

National Mission for Sustaining the Himalayan Ecosystem (NMSHE) in the Indian Himalayan Region-

Overview and Highlights of Activities

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Presentation Outline

- **The Himalayan Region & IHR**
- **National Mission for Climate Change**
- **DST's Initiatives for Capacity Building in Climate Change**
- **A Few Major Highlights of the Activities**

The Himalayan Region

- ◆ A complex and interrelated ecology of planet earth
- ◆ One of the longest, loftiest and dynamic mountain chains on earth, spreading over a length of 2500 km covering eight countries and is a huge reservoir of resources – flora, fauna, water and fresh air.
- ◆ The most populated mountain system in the world
- ◆ Total Area: 4.3 million sq km (Approx.)
- ◆ Largest Bodies of Ice Outside Polar Caps 3735 sq km; eternal ice & snow (3250 cubic km fresh water)
- ◆ Himalayan Glaciers- 17 % of global Mountain Area

The Himalayan Region

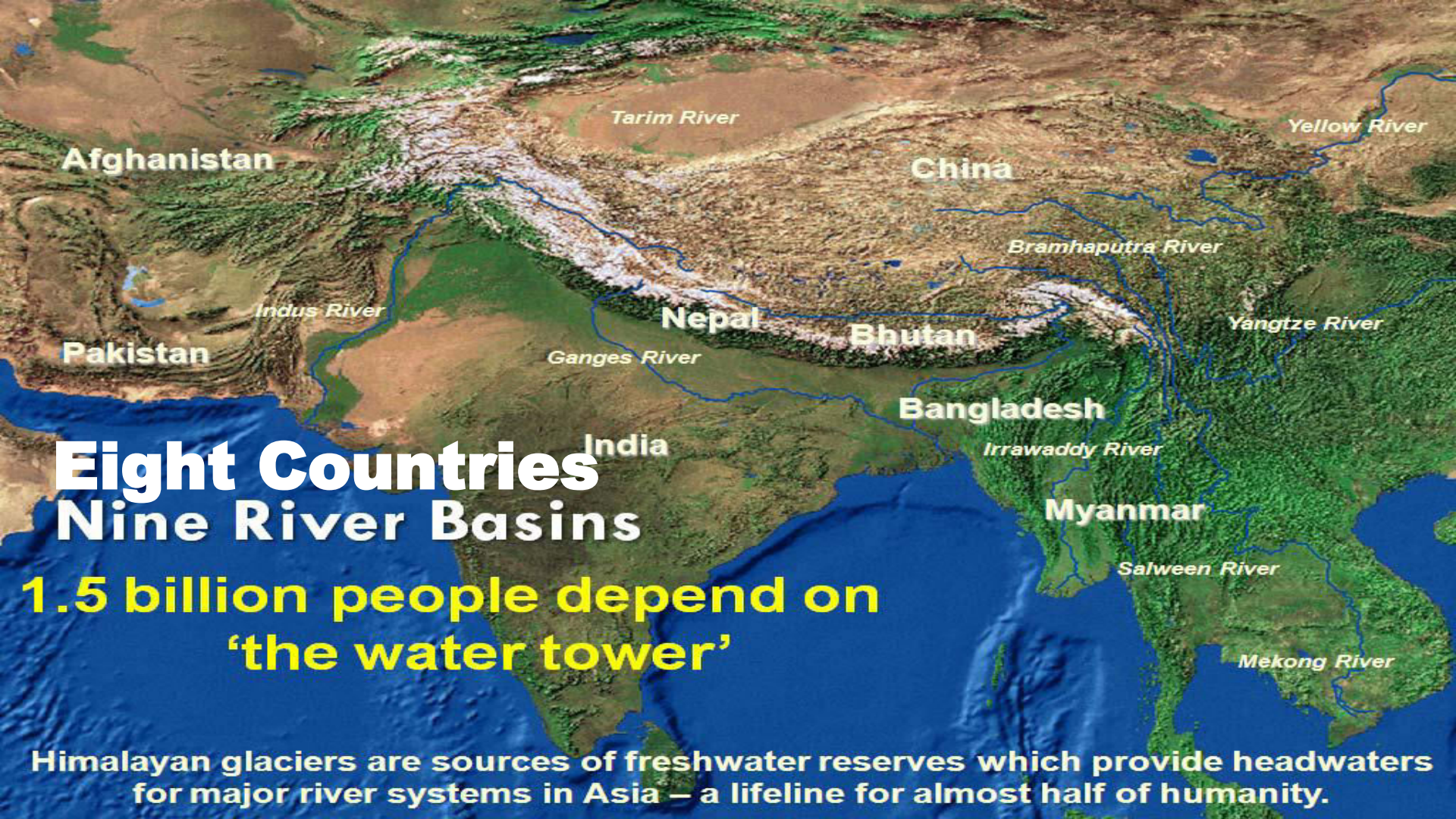
Eight Countries-

AFGHANISTAN, BANGLADESH, BHUTAN, CHINA, INDIA, MYANMAR, NEPAL and PAKISTAN

Nine large Asian river systems –

The Indus, Ganges, Brahmaputra, Irrawaddy, Salween, Mekong, Tarim, Yangtze and Yellow River

 **1.5 Billion People** depend on Himalaya for Water, Food and Energy



Afghanistan

Tarim River

China

Yellow River

Indus River

Nepal

Brahmaputra River

Yangtze River

Pakistan

Ganges River

Bhutan

Bangladesh

India

Irrawaddy River

Eight Countries Nine River Basins

Myanmar

Salween River

1.5 billion people depend on
‘the water tower’

Mekong River

Himalayan glaciers are sources of freshwater reserves which provide headwaters for major river systems in Asia – a lifeline for almost half of humanity.

The Indian Himalayan Region

- ◆ The Indian Himalayan region (IHR) extends over an area of **594,427 sq. km** (18.15% of India) covering **ten states fully** and **two states partially**.
- ◆ The region supports **6.36% of India's population** (2011 census). It is also considered a **regulator of Indian monsoon**.
- ◆ The average **forest cover** of the area is **38%**.
- ◆ The region contributes **63% to India's water budget** with Brahmaputra basin contributing 34%, Ganga basin 25%, and Indus basin 4% to the total water.
- ◆ There is need to **build S&T capacity to study the complex processes linked to sustainable development** issues and challenges across all ecosystems and landscapes of the Himalaya

Broad Objectives of NMSHE

- ◆ The primary objective of the mission is to build S&T Capacity to address sustenance of Himalayan ecosystem.
- ◆ To achieve above, the mission aims to -
 - ◆ Understand the complex processes affecting Himalayan Eco system and evolve suitable management and policy measures for sustaining and safeguarding the Himalayan Eco system
 - ◆ Assess the health status of the Himalayan ecosystem for policy-formulation functions
 - ◆ Assist states in the Indian Himalayan Region (IHR) for implementation of actions selected for sustainable development

Major Programmes/Projects Launched under NMSHE

- ◆ A Centre of Glaciology at Wadia Institute of Himalayan Geology, Dehradun
- ◆ 6 Thematic Task Forces anchored around 6 lead institutions
- ◆ State CC Centres in 11 out of 12 Himalayan States
- ◆ Inter-University Consortium of 4 universities
- ◆ Indo-Swiss Capacity Building Programme in glaciology and related areas

Centre for Himalayan Glaciology

- ◆ Established in 2009 at Wadia Institute of Himalayan Geology with the broad objective of Institutionalizing glaciological research in the country
- ◆ Some of the key outcomes of the Centre include;
 - ❖ Installation of six Automatic Weather Stations (AWS); three Aethlometers; Laser Isotope Laboratory; Remote Sensing and GIS Lab.
 - ❖ Continuous monitoring of 8 glaciers namely Gangotri, Dokriani, Chorabari, Companion, Dunagiri and Bagni, Pindari and Kafni
 - ❖ Publication of 47 research papers with a total impact factor of 70.
 - ❖ 9 Students enrolled/ awarded PhD degrees.
 - ❖ Organised several workshops and brainstorming sessions

6 Thematic Task Forces Anchored Around Existing Lead R&D Institutions in the Himalayan Region

- ❖ 6 Thematic Task forces set up at 6 lead institutions working in the areas of Himalayan Ecosystem
- ❖ Task Forces scientifically support the NMSHE objectives to develop a **national capacity to continuously assess the health status** of the **Himalayan ecosystem**
- ❖ The Task Forces has engaged more than **100 research teams so far from more than 60 research and academic institutions** spread across the IHR along with the state governments of the 12 Himalayan states.

Institutions Leading 6 Thematic Task Forces

1	Wadia Institute of Himalayan Geology	Natural & geological wealth
2	National Institute of Hydrology	Water, ice, snow, including glaciers
3	Wildlife Institute of India	Micro flora & fauna, wildlife & animal population
4	GB Pant National Institute of Himalayan Environment and Sustainable Development	Forest resources & plant biodiversity
5	Indian Council of Agriculture Research	Himalayan Agriculture
6	Jawaharlal Nehru University	Traditional Knowledge

Assigned Task to Thematic Task Forces

- ◆ Establishing Database
- ◆ Designing Monitoring systems
- ◆ Modeling and Simulation
- ◆ Vulnerability Assessment
- ◆ Adaptation policy Research
- ◆ Pilot Studies for Revalidation

State CC Cells in the Indian Himalayan Region

1	J&K	7	Mizoram
2	HP	8	Nagaland
3	Uttarakhand	9	Sikkim
4	Arunachal Pradesh	10	Tripura
5	Manipur	11	West Bengal
6	Meghalaya		

Assigned Tasks to State CC Cells

- ◆ Vulnerability & Risk and Hazards Assessment at district and sub-district levels
- ◆ Development and implementation of training programmes
- ◆ Public Awareness Programmes and
- ◆ Institutional Capacity Building initiatives

Assistance Provided to State CC Cells (Supported by IHCAP/SDC)

**Vulnerability
& Risk Assessment**



Scoping Studies and development of a framework
(led by IISc, Bangalore)

Training of Stakeholders



Development of Training Modules and Training of Trainers
(led by NABCONS)

Public Awareness



Media Workshops and Training
(led by CMS)

Institutional Capacity Building



Linkages with State and National level Institutions
(TFs, National/State Insti, Univ)

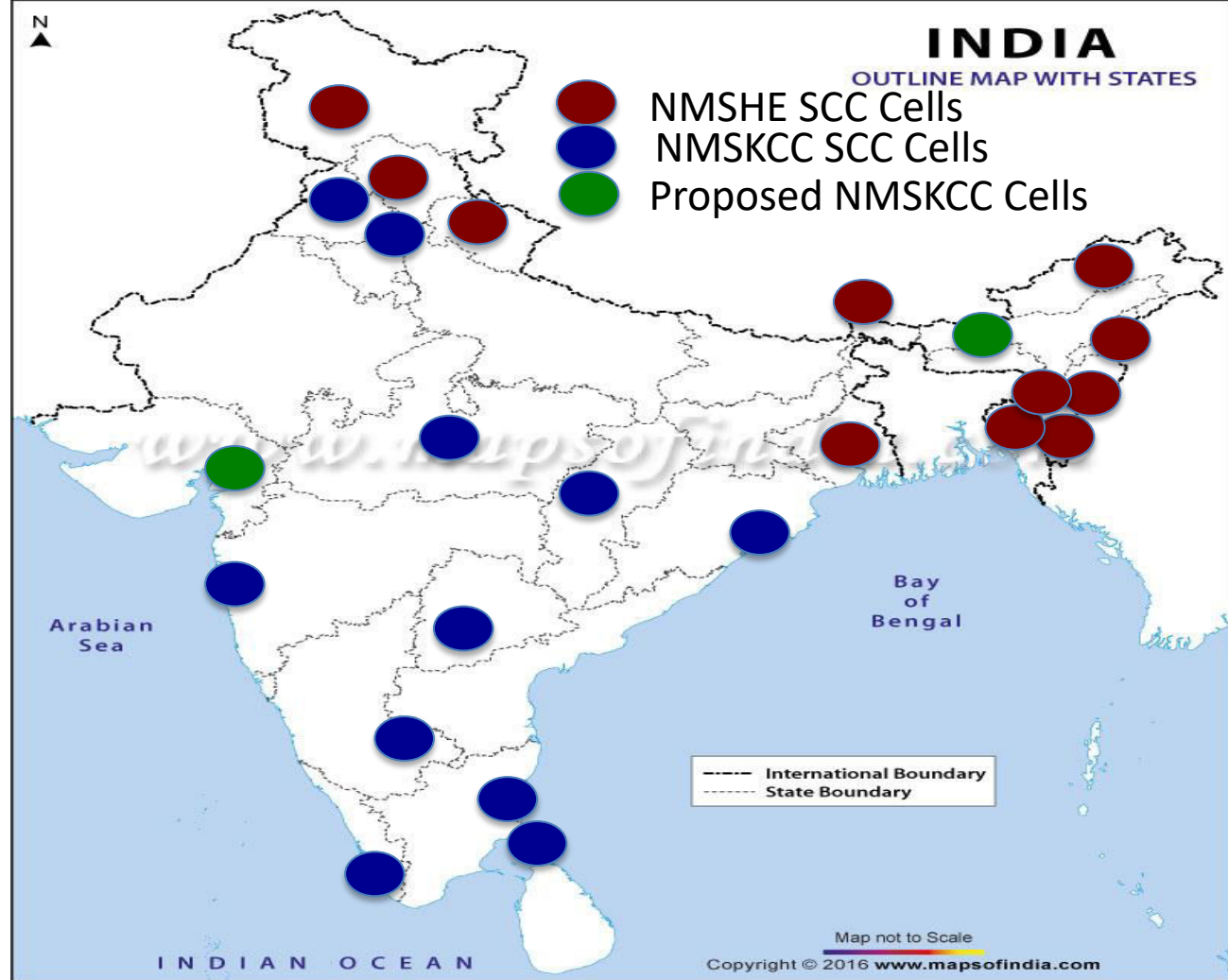
Inter-University Consortium on Cryosphere and Climate Change (IUCCCC)

- ◆ A Consortium of 4 Universities
 - ❖ Jawaharlal Nehru University,
 - ❖ University of Kashmir;
 - ❖ University of Jammu and
 - ❖ Sikkim Central University
- ◆ IUCCCC aims to develop Cryosphere-Societal interactions

Indo-Swiss Capacity Building Programme in Glaciology

- ❖ As part of S&T Agreement between India and Switzerland, an Indo-Swiss bilateral programme was developed during 2012 with the main mandate to build capacity in the field of Glaciology & related areas in climate change.
- ❖ Under this programme, 55 students were trained by Indian and Swiss experts through a three level training programme.
- ❖ The second phase of the programme has been launched recently.

Locations of State CC Cells under NMSHE and NMSKCC



PROPOSED NEW INITIATIVES UNDER NMSHE- CCP

**HICAB: Human and Institutional
Capacity Building Programme**

&

**Network Programme on Himalayan
Cryosphere**

Opportunities Available

- ◆ There are over **250 R&D and academic institutions** in the IHR - 145 universities, 38 central Govt institutions and over 75 state level institutions.
- ◆ Over **1000 scientists** work on Himalayan ecosystem research areas
- ◆ Majority of **Universities in IHR lack requisite R&D infrastructure** and resources and trained manpower
- ◆ **University-R&D Institutions collaboration** could fetch great dividends
- ◆ **International linkages** can be built with Himalayan Universities

HICAB : Categories of Proposed Programmes

- ◆ Centre of Excellence (CoE)
- ◆ Major R&D Programme (MRDP)
- ◆ Network Programme
- ◆ Human Capacity Building programme (HCBP)

HICAB: Broad Sub-Themes

- ◆ **Theme-1:** Meteorology, Glaciology and Hydrology
- ◆ **Theme-2:** Climate Change Vulnerability and Impact
- ◆ **Theme-3:** Bio-diversity and flora/fauna
- ◆ **Theme-4:** Health and Livelihood

HICAB: Developing an Exclusive Component for NE States

- ◆ Within the overall framework of the proposed programme, an exclusive component on NE States is being developed
- ◆ Each State in NE will have a programme focusing research needs and priorities of its own institutions – **State Network of Institutions**
- ◆ Over and above, there will be a **NE Regional Network of institutions** and projects
- ◆ The **NE programme will be integrated with National programme**

National Network Programme on Himalayan Cryosphere

- ◆ National Brainstorming Workshop Organized by DST on 24th April 2018 at Divecha Center , IISc ,Bangalore.
- ◆ Identified Scientists/ Institutions/ Group of institutions as potential partners for the proposed Knowledge Network
- ◆ Identified Themes/sub-themes/issues relevant to broad areas of Himalayan Cryosphere and discuss possible roles of potential partners
- ◆ Expressions of Interest have been invited.
- ◆ To Finalise a framework for the National Network Programme on Himalayan Cryosphere – Identify relevant projects for support and consider inviting proposals
- ◆ The Network programme will be set up for 3 years.

Concluding Remarks

- ◆ National Mission for Sustaining the Himalayan Ecosystem has made considerable progress
- ◆ A detailed Pan-Himalayan health status report is being brought out shortly covering aspects like glaciology, hydrology, meteorology, forestry, flora/fauna, agriculture and traditional knowledge system.
- ◆ State CC Centres in the Himalayan region are expected to bring out a sub-district level vulnerability and risk assessment
- ◆ Efforts are being made to develop a framework for Regional cooperation in partnership with ICIMOD, Kathmandu
- ◆ DST has built a partnership with Swiss Agency for Development and Cooperation (SDC) which will be strengthen in the future
- ◆ An ambitious R&D programme comprising of Centres of Excellence, Major R&D Programmes and Network Programmes is being launched shortly for the Indian Himalayan Region.

Thanks !!