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# **Climate Change Adaptation in the North-East**

**Detailed Project Report  
on Indo-German Technical Cooperation**

**Submitted to**

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Ministry of Finance, Government of India**

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## 1. Context / Background

### National Action Plan on Climate Change and State Action Plans on Climate Change in the context of Adaptation to Climate Change

Climate change is emerging as the most serious threat to sustainable development in India, with adverse impacts expected on the food security, natural resources, environment, economic activities, human health and physical infrastructure. Climate change is an issue of great concern to the Indian government.

The Prime Minister of India launched the National Action Plan on Climate Change (NAPCC) in 2008. The NAPCC noted that “climate change may alter the distribution and quality of India’s natural resources and adversely affect the livelihood of its people. With an economy closely tied to its natural resource base and climate-sensitive sectors such as agriculture, water and forestry, India may face a major threat because of the projected changes in climate”.

The NAPCC envisages eight National Missions representing multi-pronged, long-term and integrated strategies for achieving key goals in the context of climate change. *Protecting the poor and vulnerable sections of the society through an inclusive and sustainable development strategy, sensitive to climate change is a core principle of the NAPCC.*

The NAPCC addresses with those 8 national missions both: mitigation of climate change as well as adaptation to the impacts of climate change. The 5 out of 8 missions, of high relevance for adaptation to climate change, are:

- National Mission for Sustaining the Himalayan Ecosystem: The plan aims to conserve biodiversity, forest cover, and other ecological values in the Himalayan region, where glaciers that are a major source of India’s water supply are projected to recede as a result of global warming. An important action point of the National Mission is identification of desirable adaptation policies to improve regional sustainability, particularly for sustainable agriculture and food security, plantation systems in the Himalaya and sustainable forestry.
- National Water Mission: The objectives of the Mission is conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management. The strategic elements are identification and evaluation of development scenario and management practices, review (a) National Water Policy, (b) policy for financing water resources projects, and (c) criteria for design and planning for water resources projects, active participation of the stakeholders, integrated water resources planning and convergence among various water resources programmes.
- National Mission for a “Green India”: The Mission aims at enhancing carbon sinks in sustainably managed forests and other ecosystems, adaptation of vulnerable species/ecosystems to the changing climate and adaptation of forest dependant local

communities in the face of climatic variability. The objectives of the Mission are to double the area for afforestation /eco-restoration in India in the next 10 years, increase the GHG removals by India's forests to 6.35% of India's annual total GHG emissions by the year 2020 and enhance the resilience of forests/ecosystems to help local communities adapt to climatic variability.

- National Mission for Sustainable Agriculture: The plan aims to support climate adaptation in agriculture through the development of climate-resilient crops, expansion of weather insurance mechanisms, and agricultural practices. Focus areas for the Mission are dryland agriculture, risk management, access to information and use of biotechnology.
- National Mission on Strategic Knowledge for Climate Change: To gain a better understanding of climate science, impacts and challenges, the plan envisions a new Climate Science Research Fund, improved climate modelling, and increased international collaboration. It also encourages private sector initiatives to develop adaptation and mitigation technologies through venture capital funds.

NAPCC identifies awareness raising and capacity building as the important prerequisites for implementation of various missions, when it says "*Building public awareness will be vital in supporting implementation of the NAPCC. This will be achieved through national portals, media engagement, civil society involvement, curricula reform, and recognition/ awards...will also consider methods of capacity building to support the goals of the National Missions*".

In August 2010 the Ministry of Environment and Forests/MoEF (nodal Ministry for coordination of NAPCC implementation) held a national consultation on the development of State Action Plan on Climate Change (SAPCC) which are supposed to be finalized by March 2011. In addition a common framework for the development of SAPCC has been discussed between MoEF and the States during this consultation. SAPCC shall be in line with the NAPCC.

Climate Change, its manifestations and its impact is highly varied among different states of India. Particularly for the North East Region (NER) as a biodiversity hotspot and a poverty prone region, the impacts of climate change are of particular relevance and adaptation to climate change a necessity.

#### Climate Change in the North East Region

The Government of India (GoI) recognizes the special requirements of the NER and the need for significant levels of investment. However, increasing resilience to the impacts of climate change and building adaptive capacities in the NER is hampered by a number of factors. The 11<sup>th</sup> Plan noted that, "despite huge investments the impact is not visible. The primary sector has remained largely stagnant; the secondary sector has been handicapped due to variety of reasons." If not reversed these trends will affect the ability of the NER to adapt to Climate Change.

The North East Vision 2020 recommends a complete shift in the development strategy for the NER from “top down” to “people-centric” planning and implementation, based on harnessing the resources of the region, capacity development of people and governance and development institutions, creation and expansion of markets and attracting private sector participation in economic activities. A “people-centric” approach will also be important for adaptation to climate change in the rural areas of the NER.

The NER region, though rich in resources – forests, minerals, hydropower potential - is one of the most under-developed regions of the country. The Central Government is well aware of this reality and hence the region attracts special attention in the national development planning. Considering the need for removing regional disparities and national compulsions to judiciously tap the region’s vast potential, the National Advisory Council (NAC) has accorded a special focus for the region’s development. Given the development potential of the region and its global importance as a biodiversity hotspot, the MoEF has assigned a special focus to the region in its Plan allocations, particularly for conservation efforts. In the context of Climate Change, there is a realization that unplanned development can add to adverse impacts, while a judicious use of resources could potentially contribute to adaptation and mitigation. This is reflected in the Ministry’s approach to Climate Change Adaptation initiatives<sup>1</sup> and the proposed dedicated Centre for Advanced Studies on Climate Change in the North East at the North Eastern Hill University with a broad mandate for knowledge management and networking

Studies forecast that climate change will adversely affect many ecosystems particularly the terrestrial forest ecosystems and therefore rural livelihoods in the highly bio-diverse but fragile mountain ecosystem of the NER. The NER, as part of the eastern Himalaya biodiversity “hot spots”, is not only delivering ecosystem services, but forest and biodiversity is the most important livelihood base for the people in NER.

A study conducted by the Indian Institute of Sciences, Bangalore on climate change projections for NER concludes that

- Temperature will go up by about 1.7°C in the mid-term (2021-50) as compared to the baseline (1975) in almost all the districts of north-east and by more than 2°C in North and South Sikkim districts.
- Rainfall will increase in 57 of the 78 districts, with some districts expected to experience nearly 25% increase in rainfall. However, in Sikkim the annual rainfall is projected to decrease by over 5% for period 2021-50 compared to baseline (1975), in Meghalaya the increase in rainfall will be between 5% (in the western side) to 15% (in the eastern side) is projected, in Nagaland, an increase of 10-15% is projected.
- The frequency of yearly “extreme events” with respect to rainfall (i.e. frequency of days with either very high or very low rainfall) is projected to increase significantly (about 26%) in the NE region.

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<sup>1</sup> (i.e. the 4x4 strategy of the Ministry of Environment which identifies the region as a focus area)

Projected impact of Climate Change in the NER are likely to show wide variations and would be most severe in regard to water availability with direct consequences for drinking water for people and irrigation water for agriculture and horticulture:

- The projected large increase as well as decrease in rainfall will have implications for flood as well as droughts in the short term periods of 20 to 40 years.
- In the short term water yield may increase but the water scarcity may also increase due to increased rainfall intensity and runoff.
- Assam, Meghalaya, Sikkim and Arunachal Pradesh are expected to receive much less monsoon precipitation during the short term period whereas the States of Tripura, Mizoram, Manipur and Nagaland are expected to get more precipitation under the short term period.

The implications of stress from Climate Change on people's livelihood systems are not widely understood. Knowledge on special forms of vulnerability of people living in different parts of the NER, vulnerability profiles of particular areas is sparse. However, it is appreciated that the rural population of NER (85% of total population), particularly the poor, is relatively more vulnerable to adverse impact of Climate Change due to their low adaptive capacities and greater dependence on climate-sensitive sectors like agriculture and forestry for their livelihoods.

The Ministry of Development of North East Region (MoDoNER) has recently started a partnership with the German Development Cooperation in for climate change adaptation in the North-East. During the Indo-German Negotiations on Development Cooperation 2009 it was decided to assess potential areas of Technical Cooperation (through gtz) for climate change adaptation in the NER in addition to a Financial Assistance programme (through KFW) for climate change adaptation, which had been decided upon earlier. A preliminary study to assess potential areas for Technical Cooperation (TC) involvement for climate change adaptation in the North Eastern Region was conducted in February 2010 jointly by the Ministry of Development of North Eastern Region and gtz. Based on the preparatory work, the MoDoNER in April 2010 submitted to the DEA a project concept for TC support for climate change adaptation in the North-East. Subsequently, several studies were conducted (e.g. climate vulnerability assessment for the North East by the IISc, Bangalore; community vulnerability and adaptive capacity assessment in Sikkim, Meghalaya and Nagaland) and consultations were held with various stakeholders in the NE States during September 2010 to further develop the TC project concept into a detailed project design.

## **2. Problems to be addressed**

The key challenge in the NER is to develop capacities of rural communities and other stakeholders, including the state government departments, for adaptation to climate change. The TC project will focus on capacity development of people, institutions and organisations in the NER, particularly in the states of Sikkim, Nagaland and Meghalaya, in areas for enhancing

the livelihood resilience of rural communities to the impacts of climate variability and change. Human capacity building, so essential for “people-centric” development, will receive a special focus. The aim will be to strengthen the capacity of key training and resource centres that can have a multiplier effect in imparting quality training and resource-sharing.

People’s perception and experience of climate variability and its impacts on their livelihoods has been studied across six districts of Sikkim, Nagaland and Meghalaya. Some of the important results are summarised in Table-1 below:

*Table 1: Communities perception of climate change, impacts on livelihoods and economy, and coping and adaptation strategies to perceived impacts*

<b>Criterion</b>	<b>Sikkim</b>	<b>Nagaland</b>	<b>Meghalaya</b>
perceived changes in weather and climate	<p>weather patterns have become unpredictable,</p> <p>winters have become warmer,</p> <p>no snow fall since last 4 year in higher altitudes, less snow fall in the hills and ridges above the villages, less frost,</p> <p>rainfall months have decreased but rain intensity has increased,</p> <p>winter rainfall has decreased over last 5 yrs,</p> <p>monsoon witnessed heavy downpour compared to the past,</p> <p>heavy hail storm this year compared to last 10 years,</p> <p>summer temperature has increased,</p>	<p>weather has become highly unpredictable,</p> <p>general trend of decreasing rainfall in the early to mid monsoon season,</p> <p>monsoon season to have shortened from 7 to 5 months,</p> <p>large inter-annual variation in the onset of the monsoon season and in the overall amount of rainfall received,</p> <p>heavy hailstorms with large sizes of hail stones not seen in living memory,</p> <p>average annual and temperatures are increasing,</p>	<p>rain, which was regular and constant in the past, has become irregular and harsh,</p> <p>increased intensity of rainfall resulting in flash floods, landslides and increased soil erosion</p> <p>decrease in the number of rainy days,</p> <p>decrease in winter season – less number of cold days</p> <p>more instances of hailstorm (especially in May-June and Sept.-Oct),</p> <p>monsoon rains start late and people do not get rain at the time of sowing but experience rain at the time of harvesting of crops,</p> <p>winter has become warmer.</p>
perceived impacts on livelihoods and economy	<p>heavy snowfall killed many livestock in the high altitude,</p> <p>crops like ginger, maize, vegetable and fruits have started inviting diseases,</p> <p>the lower belt, which is mostly below 1200 meters has witnessed more pest, disease and decline in crop yields,</p>	<p>variable and erratic rainfall results in crop damage and declining yields or even crop failure,</p> <p>too little rain in the early monsoon season delays transplanting of paddy seedlings by several weeks, or even damages seedlings already transplanted,</p>	<p>hail storms result in excessive damage to the crops,</p> <p>drinking water scarcity during winter months,</p> <p>destruction of crops both in jhum and wet fields,</p> <p>agriculture areas have become more stressed and productivity has</p>

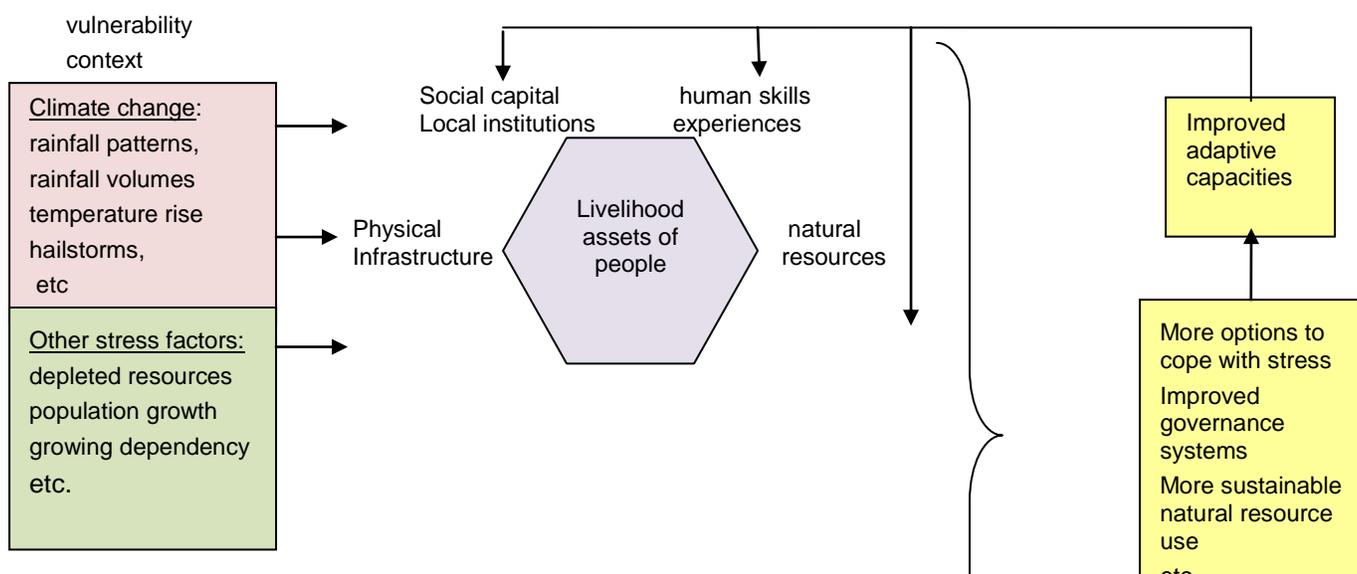
	<p>orange production have declines leaving behind very few fruiting plants</p> <p>In the middle and higher belt, large cardamoms have completely dried up</p> <p>communities seem to be facing challenges storing seeds because of pest and diseases,</p> <p><u>Opportunities:</u></p> <p>tomato, chilly and guava, which never performed well, have started growing well in the open field,</p> <p>increase in yields and more crop varieties. In low altitude fruits and crops.</p>	<p>too little rain in the early monsoon season appears to create a competitive advantage for hardy weeds in upland fields (jhum),</p> <p>redistribution of rainfall resulted in declining overall cardamom yields in recent years, and particularly in a mass mortality of cardamom in the dry year of 2009,</p> <p><u>Opportunities:</u></p> <p>growing new cash crops, such as french beans or passion fruits, at higher elevations due to higher temperature,</p> <p>higher altitudes become increasingly suitable for paddy cultivation if water is available</p>	<p>decreased,</p> <p>pest infestations have increased by 2-3 months (earlier there were only in June-July);</p> <p>pest have increased in areas where forests have decreased – and are now attacking the crops,</p> <p><u>Opportunities:</u></p> <p>due to warmer climate, paddy crop can be grown twice a year,</p>
biological indicators	<p>increased drought leading to more forest fire, less flowering and fruiting in the subsequent year,</p> <p>invasion by alien weed species, non-palatable, hardy and fast growing.</p>	<p>crop pests that were earlier found only at lower altitudes have moved to higher altitudes,</p> <p>flowering of some species shows a marked shift.</p>	<p>there have been more diseases coming up in higher elevations,</p> <p>increase in obnoxious weeds which involves lot of drudgery to uproot the weeds.</p>
copling and adaptation strategies of local communities	<p>people have adapted to alternative livelihood like tourism, and other non-farm based activities,</p> <p>increase in out migration of villagers, youth is now in search of jobs in nearby towns and industrial areas,</p> <p>farmers in the lower belt have started growing pulses, maize, beans, soya beans, tomatoes, chilly at large scale as an alternative to ginger and orange, which was the main cash crop earlier,</p> <p>the broom grass cultivation has increased in almost all belts, which provides additional income to the</p>	<p>every household maintains a seed bank, which is used in case of a crop failure, and re-sowing is needed,</p> <p>farmers have shifted sowing of the shifting cultivation fields from March (in the 1960s) to May,</p> <p>planting maize along with paddy. Maize is substituting paddy as staple food,</p> <p>crops like yam and millets are increasingly being grown as being more resilient,</p> <p>farmers move into livestock rearing for cash income in</p>	<p>people started use of chemical fertilizers to wade off pests,</p> <p>use crushed crabs to drive away pests from rice fields,</p> <p>extra seedling are raised in paddy nursery in anticipation of flood that may be replanted if the crop gets washed away,</p> <p>people have taken to growing winter vegetable crops in homestead gardens,</p> <p>millets and maize are being grown by the farmers as these crops require less water ,</p> <p>seed bank maintained by</p>

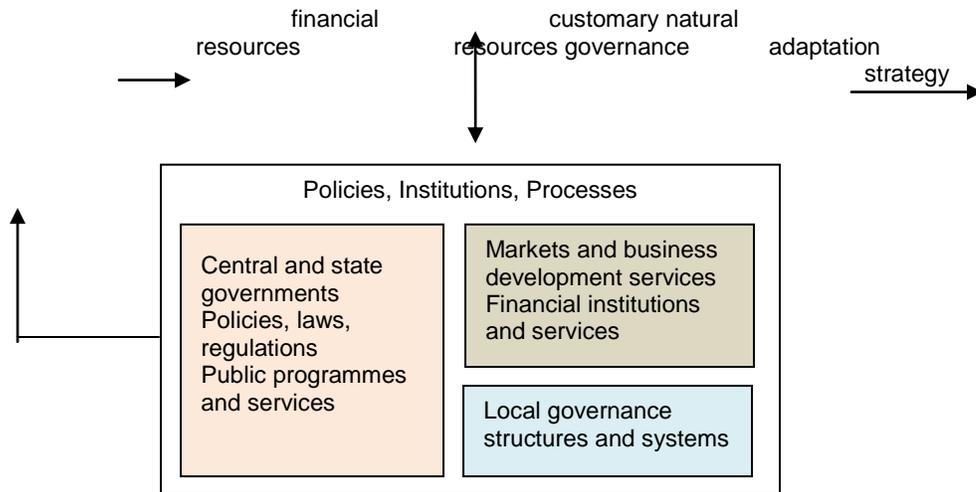
	family,	case of failure of crops, households increasingly supplement farming income with income from non-farm activities,	the community helps in case of failure of crop, people have taken to construction of rain water harvesting structures to be used during dry season.
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An adaptation strategy of local people will always be a result of the interaction between the two: available livelihood assets of people (and their changes) and available services, policies and other forces coming from public and private sector organizations. In the absence of an adaptation strategy people will have reduced options to deal with stress, and reduced adaptive capacities. This in turn will impact some or all of the livelihood assets of people.

Adaptation to climate change is of high relevance for protecting livelihood resilience of rural people and sustainable development of the North-East. However, the poor status of infrastructure, deteriorating status of the natural resource base, weak and often defunct local institutions, limited availability or access to essential services of the public and private sector, and declining relevance of traditional systems of resource use governance in most of the rural areas in NER also limits the ability of local communities to cope with adverse impacts of climate change. The interrelationship between the livelihood assets of people, their vulnerabilities and adaptive capacity is illustrated in Graph-1 below.

Graph-1: Vulnerability, livelihood assets and improved adaptive capacities





### 3. Project Objective

Adaptation to climate change requires integrated solutions that simultaneously strengthen livelihoods and natural resources' sustainability. The sustainable and climate sensitive use of natural resources and related business opportunities are expected to enhance the adaptive capacities of the rural population. Proactive measures for adaptation to climate variability and change can substantially reduce many of the adverse impacts, and thus contribute to livelihood security of the vulnerable rural population.

#### The project goal

The project goal shall be the same for Financial Cooperation and Technical Cooperation:

“Rural people in the North East enhance their livelihood resilience and adaptive capacities to the impacts of climate variability and change”

#### The project objective

“Government departments, key partner institutions and communities in the North East States have policies, competencies and instruments for adaptation to climate change”

#### The project indicators

- Joint review of State Action Plan on Climate Change by Government and other stakeholder groups ensures that adaptation measures are implemented in public sector programmes along needs of vulnerable groups in rural areas.

- Key stakeholders, such as NGOs, CBOs, training and research institutes, micro-finance suppliers, government scheme holders have clarity on their roles to promote Climate Change resilient value chains in selected priority commodities.
- State governments use knowledge products to take informed policy and service delivery decisions, which address Climate Change related vulnerability needs of rural communities.
- State governments use a regional Knowledge Management forum and network for sharing information, for generating knowledge products, and for providing demand based services.
- Training institutions are able to deliver climate change adaptation (CCA) relevant trainings along identified needs.

A result based framework for the TC project is depicted in Table-2 on the next page.

Table 2: Result Chain of the Overall TC Project

Development policy impact	Rural people in the North East enhance their livelihood resilience and adaptive capacities to the impacts of climate variability and change
Outcome (direct benefit)	Government departments, key partner institutions and communities in the North East States have policies, competencies and instruments for adaptation to climate change

Use of outputs	Joint review of SAPCC by Government and other stakeholder groups ensures that adaptation measures are implemented in public sector programmes along needs of vulnerable groups in rural areas	Key stakeholders, such as NGOs, CBOs, training institutes, micro- finance suppliers, government scheme holders have clarity on their roles to promote CC resilient value chains in selected priority commodities	State governments use knowledge products to take informed policy and service delivery decisions, which address CC related vulnerability needs of rural communities	State governments use a regional Knowledge Management forum and network for sharing information, for generating knowledge products, and for providing demand based services	Training institutions are able to deliver CCA relevant trainings along identified needs.
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Given the limited resources availability of the TC project, the first phase of the project will be focused in three states - Sikkim, Nagaland and Meghalaya.

Those 3 States have been selected out of the along following considerations:

- Selected states have diverse traditional natural resource governance, high cultural diversity and unique biodiversity conservation systems and practices
- Demonstrated interest on the part of State Government.
- Conducive working conditions in the selected States
- Representative ecosystems in selected states: Sikkim represents high altitude systems, Nagaland represents long *jhum* cycle and Meghalaya represents transformations in *jhum* and shorter cycle, rapid changing natural and social systems

In addition to State specific components (sets of interventions) the TC project will also have a regional component, which will primarily focus on regional knowledge management, regional level resource networking and capacity building.

The state specific interventions in Sikkim, Nagaland and Meghalaya, and the regional knowledge management interventions are detailed in the Project Strategy section.

#### 4. Target Beneficiaries

The target beneficiaries are the people in rural areas of Sikkim, Nagaland and Meghalaya.

Intermediary groups include officials from selected government departments (in particular Forests, Soil & Water, Water Resources), staff of relevant NGOs and civil society organizations, local and village government representatives, local traditional governance bodies, representatives of village based government programme initiated structures, selected key persons from the private sector, staff from research and training organizations

#### 5. Project Strategy

The Project Strategy will be a different combination of outputs and services in each of the 3 selected States and the Region:

- Support to preparation and implementation of the State Action Plan on Climate Change
- Promotion of climate change adapted value chains
- Capacity development and human capacity building through awareness creation and skills building for adaptation to climate change
- Strengthening of training institutions through Training of Trainers, Curriculum Development and Methodological competence building and international exchange
- Making the capacity building efforts sustainable through networking institutions into a cascading system, and through alumni support programmes
- Focusing on gender, participation and various soft skills dealing with attitudinal changes and communication competencies
- Knowledge management for adaptation to climate change (i.e. in the field of biodiversity, forest cover, shifting cultivation, livelihood)

#### 6. The Overall Project Implementation Approach

The overall project intervention (output) areas are summary statements of the intervention areas in each of the 3 States and the region (regional knowledge management).

The following table provides an overview of the project outputs and use of outputs

Table 3: Overall project outputs and Use of Outputs

Intervention (Output) areas	Use of outputs
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1. State Action Plan on Climate Change	
<p>Support to processes and input provision for necessary improvements of the draft State Action Plan on Climate Change</p> <p>Support for governments for setting up monitoring systems and review procedure for measuring implementation results of the State Action Plan</p> <p>Technical guidance to State government in the operationalisation of the State Action Plan on Climate Change</p> <p>Support coordination of relevant government programmes at district and state level.</p> <p>Development of a regional Action Plan on Climate Change</p>	<p>Joint review of SAPCC by Government and other stakeholder groups ensures that adaptation measures are implemented in public sector programmes along needs of vulnerable groups in rural areas</p>
2. Climate proof value chains	
<p>Forums of key value chain actors and supporters (from private sector, financial sector, government)</p> <p>Analysis of markets, technologies, actors, supporters</p> <p>Promotion of value chains that are (a) economically important, (b) pro-poor and (c) sensitive to climate change for providing new opportunities in the face of CC</p> <p>Impact monitoring of value chain development on rural resilience to climate change</p> <p>Climate proofing of value chains</p>	<p>Key stakeholders, such as NGOs, CBOs, training and research institutes, micro- finance suppliers, government scheme holders have clarity on their roles to promote CC resilient value chains in selected priority commodities</p>
3. State level knowledge management on climate change adaptation	
<p>Mapping land use, poverty and vulnerability</p> <p>Knowledge generation on traditional practices: Bio-Div, jhum, livelihood systems, resource use governance</p> <p>Knowledge products for policy advice on sustainable and productive use of natural resources</p> <p>Promotion of linkages to regional knowledge networks</p>	<p>State governments use knowledge products to take informed policy and service delivery decisions, which address CC related vulnerability needs of rural communities</p>
4. Institutional and Human Capacity building	
<p>Sensitization, awareness and technical knowledge on climate change</p> <p>Strengthening the identified training institutions in selected states through building their capacities in designing, developing and managing CCA relevant trainings in a cascading system of training network at the NER level</p> <p>Enhancing the effectiveness of the on-ground delivery of CCA relevant trainings through bringing together the identified training institutions and various resource organizations (Universities, research institutes, NGOs)</p>	<p>Various stakeholders in the region are able to integrate climate change adaptation into their programmes and/ or activities.</p> <p>Training institutions are able to deliver CCA relevant trainings along</p>

	identified needs
5. Regional knowledge management on climate change adaptation	
Regional forum on knowledge management on CC and Bio-Div Development of regionally relevant CC-related instruments Regionally common issues and concerns Generation of knowledge products on CC, livelihood systems and and Bio-Div	State governments use a regional KM forum and network for sharing information, for generating knowledge products, and for providing demand based services

Various instruments and approaches to capacity and competence development of persons, institutions, organizations, offices, networks and sectors are not listed as part of the output / intervention areas, since capacity development approaches and instruments are actions in support of the key intervention areas and not a separate field of intervention.

Main activities under the heading of capacity development include

- Institutional strengthening and policy development (SAPCC)
- Development of a network of training institutions in NER dealing with CCA
- Development of local level planning tools
- Conceptual CC understanding,
- Development of CC relevant technical solutions,
- Piloting for village CBOs and local resource use governance systems
- Climate proofing and aggregation of ATMA plans

Important activities under human capacity building include

- Support in curricula development on adaptation for climate change for training institutions
- Support in development on training materials for the various target groups
- Training of trainers

- Support the training institutions in training management and coordination of their training offers and programmes
- Strengthen regional and international exchange and knowledge management
- Competency building through Trainings, workshops, group discussions and exposure visits
- Multi-stakeholder dialogue forums

## **Sikkim**

### Output Areas of the TC Measure

The project will deliver outputs in the following areas

1. Operationalization monitoring and review of the State Action Plan on CC
2. Promoting climate change adapted value chains
3. Awareness creation and knowledge management related to climate change

Through the outputs, the project will raise capacities and competences of key actors (offices, organizations, networks) in climate change adaptation in Sikkim. These actors will use their capacities and competences to (by output area):

#### 1. State Action Plan on Climate Change

Key partners: Climate Change Council, Dept of STCC

Key action:

- Ensure that the State Action Plan is reflected in sectoral policies and missions
- Operationalize State Action Plan through mainstreaming climate change in selected centrally and state sponsored schemes and departmental operations
- Operationalize State Action Plan through attaching need-based technical expertise to implementation
- Monitor implementation of the State Action Plan along agreed milestones
- Review implementation annually and adjust State Action Plan

#### 2. Climate Change Adapted Value Chains

Key partners: Dept of STCC (coordinates), Dept's of Rural Development, Agriculture, Horticulture, Animal Husbandry, Cooperatives, NABARD, Local Government

Key action:

- Establish fora of key value chain actors and supporters (from private sector and government)
- Select value chains that are (a) economically important, (b) pro-poor and (c) potentially adaptable to climate change and at risk due to climate change
- Analyze markets, technologies, actors, supporters
- Design interventions to e.g.: (a) connect producers with buyers, (b) promote appropriate technology, (c) select appropriate varieties, (d) enable producers to access finance, (e) connect actors to service providers ...
- Support village clusters to plan for value chain promotion
- Monitor impact of value chain development on rural resilience to climate change

### 3. Awareness and knowledge management related to Climate Change

Key partners: Dept of STCC, Dept of Rural Development, Local Government

Key action:

- Support establishment and development of a regional network of training institutions on adaptation to CC and strengthen the participating institutions
- Develop packages that address conceptual understanding of (a) climate change, its inter-linkages with human communities and natural ecosystems, (b) biodiversity and traditional knowledge, etc
- Develop packages that present technical solutions for e.g. (a) watershed management, (b) natural springs conservation, (c) use of climate data and forecasts, etc
- Deliver training packages through e.g. (a) trainings, (b) workshops, (c) group discussions, (d) exposure visits, (e) multi-stakeholder dialogue forums, (f) train-the-trainer courses
- Poverty and vulnerability analysis and mapping,
- Generation of knowledge through systematizing anecdotal evidence and PTD

Lead executing Agency and Key implementing partners

The lead executing agency is the State Government of Sikkim. Overall leadership rests with the Planning and Development Department. The Nodal agency is the Department of Science Technology and Climate Change, which will operate its function through the Sikkim State Council of Science & Technology. The key implementing partners are the Departments of Science Technology and Climate Change, Rural Development, Agriculture, Horticulture, and Animal Husbandry, Forest & Environment Department, Cooperative Department

## **Nagaland**

### Output Areas of the TC Measure

The project will deliver outputs in the following areas

1. Review and monitoring of the State Action Plan on CC
2. Promoting climate change adapted value chains
3. Building of local capacities on climate change adaptation

Through the outputs, the project will raise capacities and competences of key actors (offices, organizations, networks) in climate change adaptation in Nagaland. These actors will use their capacities and competences towards (by output area):

1. State Action Plan on Climate Change

Key partners: State Council on CC and CC Task Force

Key action:

- Support processes and provide inputs for necessary improvements of the draft State Action Plan
  - Support for setting up monitoring systems for measuring implementation results of the State Action Plan using indicators that measure improvement of services relevant for climate change adaptation to communities
  - Develop review procedure and success indicators which guide an annual adjustment of the State Action Plan
2. Climate Change Adapted Value Chains

Key partners: private sector partners (producers and buyers), NABARD, NEPED, relevant missions, and NGOs

Key action:

- Establish forums of key value chain actors and supporters (from private sector and government)
- Select value chains that are (a) economically important, (b) pro-poor and (c) sensitive to climate change for providing new opportunities in the face of CC
- Analyze markets, technologies, actors, supporters
- Design interventions to (a) connect producers with buyers, (b) promote appropriate technology, (c) select appropriate varieties, (d) enable producers to access finance, (e) connect actors to service providers (f) establish a “Nagaland +” brand
- Support village clusters to plan for value chain promotion
- Monitor impact of value chain development on rural resilience to climate change

### 3. Local Capacity Building on Climate Change Adaptation

Key partners: faith-based institutions, NEPED, CC leaders, NGOs, research and training institutions like SIRD

Key action:

- Support establishment and development of a regional network of training institutions on adaptation to CC and strengthen the participating institutions
- Develop packages that address conceptual understanding of (a) climate change, its inter-linkages with human communities and natural ecosystems, (b) biodiversity and traditional knowledge, etc,
- Develop packages that present technical solutions for e.g. (a) sustainable Jhum practice, (b) water harvesting solutions, (c) use of climate data and forecasts, etc,
- Develop planning tools for communities to (a) jointly identify priorities, (b) identify climate proof solutions, (c) and efficiently use available natural and financial resources,
- Deliver training packages through e.g. (a) trainings, (b) workshops, (c) group discussions, (d) exposure visits, (e) multi-stakeholder dialogue forums, (f) train-the-trainer courses.

#### 4. Knowledge Management

Key partners: NEPED, NABARD, relevant government departments, NGOs, churches, research and training institutions

Key action

- Generation of knowledge through systematizing anecdotal evidence and Participatory Technology Development (PTD),
- Mapping of key land use categories and compilation of carbon baseline data at reconnaissance level,
- Poverty and vulnerability analysis and monitoring,
- Promoting linkages to regional organizations and networks for CCA

#### Lead Executing Agency, Key Implementing partner organizations

The lead executing agency is the State Government of Nagaland represented by the Agriculture Production Commissioner. The Nodal agency is the Task Force on Climate Change, which will operate primarily through the State Project Nagaland Empowerment of People through Economic Development (NEPED).

Key implementing partner are NEPED, NABARD, Nagaland State Entrepreneur Assoc. Thrift and Credit Coop. Fed. Ltd, Eleutheros Christian Society (ECS),SIRD and ATI.

### **Meghalaya**

#### Output Areas of the TC Measure

The project will deliver outputs in the following areas

1. Implementation, review and monitoring of the State Action Plan on Climate Change,
2. Improved systems of natural resources utilization and governance,
3. Institutional and human capacity building for climate change adaptation,
4. Knowledge management.

Through the outputs, the project will raise capacities and competences of key actors (offices, organizations, networks) in climate change adaptation in Meghalaya. These actors will use their capacities and competences towards (by output area):

1. State Action Plan on Climate Change

Key partners: Climate Change Council

Key action:

- Support processes and provide inputs for necessary improvements of the draft State Action Plan,
- Support for setting up monitoring systems and review procedure for measuring implementation results of the State Action Plan using indicators that measure improvement of services relevant for climate change adaptation to communities,
- Support to periodical adjustments of the State Action Plan,
- Provide technical guidance to State government in the operationalisation of the State Action Plan on Climate Change through mainstreaming climate change concerns in a few selected centrally and state sponsored schemes and departmental operations,
- Provide technical expertise to implementation of the State Action Plan on Climate Change, as required,
- Support coordination of relevant government programmes at district and state level.

2. Improved systems of natural resources utilization and governance

Key partners: MRDS, Dept of Agriculture, RD, NGOs

Key action:

- Piloting
  - Themes include local traditional governance systems, government programme initiated village structures (e.g. VEC, SHG), natural resources governance,
  - Piloting unit may be 3 village clusters in culturally distinct districts (inhabited by Khasi, Garo, Jaintia),
  - TC support to action on the ground focuses on multi stakeholder coordination (meetings, workshops, etc.) at local level, technical advice for bottom up planning, land use planning (LUP), impact monitoring, process documentation,

- Support to analysis, documentation, discussion and review, dissemination for wider application,
- Support for up-scaling and dissemination through technical advice.
- Establishment of Action Plans under ATMA: District DAP and SAP
  - Support nodal offices at respective levels for screening plans coming in for climate change relevance (climate proofing): BAP, DAP, SAP,
  - Support nodal officers in aggregation of plans to next higher levels by mainstreaming climate change adaptation concerns: DAP, SAP.

### 3. Institutional and Human Capacity Building for Climate Change Adaptation

Key partners: MRDS, SIRD, ATIC –ICAR, NEHU, NAEB

Key action

- Support establishment and development of a regional network of training institutions on adaptation to CC and strengthen the participating institutions
- Support to the establishment of a State wide network of trainings,
- Strengthen capacities of existing training and research institutes for climate change adaptation through
  - Enhancing capacities of the faculty,
  - Integrating climate change into the curriculum,
  - Support to mainstreaming CCA in trainings on CSS and SSS (MGNREGA, SGSY, IWMP, Micro-planning),
- Support to mainstreaming CCA in programmes of NGOs,
- Support to adoption and application of newly acquired knowledge and skills and facilitate change management.

### 4. Knowledge Management

Key partners: MRDS, Dept of Agriculture, RD, SIRD, ATIC-ICAR, NAEB Regional Centre for NER, NGOs

Key action:

- Generation of knowledge on good natural resource management practices,

- Documentation of good practices in sustainable resource management from selected pockets of the State,
- Discussion of findings at selected forums at district, state and regional level,
- Generation of knowledge products for government policy advice at various levels (including State) on sustainable and productive use of available natural resources,
- Generation of knowledge products, which can be used State wide, regionally, and beyond.

#### Lead Executing Agency, Implementing partner organizations

The lead executing agency is the State Government of Meghalaya represented by the Additional Chief Secretary. The Nodal Agency is the State Planning Department, which will be guided by the State Climate Change Cell. The State owned Meghalaya Rural Development Society (MRDS) will be instrumental for most of the TC project intervention areas.

Key implementing agencies are the Planning Department, MRDS, Department of Agriculture, Horticulture, Department of Rural Development, SIRD, ATIC-ICAR, NEHU, NAEB, NESAC, selected NGOs operating in 3 districts (inhabited by Khasi, Garo, Jaintia people),

### **Regional Knowledge Management**

The regional knowledge management component of the TC project needs to be designed along following key considerations:

- Principles of regional knowledge management
- Requirements and functions
- TC support and TC output areas
- The architecture

#### Principles of regional knowledge management

The regional knowledge management and exchange mechanism should be based on the following principles:

- a multi-state participation, contribution and benefit sharing involving several states, if not all, from the region.
- a mechanism for multi-stakeholder contribution and benefit sharing (community, local bodies, civil society, NGOs, research fraternity, financial institutions and government)
- a multi-level sharing and exchange mechanism (local communities, state, regional and national levels)

### Requirements and functions

#### A forum with partnerships

The mandate requires a network of actors, each with core competencies in relevant areas, complementing each other to deliver the expected outcomes. The actors should, however, have proven and relevant experience of knowledge management (of satisfactory quality), possess institutional and human capacities to contribute to knowledge management networks in the sector, have peer recognition and an interest in climate change adaptation. It is advisable to identify existing networks or loosely strung collaborations that presently work in the relevant areas, rather than establish a new set-up. Ideally, this requires the facilitation of a forum which can bring together the required 'constellations' and foster an effective partnership.

#### The actors and network functions

The first constellation comprises of a regional coalition of State Climate Change nodal agencies together with selected representatives from the second constellation comprising of research, business, and development actors. This coalition is necessary in order to initiate an inter-state information and knowledge sharing platform and to identify regional concerns and special needs that require focused attention. The constellation is also necessary for producing clarity on the regionally important common properties and to seek recognition of regional characteristics and commonalities that can potentially contribute to national and global initiatives and debates on CCA.

Apart from exchange of experiences and knowledge, a forum can be used to

- identify capacity building and capacity enhancement needs (within each state as well as regional),
- exchange information/knowledge on good practices identified within their respective states (i.e. biodiversity, shifting cultivation, forest cover, carbon sinks, livelihoods)
- identify emerging regional concerns,
- identify issues/concerns that require dialogue at the national level (to be conducted through State Councils), and also serve to

- identify knowledge input needs that could then form action agendas for the sub-constellations within the 'alliance' of research and development partners.

The 'Alliance' of research, business and development actors (forming the second constellation within the network) is necessary in order to address the need for infusing a 'people driven' research agenda and strengthening of the vertical networking that seems to be the weakness in research organizations and networks. This gap can be filled by inducting development actors assisted by the climate change leaders who could bring in people's concerns and hence suitably shape the adaptation research thrust meaningfully. These entities could also contribute in bringing stories from the field (good practices in resource management and adaptation mechanisms) as well as help to identify emerging concerns. Further, piloting of adaptation mechanisms could be conducted through such entities. Given that between the suggested actors (projects), most of the NE states are covered, the element of 'cross state' knowledge exchange can potentially be executed effectively.

### TC Support and Output Areas

For the regional knowledge management mechanism to effectively meet its objectives, it is necessary to foster partnerships and networking between different existing actors. In this regard, it is envisaged that the

- TC project will facilitate the development of the North East Forum for Climate Change Adaptation. The institutional arrangements (networks) will comprise the two constellations – the first consisting of the State Climate Change nodal agencies, and the second of an 'alliance' of three sub-constellations drawn from research, business and development actors.
- The TC will have to initiate dialogue with potential partners to solicit their membership, identifying common interests, the relevance and role within the constellations.
- TC will have to provide the necessary support to the various actors (initiating the fora for the sub-constellations, organizing capacity enhancements where required) to become relevant actors.
- The TC will also have to extend technical as well as budgetary support for the partners of the network in taking up thematic actions as required. Support will also have to be extended to the hub for its leadership and technical functions (incl. interactive web site, forums).

## **7. Legal Framework**

The TC (gtz & InWEnt) Project will be part of the Indo-German Development Cooperation, as mutually agreed upon between the Government of India (Ministry of Finance, Economic Affairs Division) and the Government of Germany (Ministry of Economic Cooperation and Development).

The Governments of India and Germany have decided to extend the Indo-German Development Cooperation for Climate Change Adaptation in the North-East (CCA-NE) in partnership with the union Ministry of Development of North-East Region (MoDoNER). The CCA-NE programme falls under the Indo-German DC's priority area of Environmental Policy, Conservation and Sustainable Use of Natural Resources. Both Financial Cooperation/FC (through KfW) and Technical Cooperation/TC (through gtz and InWEnt) will be extended for the CCA-NE programme.

During the Indo-German Negotiations on DC in October 2009, the German Government agreed to provide FC of EUR 56 million for CCA-NE, based on the proposals made by five NE States (Sikkim, Assam, Meghalaya, Nagaland and Manipur) through the MoDoNER. The FC for CCA-NE has further been increased to EUR 76 million (reduced interest loan of EUR 70 million, standard loan of EUR 5 million and EUR 1 million grant for Accompanying Measures). It was decided to further elaborate the FC project proposals in the context of ongoing programme preparation. It was also decided to assess potential areas of TC for CCA-NE. gtz has been commissioned a study under the Study and Expert Fund to explore the potential areas for TC involvement for CCA-NE in partnership with the MoDoNER. Based on the preparatory work by gtz and InWEnt in collaboration with the MoDoNER and some NE State Governments, the MoDoNER submitted a proposal for TC for CCA-NE during the Indo-German Consultations in May 2010. The German Government showed interest in supporting the TC (gtz & InWEnt) for CCA-NE and is likely to commit funds for TC during the Indo-German Negotiations in 2010. TC will prepare offer (project proposal) documents to be submitted to BMZ by gtz & InWEnt. At the same time MoDoNER and TC will start to prepare the Implementation Agreement taking into consideration the Minutes of Meetings of the Appraisal mission of September 2010, the DPR as well as inputs by relevant authorities from both sides. To make use of synergies between FC and TC activities in the region, gtz/ InWEnt and KfW closely cooperate for preparation the CCA-NE programme.

## **8. Environmental Impact Assessment**

The TC Project focuses on the interaction between Climate Change, Bio-Diversity and Livelihood Systems of Rural Communities. Adaptation to Climate Change considers, therefore, necessarily the balance between long-term environmental sustainability and economic use of natural resources.

This balance will best be achieved and maintained, when adaptation strategies aim at

- more options to cope with stress
- improved governance systems

- more sustainable natural resource use<sup>2</sup>

## 9. On-going Initiatives

Indo-German Financial Cooperation for Adaptation to Climate Change has been appraised as well for the NER in the States Sikkim, Assam, Nagaland, and Meghalaya. The FC programme has a much higher financial volume and concentrates on financing of identified projects in each of the States in climate change- vulnerable areas, which include local infrastructure for water storage, rehabilitation of spring water, afforestation programmes, support to climate proof value chains, etc.

The Indo-German Technical Cooperation (TC) project and the Indo-German Financial Cooperation (FC) project shall closely collaborate with each other, whereby the TC project concentrates on development of instruments, methodologies and procedures in the larger thematic field of capacity development, which then can be taken up and used by the FC programmes. The creation of synergies has been mentioned as one of the central points in each of the appraisal reports of FC and TC.

Indo-German Technical Cooperation has an ongoing project with the Ministry of Environment and Forests named “Adaptation to climate change in rural areas, India”, PN 2006.2161.5-001.00. This project has been in operation for a year. . and is implemented in four States - Madhya Pradesh, Rajasthan, Tamil Nadu and West Bengal. . This project and the proposed TC project on Adaptation to Climate Change in the NER shall closely collaborate for development of concepts and advisory packages particularly for support to establishment and implementation of State Action Plans on Climate Change (SAPCC).

In the NER a number of other donor funded projects are in operation or in the planning stage. Some of them will be important for close cooperation, as indicated in the overview below:

Donor	Title	Objective	Coverage	scope for coop
IFAD	NERCORMP	improve the livelihood of vulnerable groups in a sustainable manner through improved management of their resource base	8 districts in Assam, Meghalaya, Nagaland, Manipur, Arunachal Pradesh	High
World Bank	Northeast Region Livelihoods Project	upward trend in livelihood productivity among participating local community groups (SHG)	2 districts each in Tripura, Sikkim, Mizoram & Nagaland	Low
IFAD	Meghalaya Rural Development Society	develop communities that they can find resources on their own, which are helpful to meet their objectives	5 districts in Meghalaya	High

<sup>2</sup> See here also graph 1: Vulnerability, livelihood assets and improved adaptive capacities

ADB	Improving Connectivity & Destination Management of Cultural & Natural Resources in the South Asia Sub-Region : Sikkim	length of stay of tourists and consequent greater incomes and wider distribution of benefits from tourism to the Sikkim communities Enhanced institutional and community capacities and human resources for developing and managing nature and culture-based tourism products	Sikkim	Low
JICA	Sikkim Biodiversity Conservation and Forest Management Project	biodiversity conservation activities and forest management capacity, and to improve livelihood for the local people who are dependent on forests by promoting sustainable biodiversity conservation, afforestation and income generation activities including eco-tourism for community development,	Sikkim	High
JICA	Nagaland Afforestation & Economic Development Project	Support afforestation programmes and stabilization of shifting cultivation	Nagaland	To Be confirmed
GEF	Sustainable Land Management in Shifting Cultivation Areas of Nagaland for Ecological and Livelihood	promote sustainable land management and use of biodiversity as well as maintain the capacity of ecosystems to deliver goods and services while taking account of climate change	Nagaland	High
GoI	NEPED	livelihood support: watershed catchment treatment. agro forestry, fallow management and participatory action research methodology	Nagaland	High

## 10. Technology Issues

The proposed TC project on Adaptation to Climate Change in the NER has no particular technology issues, which would need elaboration here.

## 11. Management Arrangements

The TC project will be managed, as far as day to day management matters are concerned, by Climate Change Nodal Offices in each of the 3 States Sikkim, Nagaland and Meghalaya, and by the Climate

Change Knowledge Management Forum at regional level, which is going to be hosted by an important regional organization.

The Climate Change Nodal Offices are:

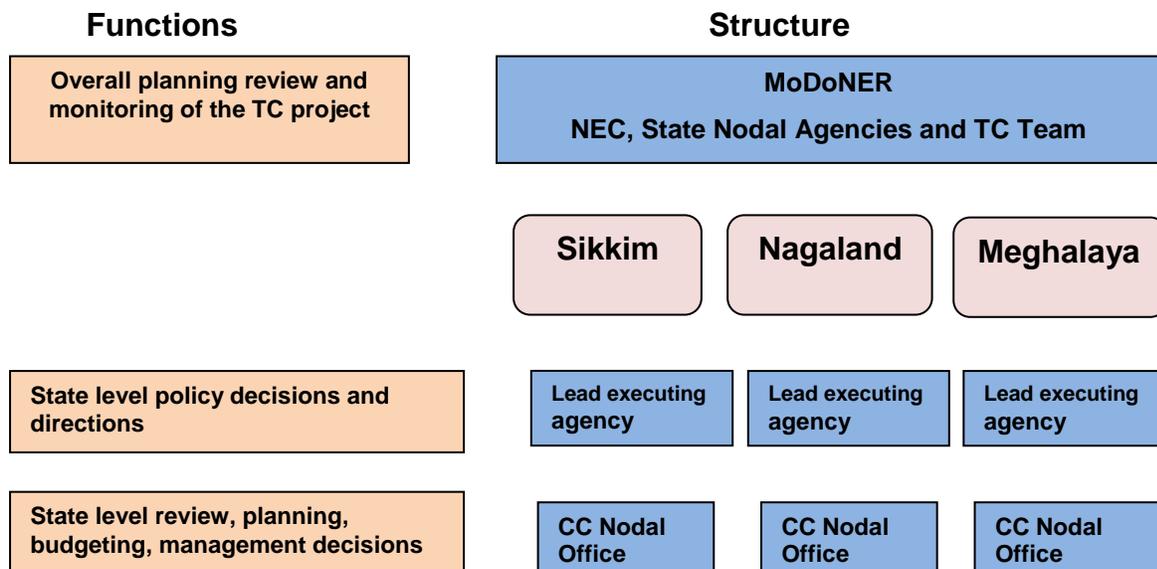
- Sikkim Department of Science Technology and Climate Change, which will operate its function through the Sikkim State Council of Science & Technology
- Nagaland Task Force on Climate Change, operated through the State Project Nagaland Empowerment of People through Economic Development (NEPED)
- Meghalaya: State Planning Department

Policy decisions in each of the States shall be made by the respective Climate Change related decision making bodies, which are:

- Sikkim Climate Change Council
- Nagaland Agriculture Production Commissioner
- Meghalaya: Climate Change Cell

The overall project management will rest with the MoDoNER. Steering functions and structures are further explained in the graph below:

Graph 2: TC Project Steering Functions



## 12. Means of Finance and Project Budget

The TC project will partly be funded through grants from the government of Germany through gtz and InWEnt. Prior to the commencement of the project an Implementation Agreement will be worked out and signed by both, Government of India/DoNER, and gtz, which will detail all quantities to be supplied by either side.

The total project budget is estimated at € 8 million. This amount will be financed through following means:

1. The financial contributions from the German side are estimated at € 4 million (gtz) for the time period of 3 years and € 1 million (InWEnt) for 3 plus years (a portion of the fund is meant to cover spill-over and follow-up activities in the fourth year).
2. Financial contributions from the Indian side will be met through their ongoing expenditure framework, i.e.,
  - Centrally Sponsored Schemes,
  - Regular budgets to Sector Line Departments,
  - Financial contributions through projects sanctioned by the NEC,
  - special funds from MoEF being mobilized through identification of financial requirements for implementation of additional schemes in the course of establishment and implementation of the SAPCC.

Those contributions are estimated at € 2 million.

3. Additional funds will be raised through participation of public and private finance organizations in identified programmes in the States, along programmes in support of climate proof value chain establishment, such as MFIs (BASIX in Sikkim, State Entrepreneurs Associates Thrift and Credit Cooperatives Federation Ltd. In Nagaland) or NABARD (Tribal Welfare Fund, UPNRM, other funds).

Those contributions are estimated at € 1 million.

### **13. Time Frame**

The time frame for the TC project is 3 years. It is expected, that the project operations will commence at the beginning of the second quarter, 2011.

### **14. Risk Analysis**

#### For Sikkim, Nagaland, Meghalaya

Climate Change being a global political agenda, the outcomes of the upcoming UNFCCC negotiations are likely to influence the national policy on climate change in India as well as involvement of bilateral development cooperation for climate change programmes. The degree to which risks can be influenced is low.

#### For Nagaland

A ceasefire has been agreed between the State of Nagaland and the insurgent movement. Anecdotal evidence, however, indicates that rural commodity markets are at least partially still controlled by the insurgent groups, which impose road tolls and levies. This renders agricultural products from Nagaland less competitive than comparable products from other states, and could put the development of rural value chains at risk. This is considered a medium risk for project implementation. The degree to which risks can be influenced by TC is low.

#### For Meghalaya

The traditional systems of equitable access to natural resources seem to be undergoing change. Access to natural resources by local people is increasingly monopolized by local elites. This is considered a medium risk for project success. The degree to which risks can be influenced by TC is low.

Local level marketing mechanisms (mining and cash crops) are dominated by forces with immediate commercial interests at the expense of long term sustainability. This is considered a medium risk for project implementation. The degree to which risks can be influenced by TC is low.

#### For the Region

No specific risk has been identified for the regional level, which is going to be managed by the regional knowledge management forum.

## 15. Evaluation and Success Criteria

The proposed TC project on Adaptation to Climate Change in the NER is a new type of project in terms of thematic focus, regional belonging and conceptual approach. It is new for India as well as for the global development community. The unique character of this project is the combination of addressing climate change adaptation by

- support to the preparation, implementation and periodic reviews of a SAPCC,
- support to climate proof value chains,
- knowledge management systems at State level,
- knowledge management systems at regional level.

in geographical regions, which

- are globally recognized bio-diversity hot spots and are clearly affected by climate change,
- have a unique wealth and variety of local ownership and governance systems of natural resources,
- have unfavourable socio-economic indicators, and
- have common borders with neighbour countries like Bangladesh, Myanmar, Nepal and China.

The TC project possesses a list of result indicators, which can be used to evaluate progress and results prior to any decisions for continuation in the shape of a second phase. This evaluation should take place latest at the beginning of the third year of project implementation. The indicators are:

- Joint review of State Action Plan on Climate Change by Government and other stakeholder groups ensures that adaptation measures are implemented in public sector programmes along needs of vulnerable groups in rural areas.

Measurement: xx number of stakeholder groups outside government confirm that SAP implementation (through yy CSS and SSS) is relevant for groups, which are vulnerable to CC.

- Key stakeholders, such as NGOs, CBOs, research institutes, micro- finance suppliers, government scheme holders have clarity on their roles to promote Climate Change resilient value chains in selected priority commodities.

Measurement: stakeholder survey

- State governments use knowledge products to take informed policy and service delivery decisions, which address Climate Change related vulnerability needs of rural communities.

Measurement: through presentations made to the legislature, departmental orders.

- State governments use a regional Knowledge Management forum and network for sharing information, for generating knowledge products, and for providing demand based services.

Measurement: through a) regular participation, b) feedback from State Councils on CC, c) demands reached the forum for services

The indicators need a solid base line to be established right at the beginning of project implementation, and shall be monitored at least annually against levels of achievement. The monitoring results will be the core piece of the annual progress reports.

On the level of State specific operations, indicator banks have been established as well, which match well with the overall project indicators above:

#### Sikkim

1. Rural Development, Agriculture, Horticulture and/or Animal Husbandry Departments mainstream actions prescribed by the State Action Plan on Climate Change (SAPCC) into centrally sponsored and state sponsored schemes.
2. Most household in a high number of selected villages confirm that their profit outlook for farm-based activities has improved despite observed climate variability.
3. Key government staff, NGO staff, and a significant number of elected local government representatives confirm that they have used knowledge on CC adaptation gained in capacity building measures in their work and can name an example.

#### Nagaland

1. Heads of Agriculture and allied Sector Departments have issued orders for mainstreaming the Nagaland State Action Plan on Climate Change.
2. Most households in selected pilot villages confirm that their profit outlook for jhum, and non farm land-based activities has improved despite observed climate variability.
3. Key staff of government (departments, institutions and state missions), NABARD, training and research institutions, church organizations, NGOs, and a significant number of village government bodies, confirm that they have used knowledge (including instruments) on CC adaptation in their work and can name an example.

## Meghalaya

1. Departments of Rural Development, Agriculture, Horticulture, Soil & Water Conservation, Forest & Environment, mainstream actions prescribed by the State Action Plan on Climate Change (SAPCC) into xx centrally sponsored and yy state sponsored schemes.
2. Key government officials, NGO professionals, and traditional local governance representatives confirm that they have used knowledge on climate change adaptation gained through capacity building measures in their work and can name at least one example.
3. Most households in selected pilot cluster villages confirm that their natural resource (including jhum land) based activities have reduced risks despite observed climate variability.

## **16. Financial and Economic Analysis**

Financial returns of the TC project will not be quantifiable.

The focus is on capacity development of various stakeholder organizations and networks for developing higher levels of climate change resilience for livelihood systems in rural areas of selected States in the North Eastern Region. It is expected that the selected States develop and employ more viable and relevant systems of making best use of the large public sector finances, which come to through Centrally Sponsored Schemes. Interventions as well as expected outcomes of the project will, therefore, be structural and institutional in nature. It will not be feasible to quantify monetary values for the expected outcomes at the present stage for a cost-benefit analysis. The project aims at increasing the efficiency and effectiveness of public resources and improving the service delivery of public investment programmes in the natural resources sphere. Hence it will be highly beneficial.

## **17. Sustainability**

The TC project in principle supports processes, which help organizations of the public and private sector to re-orient their service delivery systems along needs which have jointly be identified as relevant and important in the context of adaptation to climate change. The outcome of this re-orientation will not necessarily be additional schemes or additional service packages, but rather a higher level of relevance of the existing services to raising local communities' adaptive capacities to climate change.

In this context the projected investment levels (approx. 42 Indian Rs) are Project resources are rather small in comparison to large envisaged results in 3 the States of the NER. A very important project implementation modality will be to seek strong partners and leverage existing large resources coming from either public schemes or funds, private sector funds or other donors.

Sustainability is a parameter, which measures long term sustenance of the project results beyond the lifetime of the measures under the same or under a changing environment. Since gtz supported TC projects primarily are directed at capacitating systems, networks and offices, the sustainability aspects is important particularly with regard to the ability of organizations to use acquired capacities also under changing conditions. The aspect of impact then examines the ability of organizations and systems, to use project results also beyond the levels as identified by the goal and objective indicators, either in terms of quantities (outreach) or levels (scaling up). Since both parameters: sustainability and impact, measure the capacities of the organizations and systems of North Eastern States and their networks to make use of achievements beyond the project life time and beyond the agreed objective statements, the measurement can take place only towards the end of the project or in an ex-post evaluation. For both parameters regular monitoring of appropriate strategies, cooperation partnerships and useful steering structures is decisive for ongoing learning on necessary improvement of project planning and positioning.

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