The characteristics of the management of *Satoyama*-like landscapes and their benefits for biodiversity conservation and human well-being in Nepal

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Outline

- **Introduction**
- ***Satoyama*-like landscapes in Nepal**
- **Elements**
- **Challenges**
- **Future scope**
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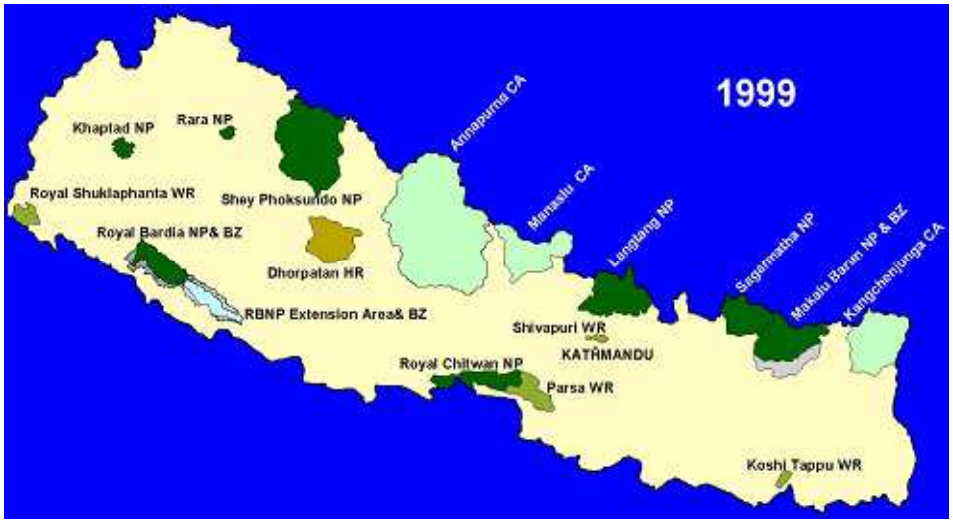
1. Introduction:



1.1 Nepal:

- Area – 147, 181Sq. Km
- Population – 25 million
- Forests- 39.6 %
- Agriculture- 22 %
- Farming system – Crops, Livestock, Forests/trees
- Rich in cultural, ecological and biological diversity
- High endemism – 342 plants, 160 animal spp.
- Key economic activities – agriculture, eco-tourism

2 *Satoyama*-like landscapes in Nepal

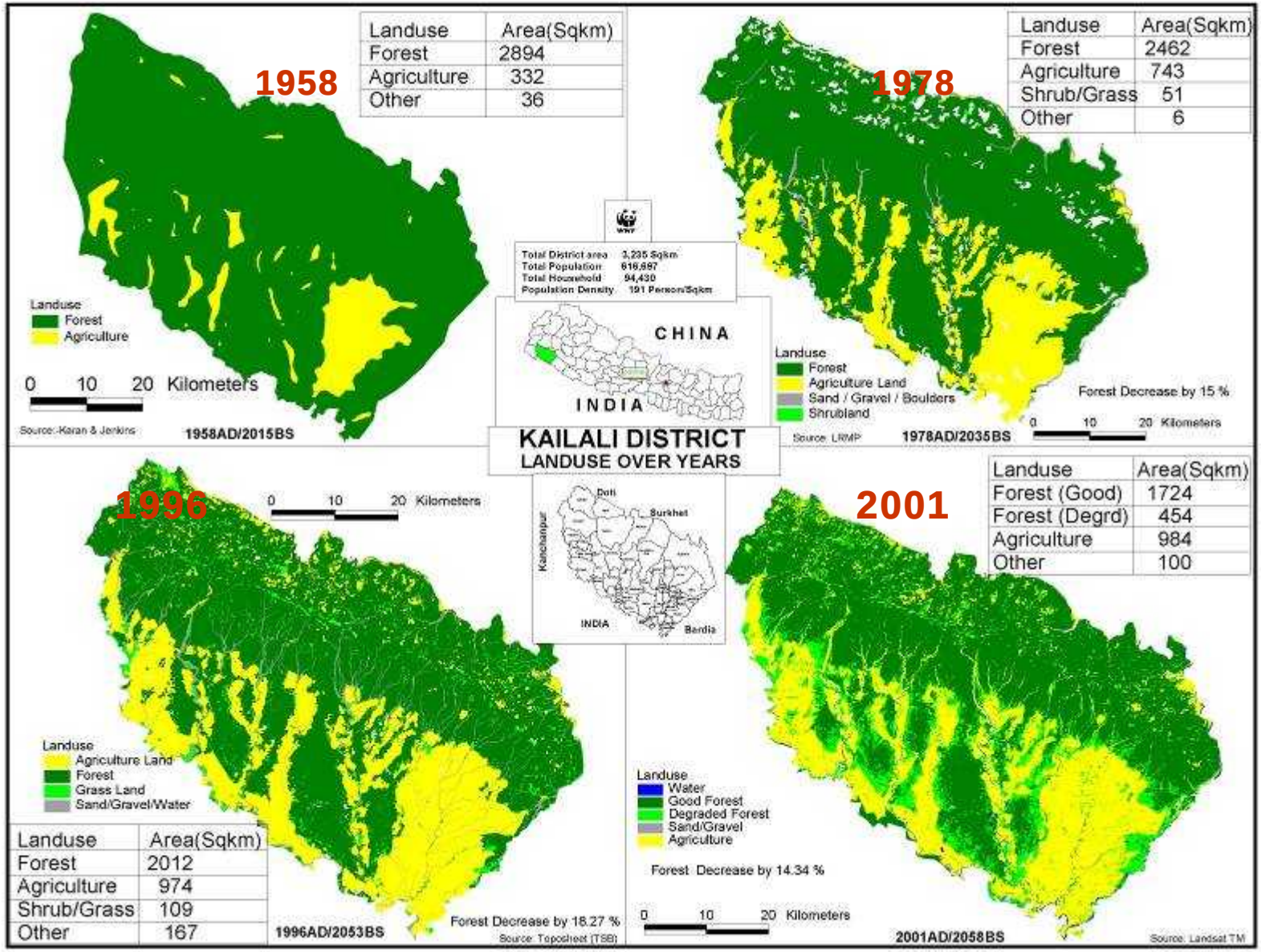
2.1. **Degraded forest landscapes- in the mountains, siwaliks and plains**

2.2 Slash and burn agriculture landscapes in the mountains

2.3 Encroached forest areas for settlements and agriculture

Typical example of Forest Cover Changes in

Kailali District, (1958 – 2001)



2.4 . Unplanned settlements, quarry and urban landscapes

2.5 Degraded wetlands

3. Elements of Satoyama-like landscapes …..

3.1 Formation process

- **Clearance of forests** for decades for agriculture, fuel, fodder, timber, NTFPS, in the mountains, Churia (foot hills) and Tarai (plain areas)
- **Traditional farming system** - Livestock grazing, lopping of fodder trees, repeated forest fires for good grass and hunting, soil working before the monsoon leading to soil erosion
- **Unsustainable collection and marketing** of forest products
- **Un planned urbanization, stone quarries**, collection of sand, gravel, stones for construction
- **Forest encroachments**
- **Government resettlement schemes** (freed bonded labor, land less people, victims of conflict, floods, landslides
- **Physical infrastructures** (roads, hospitals, dams, hydropower stations etc. through the forests
- **Wetland degradation** through siltation, excessive use and pollution of lakes, ponds, rivers and other wetlands

3 *Elements of Satoyama-like landscapes……*

3.2 Structure and ecological processes

- Forest landscapes fragmented into settlements, towns, agricultural fields, highways and rural road networks forming more complex ecosystems

- Contiguity of water flow, forest, wildlife corridors/connectivity, watershed broken

- Loss of wetland biodiversity due to pollution, siltation and encroachment

- Limited ecological functions and service where degradation continued

3 Elements of Satoyama-like landscapes……

3.2 Structure and ecological processes ……contd.

- Churia and foot hills are severely fragmented forming mosaic of settlements, farms and roads thereby causing –
  - loss of wildlife corridors/connectivity
  - loss of forest biodiversity
  - drying of water sources and reduction of ground water recharge
  - enhancing soil erosion and floods, decreasing crop productivity in Nepal and, causing floods in Nepal, India and Bangladesh

3 Elements of Satoyama-like landscapes…….

3.3 Use and management

- **Either unmanaged or mostly managed by the local and indigenous communities** (over 15000 CFUGs managing forests)

- **Used for the fulfillment of local needs –** (e.g. grazing, fishing, sheltering, religious and cultural spots, public places etc.)

- **Community based management systems encouraged**

- **Vulnerable to further degradation and loose identity**

3 Elements of Satoyama-like landscapes…

3.4 Regional characteristics:

- **Community based natural resources management approach is increasingly being popular**

- **Conservation education and rights of local and indigenous community being more pronounced**

- **Loss of forest land for non forestry use, hence loss of forest biodiversity still continue**

3 Elements of *Satoyama*-like landscapes….

3.5 Changeability:

- **In Tarai - Forest cover changed into agriculture, settlement and degraded forests**
- **In the mountains – reappearance of forest & wildlife**
- **Improved livelihoods through forest based micro enterprises**
- **Wetlands decreased in area and quality**
- **Socio-cultural transformation**
- **Increased area under community management** (over 1.3m.ha) and under Protected Areas (nearly 20%)

3 Elements of Satoyama-like landscapes…

3.6 Biodiversity

- **+ve and –ve results**

- **Loss of biodiversity continue in unmanaged landscapes**

- **Restoration of flora and fauna in managed landscapes (**(e.g. birds, fish, wildlife in CF, PAs & Ramsar Sites)

•Increased area under CF and BZ management has improved habitats for rhino, elephant, deer etc.

- **Integrated landscape management concepts promoted conservation education, germplasm conservation and sustainable use**

Major threats to biodiversity

- **Threats to ecosystem – habitat loss, deforestation, fire, grazing, illegal timber harvesting, unmanaged tourism, pollution, over fishing and use of wetland resources, climate change**

- **Threats to species – over exploitation of high value spp., alien invasive spp., poaching**

- **Threats to genetic resources – loss of local land races, monoculture, increased vulnerability to pests and diseases.**

3 Elements of *Satoyama*-like landscapes..

3.7. Ecosystem services

- **Watershed management – ground water recharge, maintain flow, fresh water availability**

- **Community forests - availability of range of forest products, NTFPs, carbon stock**

- **Conservation areas - conservation of genetic resources**

- **Public land management – agroforestry and environmental improvement**

3 Elements of Satoyama-like landscapes…
3.8. Human well being

- **Agricultural productivity** – availability of fodder, fuel, fertilizer, improved soil fertility, improved agroforestry practices
- **Income through collection of forest products** – timber, fruits, fiber, resin, honey bee, medicinal herbs,
- **Additional employment** – forest based micro-enterprise – hand made paper, processing of herbal products, ecotourism
- **Cultural and religious values**
- **Agroforestry in degraded forest** landscapes contribute in food security, biodiversity conservation and environmental balance
- **Contribution to climate change** adaptation/mitigation.

4. Challenges to management of *Satoyama*-like landscapes

- **Protection of landscapes from encroachments, conversion and degradation**
- **Coordination for Integrated management**
- **Minimize threats to biodiversity loss at all levels**
- **Benefit sharing mechanisms**
- **Increase financial investment**
- **Fighting against poverty**
- **Political stability and peace building**

5. Can *Satoyama*-like landscapes be beneficial to your country? (Future scope)

Key programs/projects contributing to the management of degraded landscapes and their impacts

a) **Community Forestry**

b) **Leasehold Forestry**

c) **Conservation area and Buffer zone management**

d) **Transboundry landscape projects**

e) **One person one tree programme**

Impacts of key programmes

Forest degradation reversed

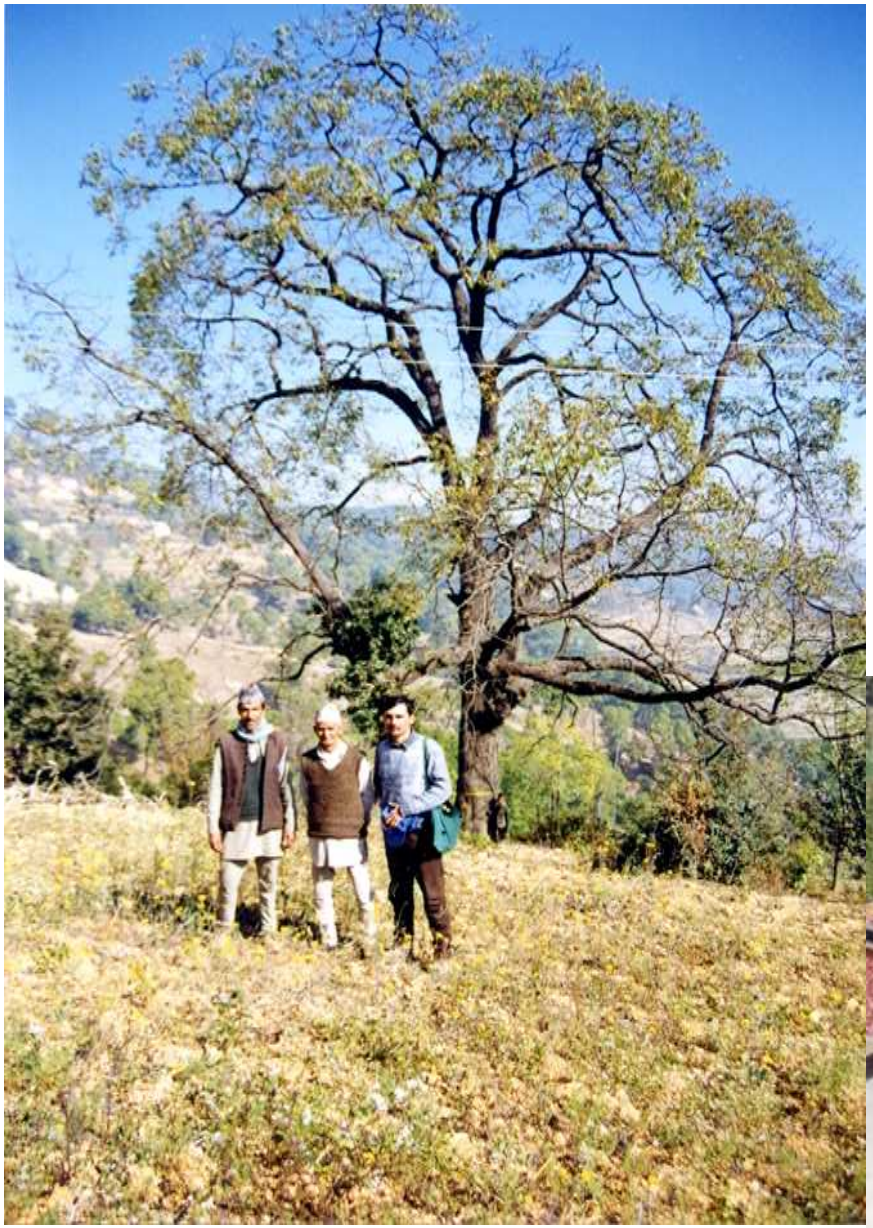
Forest condition improved

2.5 mill. person day annual voluntary labor contribution of users

Benefited from ecosystem services

Incidence of Fire Reduced

Forest Based Enterprises Developed



Domestication of wild fruits

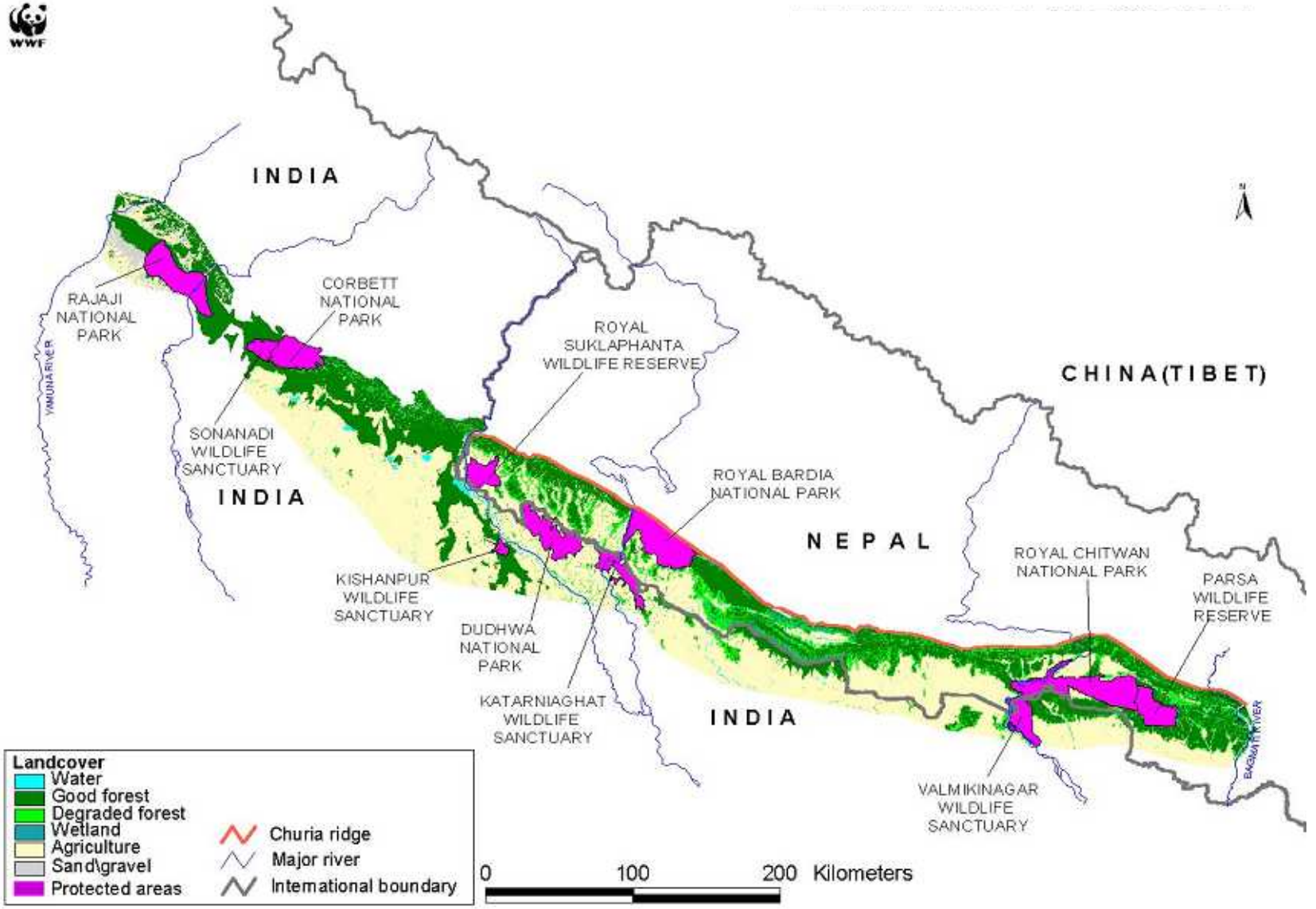
Availability of forest products

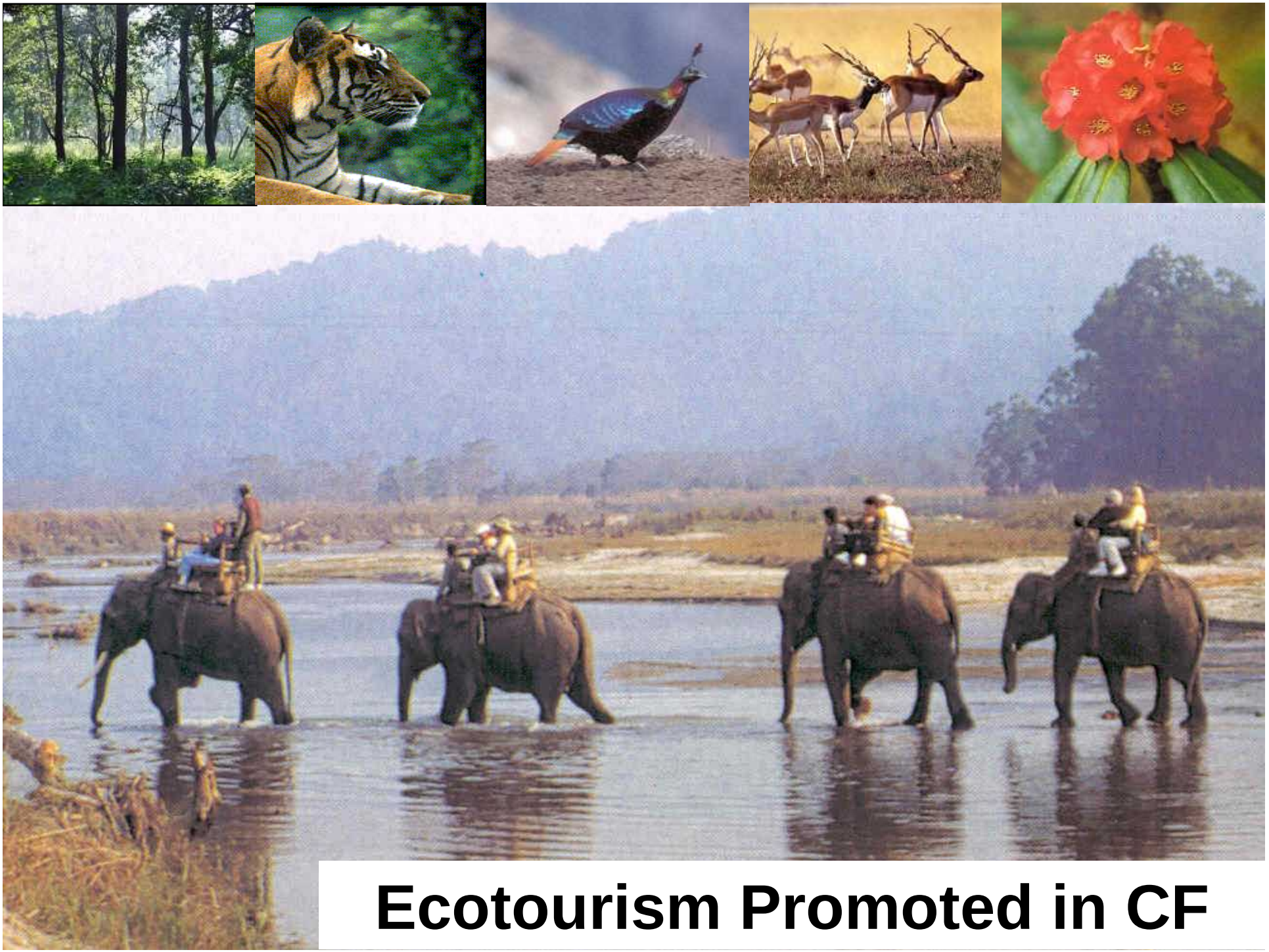
Annual Production from CF: 10.9 mill.cft of timber, 338 mill.kg of firewood and 379 mill. kg of grasses

Consumed by users: 8 mill. cft of timber, 335 mill. kg of firewood and 370 mill. kg of grasses

Community Development Works

Significant contribution (7.6 percent of total expenditure) on education


WWF
INDIA
CHINA(TIBET)
NEPAL
INDIA
INDIA
RAJAJI NATIONAL PARK
CORBETT NATIONAL PARK
ROYAL SUKLAPHANTA WILDLIFE RESERVE
SONANADI WILDLIFE SANCTUARY
ROYAL BARDIA NATIONAL PARK
KISHANPUR WILDLIFE SANCTUARY
DUDHWA NATIONAL PARK
KATARNIAGHAT WILDLIFE SANCTUARY
ROYAL CHITWAN NATIONAL PARK
PARSA WILDLIFE RESERVE
VALMIKINAGAR WILDLIFE SANCTUARY
YAMUNA RIVER
BAGMATI RIVER
Landcover
Water
Good forest
Degraded forest
Wetland
Agriculture
Sand\gravel
Protected areas
Churia ridge
Major river
International boundary
0
100
200
Kilometers



Ecotourism Promoted in CF


राधा-७
माला
मन्थुली
रातो भन्द्री
सेतो भन्द्री
नौलो मधिसे
मानभुरी
जेठीबुढो
बयर्नि
एकुले
राधा-९
गुदी
पाखे जेठेली

Conclusions:

Satoyama-like landscapes have enormous potential for offering cultural, ecological and economic goods and services to mankind.

Tremendous potentials for livelihood improvement through forest management, bio-prospecting, and promotion of eco-tourism

Community based resource management systems are cost effective and sustainable, however people needs to be paid for their conservation contributions.

However, Challenges to the successful management must be carefully addressed.


THANK YOU