cover duration of two months will involve dissemination through seminars, use of media and awareness materials. A technical policy paper will be prepared and submitted to the government to facilitate the process of mainstreaming indigenous forecasting for climate change adaptation in planning processes. A documentary will be made and disseminated in other parties of the country and beyond were such indigenous knowledge can be used to address climate change Monitoring and evaluation will be done to ensure smooth implementation of the project, high impacts and sustainability. This will be developed as a means to assess project activities and progress made towards achievement of the outputs and objectives. Monitoring will also provide some inputs for periodic re focusing of the project. Evaluation will be done at the end of first and second phases to ensure accountability and transparent.

PROJECT IMPLEMENTATION TIME LINE, OUT PUTS AND INDICATORS

Activity	**Timing**	**Output**	**Indicators**
Liase with local government authority, identify and select areas within the district where the project will be implemented.	1st month	Areas of project implementation identified as well as local government official to participate in the study.	Community leaders agree the area to be involved in the study.
Select elderly people who have indigenous local forecasting knowledge.	1st month	At least 5 elderly people with local indigenous knowledge from each district identified.	Elderly people agreed to participate and their local knowledge collected and documented
Prepare awareness rasing materials and information collection tools.	2nd month	Awareness raising materials and information collection tools prepared both in English and Swahili	User friendly materials developed. Local people able to respond to questions
Conduct workshop/training to create awareness to stakeholders as well as training to field assistant(s).	2nd month	1 workshop / training conducted per district.	Workshops/training conducted
Site visit and collect information.	3rd month & 4th month	Local forecasting knowledge information required collected.	Required information collected.
Analsye and process the information collected from the field.	4th month	Information collected analysed and processed	Local knowledge information processed and analysed to give meaning information easily understood by different stakeholders.

Prepare reports and document the findings (both technical and non technical as well as both in English and Swahili)	4th & 5th month	50 reports prepared (copies).	10 reports both in English and Kiswahili produced
Dissemination of the findings to various stakeholders.	5th month	50 findings reports reached stakeholders to lowest level possible level i.e. grass root.	All 50 copies disseminated to various stakeholders.
Mainstreaming the findings in planning processes at district level.	6th month	15 District planners, agriculture extension officers and other actors trained on how to use local indigenous forecasting knowledge in their daily activities.	A manual developed.
Evaluation of the project	3rd & 6th month.	Evaluation report	A well prepared and acceptable report.