IMPLICATIONS OF CLIMATE CHANGE ON BHUTAN

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Bhutan is One of Most Vulnerable Countries to Climate Change

▶ High dependence on climate sensitive sectors,

  ▶ Agriculture and hydropower

▶ Level of economic development

  ▶ ~ 70% population engaged in subsistence agriculture
  ▶ Low diversification of economy

▶ Geography

  ▶ Fragile mountainous ecosystem.
  ▶ Tropical setting and spread of diseases to higher elevations
  ▶ Increased risk of disasters like GLOF and flash floods, seasonal drought, changing monsoons

Impacts of Climate Change in Bhutan

POTENTIAL IMPACTS OF CLIMATE CHANGE

Agriculture:
80% of the Bhutanese practice subsistence farming. Climate Change can cause changes in temperature and precipitation patterns and increase the vulnerability of a large group of this population.

Human Health:
Rising Temperatures may cause the spread of tropical diseases and heat stress into higher altitudes.

Natural Disasters:
Rapidly retreating alpine glaciers is increasing the risk of "glacial lake outburst floods" endangering life and property downstream. Increasing flash floods may also be caused by intensifying
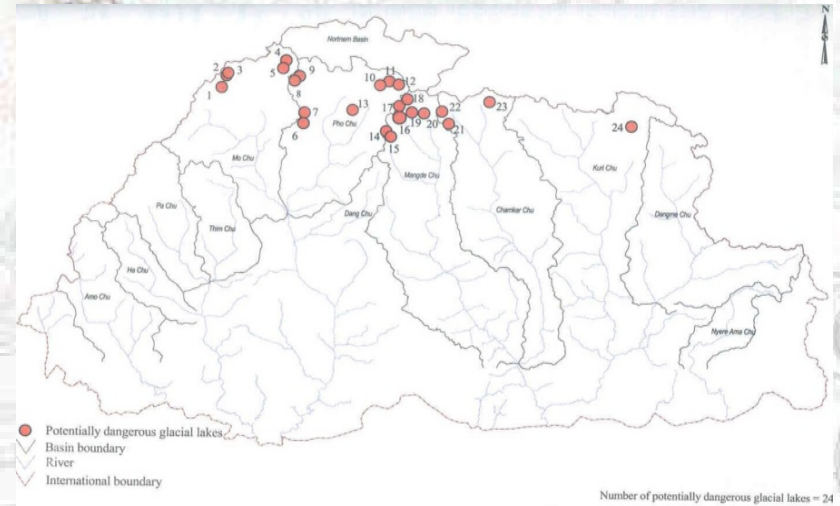
Forests & Biodiversity:
Increasing temperatures may cause species and ecosystems to shift and species at higher elevations and other species unable to migrate to become extinct.

Water Resources:
Changes in the hydrological cycle such as lower winter flows in streams and intense monsoon rains may affect drinking water and supplies as well as hydropower generation

Glaciers and Glacial Lakes

Total of 2,794 glacial lakes
25 potentially dangerous

PhoChhu Sub Basin	9
MoChhu Sub Basin	5
Chamkhar Chhu Sub Basin	4
KuriChhu Sub Basin	1
MangdeChhu Sub Basin	7

Observed Changes in Glaciers of Bhutan

Observed Changes in Glaciers of Bhutan

Planned and Ongoing Work

- Artificial lowering of water level in Thorthormi lakes
  - *NAPA Project funded by LDC Fund*
- Follow up on the installation of TEWS along Pho chu valley (Lunana, Punakha and downstream.
  - *NAPA Project funded by LDC Fund*
- Conduct further studies in other watersheds

Acts relating to protection of Environment

➢ Constitution of Bhutan: came into force from 2008
- separate article dedicated to environment.
➢ National Environment Protection Act, 2007
- An umbrella Act.
- protection of genetic resources, minimum 60% forest coverage in all times to come, protected areas.
➢ Environment Assessment Act, 2000 and its regulations
- environmental assessment procedures
- issuance of Environmental Clearances
- Compliance monitoring.
➢ Forest and Nature Conservation Act, 1995 and its regulations.
➢ The Biodiversity Act of Bhutan, 2003
- regulate access to genetic resources and benefit sharing.
➢ Draft Waste Prevention and Management Act.
➢ Draft Water Act.

Conclusion

- Climate change is happening and caused by human activities

- Climate change is a serious issue and an adequate response requires coordinated efforts of all stakeholders.

- Bhutan contribute least towards climate change but will suffer from its adverse impacts

THANK YOU AND TASHI DELEK