

Title

Bhutan's initiatives towards the conservation and sustainable management of biological resources in the 21st century.

Introduction to the Kingdom of Bhutan.

- Located on the mountainous southern slopes of the Eastern Himalayas and is landlocked between the Tibetan autonomous region of China in the north and India on the other frontiers with a total area of 40, 077 square kilometers .
- Prominent landscapes :The southern foothills,The inner Himalayas and The high Himalayas.



Biodiversity and the Status of Biological Resources in Bhutan

- Bhutan is ranked in the top ten percent of countries with the highest species density in the world.
- The diverse geophysical elements of high, rugged mountains interlaced with deep valleys with microclimatic environments have endowed Bhutan with an array of biodiversity both wild and domesticated at the ecosystem, species and genetic levels.



Wild terrestrial species diversity of Bhutan

- The High-altitude fauna: “Flagship” species - snow leopard, blue sheep, red panda, tiger, and takin.
- Temperate zone: Tiger, leopard, goral, grey langur and macaques are found, Himalayan black bear, red panda, sambar and barking deer.
- Animals :Tiger, clouded leopard, elephant, greater one-horned rhinoceros, , gaur, swamp deer, hog deer, pygmy hog, piliated langur and four species of hornbills.



Natural vegetation

- **Narrow lowland tropical fringe: Tropical vegetation** including flood-plain grasslands, sal forest and tropical semi-evergreen forest.
- **Subtropical evergreen broadleaf forests: Conifer forests** rich in non-wood forest products include numerous medicinal and aromatic plants, wild edible plants and plants for construction materials.
- **Medicinal plant: More than 300 species of medicinal plants ,400 species of orchids, and over 5500 vascular plant species .**



Diversity of Domestic Floral and Faunal resources

- Rice is the major cereal in Bhutan, cover about 90% of the total rice growing areas in the country .
- Maize is the most important crop in terms of the area under cultivation and various land races exist.
- The main domestic livestock in the different regions of Bhutan are cattle, yaks, poultry, pigs, , sheep and dogs.

Major threats to Bhutan's Biodiversity

- Land conversion
- Replacement of indigenous species
- Brown sector activities
- Lack of awareness

Biodiversity Conservation Efforts in Bhutan

- Conservation and preservation of Bhutan's natural endowment has been largely possible given the strong political support and leadership of the country, and the strong conservation ethic of the Bhutanese people .
- Bhutan's conservation efforts locally have been both in-situ and ex-situ .

In-situ Conservation Efforts in Bhutan

- Bhutan has managed more than 70% of the land area under forest cover for the conservation of natural biodiversity and the environment.
- The in-situ conservation of wild biodiversity in Bhutan is mainly inside protected areas, comprising of 26.23% of the total land area .
- In 2002, 9% of the land area assigned for biological corridors, as migratory pathways among the country's system of protected areas for environmental conservation.

Conservation inside the Protected area

- The nine protected areas - four national parks, four wildlife sanctuaries and one strict nature reserve.
- Two reserves in the northern high altitude zone, four in the temperate zone from east to west and another three remain along the tropical fringe.
- Three national parks are rated as of global significance according to the eco-regional studies undertaken by World Bank .

Conservation Outside the Protected Area

- Outside protected areas, significant wetland managed for specific species- the black-necked crane refuge of Popjikhah valley by the Royal Society of Protection of Nature.
- An in-situ orchid garden and a rhododendron garden is identified in the western and central regions .
- Social forestry and community forestry for the conservation of native tree species.

Active Organizations

- **Agro biodiversity Conservation Project** for the documentation and inventory of the local species using indigenous knowledge for the use and maintenance of the species.
- **Other Projects** include the **Biodiversity use and conservation Asia project** for the preservation of traditional knowledge in maize and rice production systems .

Protected Areas, Biological Corridors and Tiger Habitat

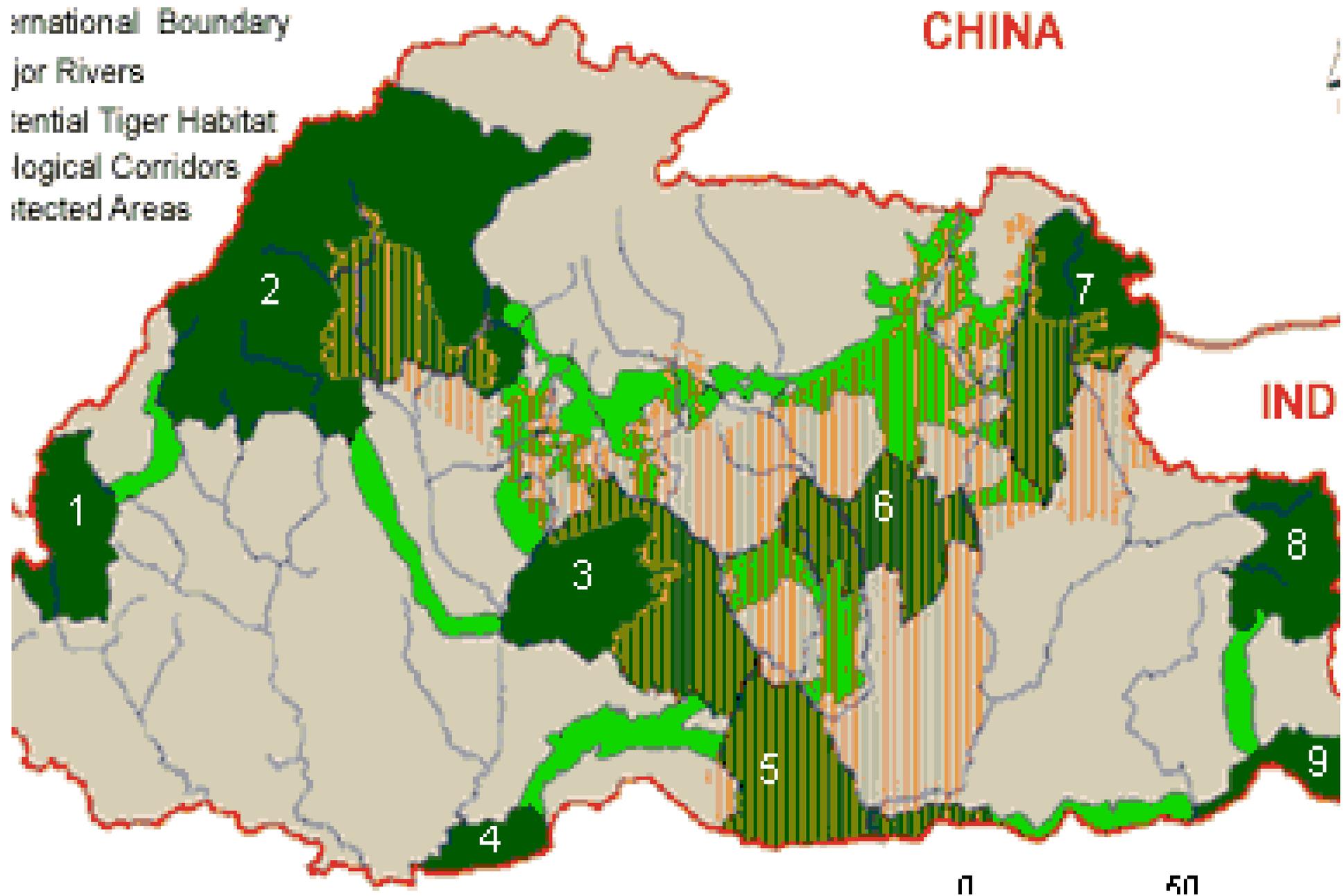
International Boundary

Major Rivers

Potential Tiger Habitat

Biological Corridors

Protected Areas



Biodiversity Management by Government Institutions

- Ministry of Agriculture (MoA)
- National Biodiversity Center (NBC)
- The Nature Conservation Division (NCD)
- Renewable Natural Resources Sector (RNR)
- National Environment Commission (NEC).
- Bhutan Trust Fund for Environmental Conservation
- Non governmental WWF and the RSPN in Bhutan programs

Ex-situ Conservation in Bhutan

- Establishment Royal Bhutan Gene Bank for conservation and utilization of plant and animal genetic resources.
- Establishment of national botanical garden on 58 acres of land near the capital city.
- National Herbarium with 17,000specimen for having record on the sample of flora.
- Looking forward for the establishment of field museum for scientific research

National Policies and Legislation for Biodiversity Management in Bhutan

- Mainly focus on biodiversity issue prioritizing the protected area associated with conservation information.
- The Environment Assessment Act 2000.
- Forest and Nature Conservation Rules 2000.
- The Biodiversity Action Plan for Bhutan, 2002.
- Biodiversity Act ,2003

Local Community's Contributions to Biodiversity

- More than 70% of the people in rural areas dependent on the forests and agricultural products.
- Agro-forestry or other forms of diverse integrated management systems are common in agricultural land.
- Sustainable management of forestry resources is taking place in the form of social forestry .
- Local forest manage on government reserve land by Community management plan.

International Undertakings and Initiatives

- **The Convention on Biological Diversity at the United Nations Conference on Environment and development in 1992.**
- **Framework for Climate Change, which was ratified by the National Assembly in 1995.**
- **The World heritage Convention on 22nd October 2001.**

Conclusion

- The Bhutanese with the age old cultural traditional respect for nature and all life forms are aware about the consequences of over exploiting the earth's natural resources for self and economic gains .
- This is not only from cultural belief but also survival and well-being of the hilly people to take proper conservation and management ensuring sustainable management followed by the middle path approach is the ultimate goal of national gross happiness for the present and future generation.

