

System of Environment Economic Account (SEEA)

Pilot Land Account of Nepal

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Goals & priorities of the nation

- Committed to meet the targets of SDG in 2030
- Healthy and balanced environment (*Long-term National Goals*)
- To conserve and utilize natural resources and improve resilience (*Long-term National Strategies*)
- Sustainable development, green economy, climate change, biodiversity preservation, etc. are the priority agenda
- Making human activities and development process **environment friendly**
- Develop the **adoptive capacity** of the impact of climate change

Current status

- 2/3 of the population dependent on agriculture (subsistence agriculture)
- 1/3 of the GDP from agriculture sector
- Urbanization is in rapid process
- Change in the land use category
- 44.7 percent of land covered by forest (FRA 2015)
- Forest area increases mostly in hilly region
- Shrub changes to forest
- Trend of out migration from rural hill area to urban Hill area and Terai (plain) area

Why Land account

- Over the past few years, demand for environmental-economic and ecosystem accounts from policy makers and others has markedly increased
- There are 33 accounts in SEEA
- As a pilot work, it is preferred land account in Nepal
- NSO Ministry of Agriculture Development, Survey Department, Urban Development and Building Department, ICIMOD, WECS, Forest Research and Survey Department etc. are the major data sources of land account

Land Account

- Land is a unique environmental asset that delineates the space in which economic activities and environmental processes take place
- Land account describes areas and their change in terms of **use** and **cover**
- Land accounts can be prepared in both physical (eg. hectares) and monetary terms
- Used for land planning, agriculture and forestry
- Risks and vulnerability assessments
- Environmental issues such as nature/biodiversity conservation, water, soil, climate change

Some Nepal specific SDG indicators that can be developed from the land account

- Ratio of land consumption rate to population growth rate
- Forest area as a proportion of total land area
- Protected area in Hectares
- Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
- wetland area in hectares
- Area of land erosion
- Coverage by protected areas of important sites for mountain biodiversity
- Mountain Green Cover Index

Technical support from UNESCAP

- UNESCAP Identified need and interest of CBS to implement SEEA in Nepal
- Focussed on opportunities for establishing land cover & timber accounts and provided basic training on land accounts
- MOU with NSO and UNESCAP to support the implementation of the SEEA as a pilot project to develop Land Account

Formation of task force team

- Deputy Director General , NSO, Coordinator
 - Directors, Environment Statistics Section, NSO, Members
 - Representative from Planning Commission , Member
 - Representative from Ministry of Agriculture Development, Member
 - Representative from Forest Research and Survey Department, Member
 - Representative from ICIMOD, Member
 - Statistics Officer, Environment Statistics Section, NSO, Member Secretary
- *Provision to invite the experts and the representative from other stakeholder in the meeting***

Terms of the reference for task force team

- To facilitate supply the data to prepare pilot land account
- To suggest the availability, accessibility, quality control of the data required for the development of the land account
- To guide and coordinate the development and publication of pilot land account
- To facilitate and support the international and local consultant to develop the land account
- Support to develop the land account according to the manual of System of Environment and Economic Account (SEEA)
- To coordinate ministries, departments and other stakeholders for the compilation of data and for the MoU process (if needed).

Stakeholder's Workshop

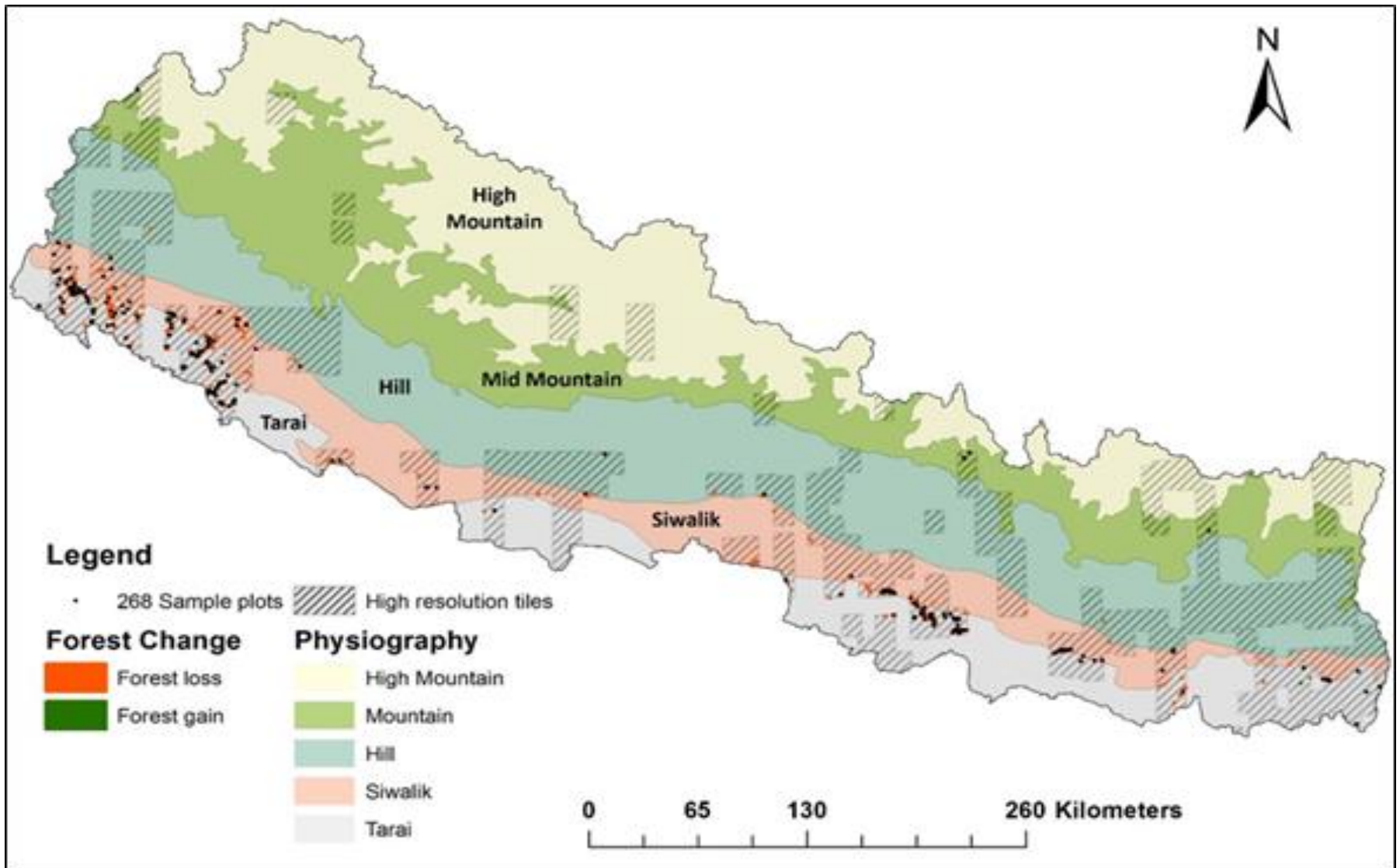
- Conducted the national level stakeholder's workshop to identify information needs for policy analysis and planning, discuss data requirements, data availability, and memoranda of understanding
- Micheal Bordt(SEEA expert) had given the presentations of SEEA land and forest account

Progress on the compilation

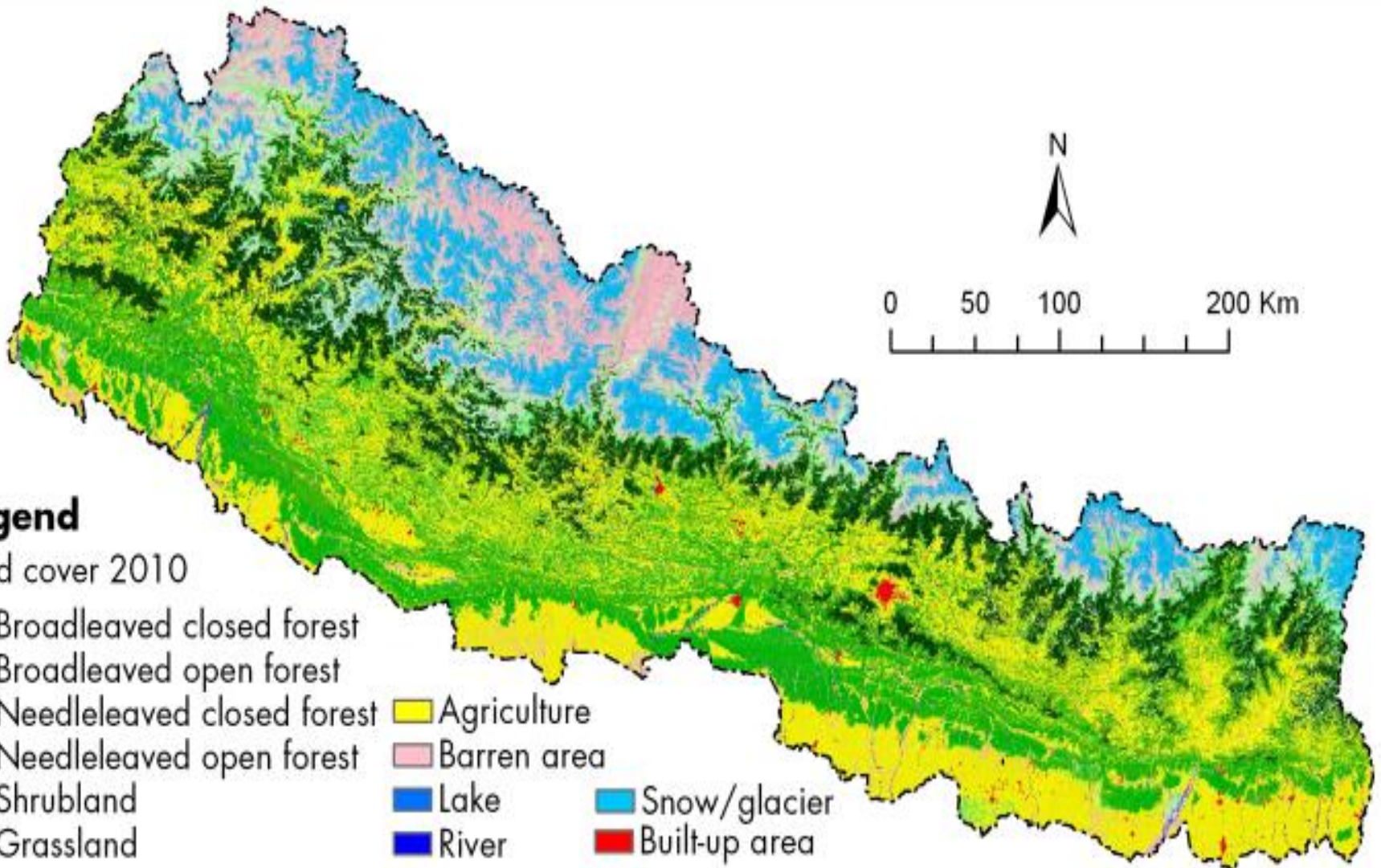
- Developed the workplan (calender)
- Source of the Land Cover data was ICIMOD
- Data available on the time periods 1990, 2000 and 2010
- Discussed on the taskforce meeting about the available data
- Compared and agreed on land cover types across the different times periods
- Analysis of the preliminary account and feedback was taken from the UNESCAP experts

Input data for Land cover mapping

- All images were downloaded from the United States Geological Survey (USGS) archived data portal
- The whole study area lies within thirteen fully or partially covered Landsat images (each scene 185 x 185 km)
- At the national level, eight land cover classes (forest, agriculture, grassland, shrubland, barren area, built-up area, water body and snow & glacier) were mapped for the comparison and further analysis.
- accuracy assessment done through confusion matrix, method propose by the (Foody, 2002)



Distribution of sample plots for accuracy assessment of forest loss and gain 2000-2010



Legend

Land cover 2010

- Broadleaved closed forest
- Broadleaved open forest
- Needleleaved closed forest
- Needleleaved open forest
- Shrubland
- Grassland
- Agriculture
- Barren area
- Lake
- River
- Snow/glacier
- Built-up area

Source :- ICIMOD

Land cover change matrix (hectares) 2000 to 2010

Class_Name	Forest	Shrubland	Grassland	Agriculture area	Barren area	Water body	Snow/glacier	Built-up area	Total (2010)
Forest	5917531	37673	45184	194603	6856	2163	168	0	6204178
Shrubland	25426	251789	38734	23637	2032	463	1032	0	343113
Grassland	29225	30934	1257540	93470	55968	3226	71113	0	1541476
Agriculture area	167982	22758	71629	3705072	57300	13875	14	22	4038651
Barren area	6761	2608	109096	65108	977602	10005	88887	0	1260067
Water body	2580	1106	4472	12944	13877	42703	1062	0	78744
Snow/glacier	174	364	147703	13	294435	1132	814462	0	1258284
Built-up area	570	58	1047	10020	334	51	2	42285	54365
Total (2000)	6150247	347290	1675405	4104867	1408404	73617	976741	42307	14778878

Challenges and Issues

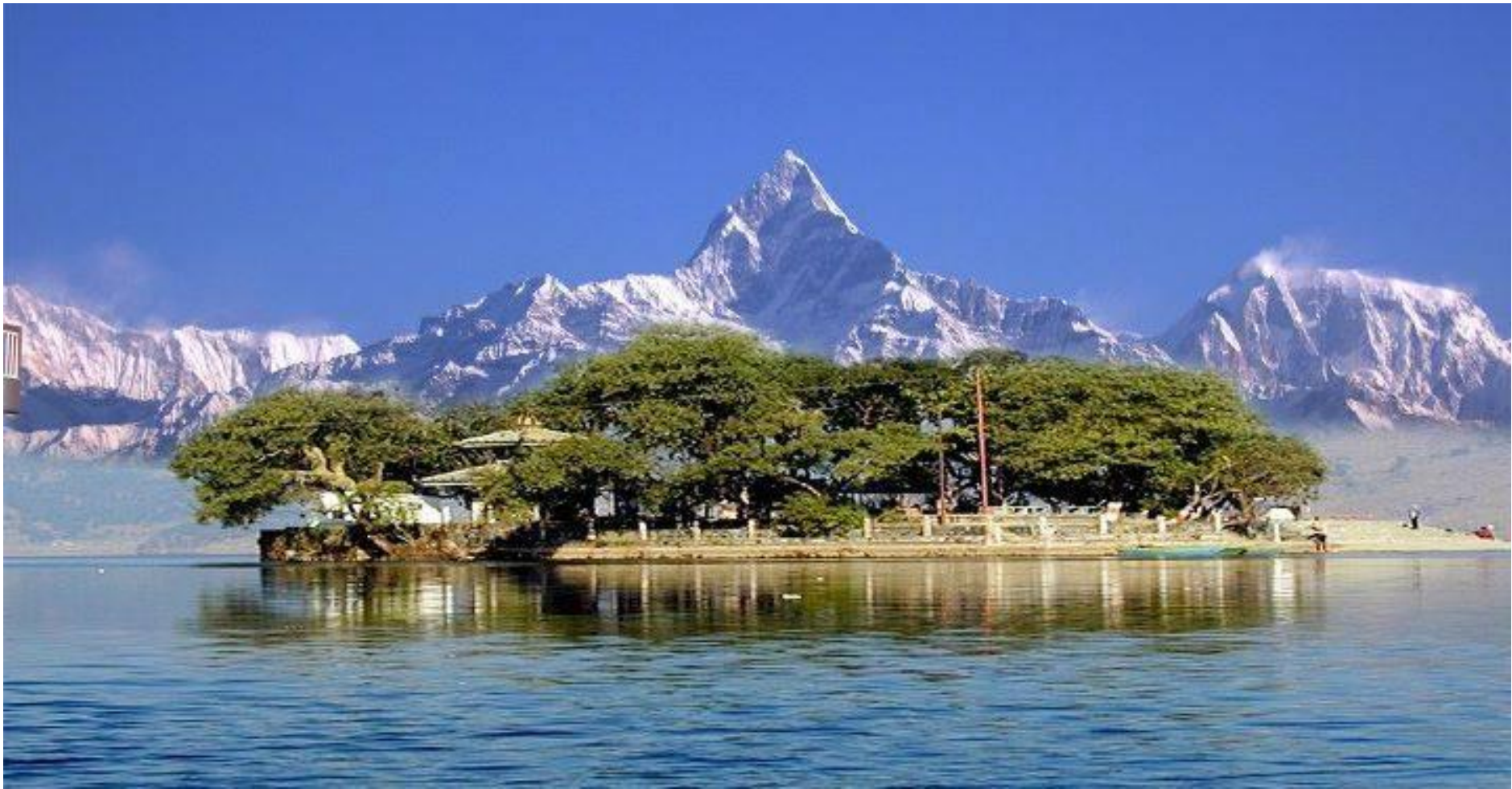
- The methodology used by ICIMOD and Ministry of Forest & Environment(MoFE) was same for the data generation
- Slightly difference in area of forest (MoFE & ICIMOD)
- It may be the boundry difference
- Issues of shrub land (MoF added to the forest but ICIMOD separete category)
- Data quality issues like in snow/glacier (it may due to seasonal variation)

Conclusions, Recommendations and Ways Forward

- NSO is the central authority for disseminating and managing key sectoral datasets for Nepal. However, the GIS component of NSO is not actively producing spatial data
- It is important to note that the account is experimental and based on the best available data to date
- National Land Use project of Ministry of Land Reform and Management is collecting data of land use in 11 categories.

Conclusions, Recommendations and Ways Forward cont....

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Thank you !!!
Your comments and queries are highly appreciated !!!