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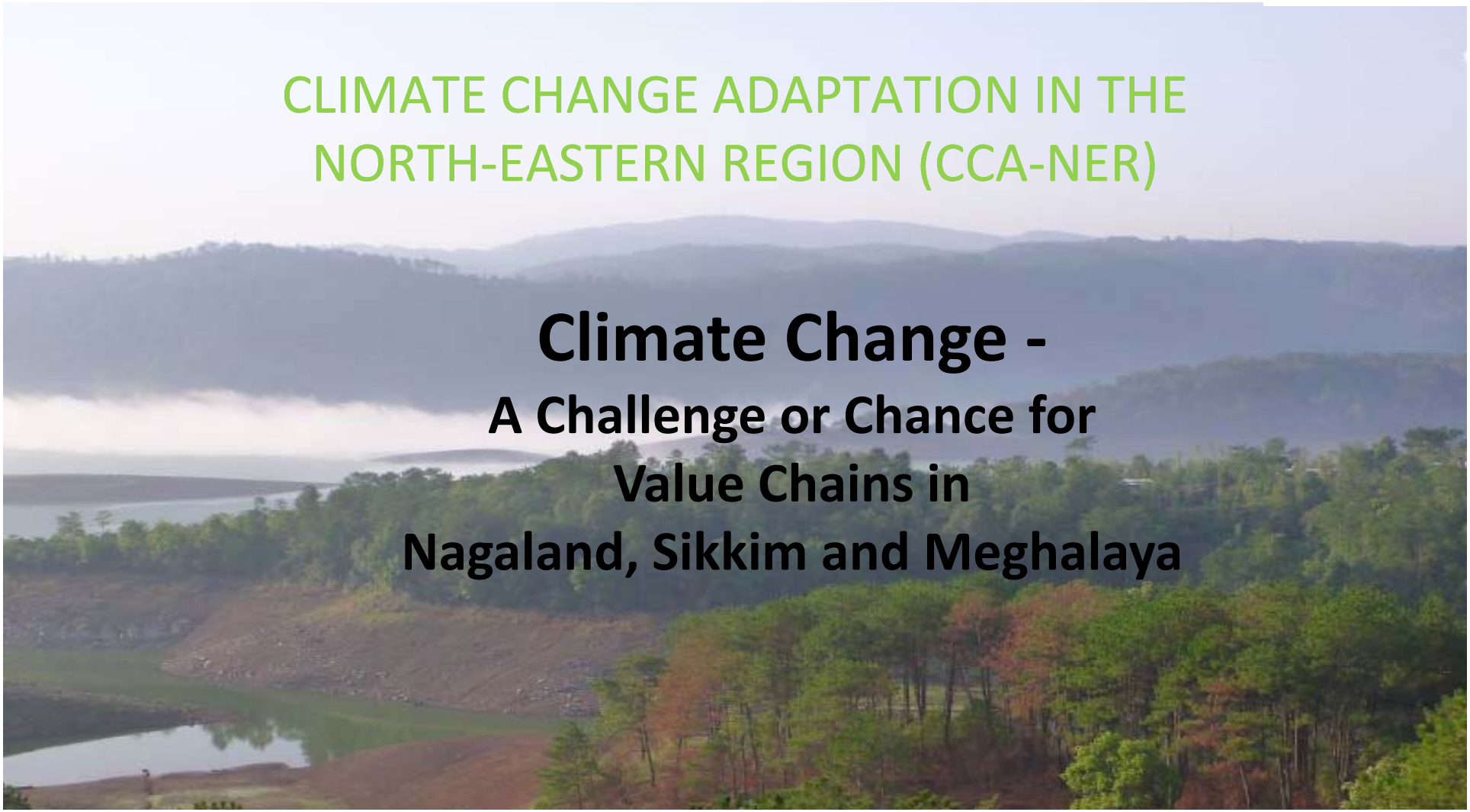

CLIMATE CHANGE ADAPTATION IN THE NORTH-EASTERN REGION (CCA-NER)

Climate Change -
A Challenge or Chance for Value Chains in Nagaland, Sikkim and Meghalaya

CCA-NER

14. December 2012

- Info on the North Eastern Region and CC (6)
- Info on CCA-NER (2)
- Info on climate proofing of value chains (3)
- Examples of 4 CCA-NER value chain approaches in Nagaland, Meghalaya and Sikkim (14)

STOCKTAKING –
NE: Region of Abundance?

- Forest cover of 54.5% against 23.5% nat. aver
- Part of the Eastern Himalaya “hot spot”
- Biodiversity NER a major global CO_2 sink tank
- Water resources of NER represents one-third of India’s runoff
- Forest and biodiversity are most important livelihood base
- Natural wealth of NER offers good potential for prosperity of the region
- Indigenous culture, customs and traditional institutions in NER play important role in conserving natural resources

THE PARADOX

- **NER, India's richest region in terms of natural resources and biodiversity, yet remains poor and lags behind**
- **34% of the population in NER lives below the poverty line compared to the national average of 26% *(World Bank, 2007).***
- **NER also represents one of the highest rates of unemployment (12% against a national average of 7.7%)**
- **NER suffers from geographical isolation, infrastructure bottlenecks, small market size and low private investments**

CLIMATE CHANGE PROJECTIONS FOR NER

BASED ON: “CLIMATE MODEL BASED VULNERABILITY ASSESSMENT”

BY KFW THROUGH THE INDIAN INSTITUTE OF SCIENCES (IISC), BANGALORE. PROF. N.H. RAVINDRANATH

(a) Temperature

- **Average annual mean temperature in the NER is projected to go up by about 1.7°C in the midterm (2021-50) as compared to the baseline (1975)**

- **It is projected to go up by more than 2°C in North and South Sikkim districts.**

(b) Rainfall

- **Sikkim: Annual rainfall is projected to decrease by over 5% for period 2021-50 compared to baseline (1975).**

- **Meghalaya: Increase in rainfall is projected between 5% (in the western side) to 15% (in the eastern side)**

- **Nagaland: Increase of 10-15% is projected**

(c) Severe events

- **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 (about 26%)**

- **Number of days with less rainfall (lesser than 5mm per day) goes up slightly. Number of days with rainfall exceeding 100mm per day (signaling a flooding event) is likely to increase significantly (around 20%)**

- **The number of days when the rainfall exceeds 150mm per day (signaling a heavy flooding event) is likely to increase significantly (around 38%).**

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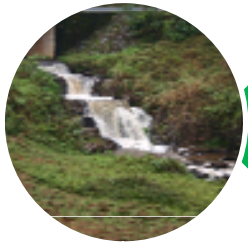
Climate Change Adaptation in the North Eastern Region:
- OBJECTIVES -

Rural people in the North Eastern Region enhance their livelihood and adaptive capacities to the impact of climate vulnerability and change

GOAL

Governments, key partner institutions and communities apply policies, strategies and instruments for Climate Change Adaptation (CCA)



Human and institutional capacities to apply CCA measures, regional knowledge management and networking are improved

OBJECTIVES

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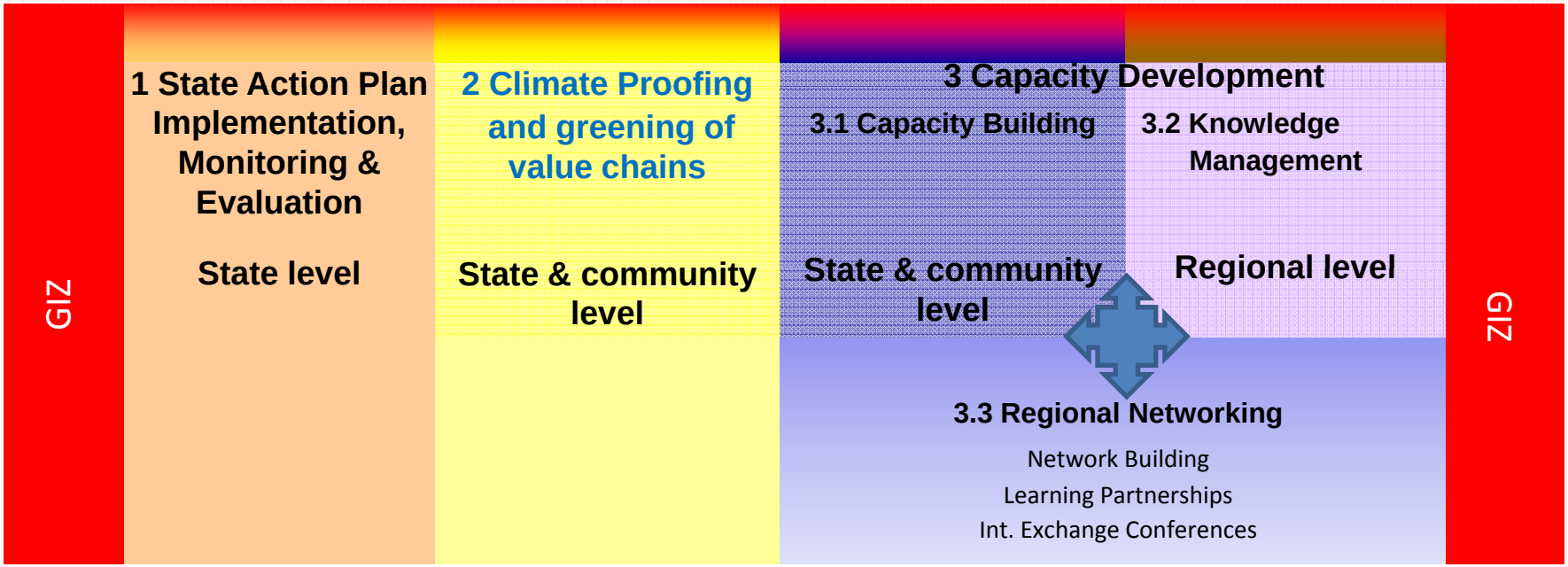
- COMPONENTS -

Sustainable development

Climate resilience, natural resource protection
socially inclusive economic growth

Climate Change Adaptation



Impact based M&E

CAPACITY DEVELOPMENT

Understanding the concept of greening value chains

Greening Value Chains is

- ✓ **about systematically integrating ecological aspects into value chain analysis, design of interventions and implementing interventions**

Key Concepts

- ✓ **Risk & vulnerability assessment**
- ✓ **„Climate proofing“**

Value Chain - definitions

„Value Chain“ means ...

- ✓ **the sequence of related business activitis (functions) from the provision of specific inputs for a particular product to primary production, transformation, marketing and up to final consumption**

- ✓ **the set of enterprises that performs these functions i.e. the producers, processors, traders and distributors of a particular product**

- ✓ **a business model for a particular commercial product using a particular technology and a particular way of coordinating production and marketing.**

Goals of value chain promotion

To add value to the local products…

…by…

- improving product quality
- improving post harvest technology
- Improving supply chain efficiency
- fulfilling international standards such
- as ISO, HACCP, Eurepgap, FSC, etc.

…and…

- adding processing steps
- innovating new products
- applying modern package designs
- branding the products

The value chain "map"





Basic sequence of functions in an agribusiness value chain

Specific Inputs	Production	Trans-formation	Trade	Con-sumption
Provide - equipment - inputs	Grow, harvest Produce the primary stage etc.	Classify Process Pack	Transport Distribute Sell	Prepare Consume

Categories of operators in value chains and their relations

Specific Input providers → *Farmers, (primary producers)* → *Packers, Agro-industry* → *Traders (sales pt.)* → *Consumers of pineapple juice (the market)*

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1. Rice Value Chain – Nagaland

(Promotion of traditional rice varieties)

Climatic Challenges in Rice

- **Estimated 3.5 million hectare of land of northeast under rain-fed rice cultivation, accounts for about 30% of the total area under cultivation**
- **1 degree Celsius increase in temperature reduce yields of major crops by 3-7 %**
- **Impact on rice production in 64 districts of Northeast**
- **Hybrid rice is more affected by rise in temperature than traditional rice varieties**
- **Hybrid rice is more water intensive compared to traditional rice varieties**

Why Rice?

- Economically important
- 80% of the gross cropped area is under rice cultivation
- Essential for food security
- Pro-poor
- Employment opportunities for rural folks

Why promotion of traditional rice varieties ?

- **Irrigated rice production is a major emitter of greenhouse gases – traditional rice varieties and growing methods and techniques help reducing methane emissions**
- **Hybrid rice is more affected by rise in temperature than traditional rice varieties**
- **Hybrid rice is more water intensive compared to traditional rice varieties**
- **Farmers have a huge traditional knowledge on traditional rice cultivation**
- **More than 867 traditional varieties identified from the State (SARS)**

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2. Silk Value Chain – Meghalaya (Promotion of Eri and Muga Silk)

Climatic challenges in Silk?

- **Silkworm highly sensitive to temperature, humidity, air circulation, gases, light - affecting growth, development, productivity, and quality of silks**

- **Good quality cocoons are produced within a temperature range of 22–27°C, cocoon quality is poorer above and below these levels**

Why Eri and Muga Silk?

- Muga and Eri silk is only endemic to NER
- Economically important and pro-poor
- Sericulture and weaving are cottage based, eco-friendly industries in rural Meghalaya
- Sericulture is mainly done by women - silkworm rearing, reeling, spinning, dying and weaving
- 16,000 families are involved in mainly Eri farming and 15,900 families in handloom activities
- CC strengthens Muga production in Meghalaya (rising temperature and humidity in Assam pushes worm production to Meghalaya)

How to improve this VC?

- **Silk production is based on traditional knowledge and a lot of experience exists**
- **It can be showcased and technology can be improved**
- **It can be promoted for eco-labeling**
- **Silk answers the growing demand for natural fibers → marketing interventions**

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3. Trout farming as Value Chain - Meghalaya

Climate Challenges in Trout?

- **Trout is a fish species highly sensitive to water quality: Dissolved oxygen, clear and cold waters, pH, temperature**

- **Change in climate in the recent years resulted in heavy unprecedented rainfall during the monsoon causing flash flood**

- **Fish ponds are flooded with runaway rain water and fish feed are washed away**

Why and how trout?

- Aquaculture can ensure employment/income and culturally and historically of importance
- 30% of the total land area around the streams can be used for development of aquaculture
- Aquaculture as income generating economy through angling tourism
- Aquaculture strengthens need for sustainable use of water resources and water quality conservation (better governance)
- Appropriate technological inputs required to translate trout farming into a valuable enterprise

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4. Water as Value Chain – Sikkim

Assessing hydrological potential and Village Water Security Plans

Climate Challenges?

- Climate change manifested in the form of rising temperatures, rise in rainfall intensity, reduction in its temporal spread
- Marked decline in winter rain leading to dying of mountain springs
- Many of local springs in the drought prone zone are now seasonal
- Lifeline for drinking water for most of the rural population affected
- Longer winter droughts reported

Why Water?

- Implement "springshed" approach through NREGA soil and water conservation activities and/or Forest plantation activities

- Arrive at an approach and strategy for optimum utilization of the existing water resources around the Tendong Catchment area

- Development of Village Water Security Plans

Thank you

Context

The population depends for its livelihood on its natural resources, especially water

Existing politics, legislation and regulation and technical instruments are insufficient, to protect natural resources, ecosystems and biodiversity.

Sustainability of NRM is at risk and thus socially inclusive economic growth

Climate change, overuse and unplanned use of natural resources, population growth, and high vulnerability ask for instant actions and the ability to act

Vulnerability, distribution and access, conflict potential

Details on value chains

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Climate Proofing (CP) and Greening of Value Chains (VC)

Climate proofing is applied by communities to minimize negative impact of CC on VC

Activity	*Meghalaya*	*Sikkim*	*Nagaland*
Value Chains	• 11 VC selected by Govern. • 9 chosen for CP	• 4 VC selected by Government • All chosen for CP	• 4 VC selected by Government • All chosen for CP
Climate proofing & Feasibility studies	• CP done for 9 VC (silk, citrus, honey, selected ornamental & medicinal plants, turmeric, pongamia, Ecotourism, and MGNREGA	• CP under preparation (black cardamom, ginger, citrus, ginger)	• CP under preparation (citrus, ginger, rice)
Pilot measures	<u>Economic & CCA potential:</u> - Silk, citrus, orchids, medicinal plants, honey <u>Mainstream CCA into policies</u>: - Ecotourism, MGNREGA	• Ongoing	• Ongoing

Governments use CP as new instrument for CCA for greening VC

CCA-

Partner structure

PARTNERS

Indian Government

Ministry of Development Northeastern Region (DONER)

State Governments

Sikkim	Nagaland	Meghalaya
•Department of Science & Technology (Nodal Office) •*Climate Change Council* *Other partners* •*Rural Development, Agriculture, Horticulture, Animal Husbandry* •*NABARD*	•Agriculture Production Commissioner •Task Force on Climate Change (Nodal Office of State for NEPED) *Other partners* •*NABARD* •*Microfinance Agencies* •*NGOs*	Department for Planning and Finance (Nodal Office) *Other partners* •Meghalaya Rural Dev. Society •*Rural* Development •Trainings- and Research institutions •NGOs for Khasi, Jaintia, Garo reg.

Capacity Development

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The value chain "map"





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