



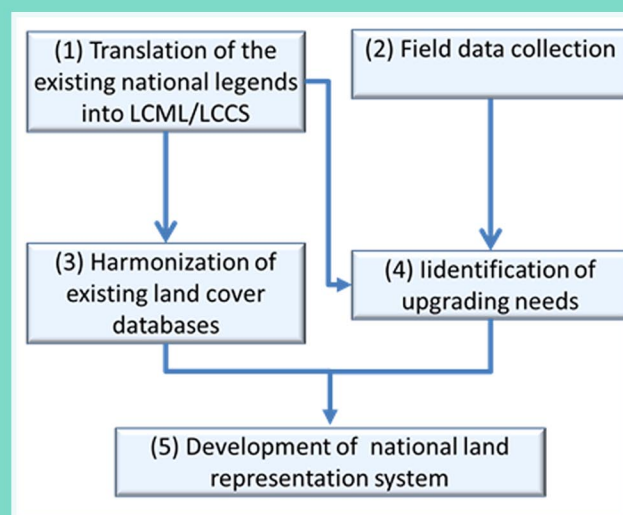
National Land Representation System of Bangladesh

Ensuring harmonized and standardized classification for consistent land cover mapping and monitoring

There is a long-standing data integration problem in the domain of land cover mapping. How to reconcile semantic differences between classification systems? A standardized classification system for Bangladesh is a strong technical progress for producing consistent and comparable land cover information.

Context

In Bangladesh, various agencies develop land cover maps for a range of purposes, by making use of remote sensing and ancillary data. Apart from the inherent differences in organizational objectives, dissimilarities in methodologies, boundaries, definitions, classification systems and capacities limit the utility and comparability of land cover maps across time, space, organizations and disciplines. In response, Bangladesh Forest Department (BFD), in collaboration with nine government and non-government institutions and with the technical support of the Food and Agriculture Organization of the United Nations (FAO) started the development of National Land Representation System (NLRS) which is the first ever attempt to harmonize all possible land cover classes of Bangladesh. NLRS is based on ISO standard (ISO 19144-2) Land Cover Meta Language (LCML), developed by Global Land Cover Network (GLCN- a joint initiative between FAO, UNEP and IAO). The system has the potential to reduce inconsistency, significantly, between maps produced by different organizations. Based on the system, the Land Cover Map of Bangladesh 2015 has been produced and is being used for Bangladesh Forest Inventory (BFI).



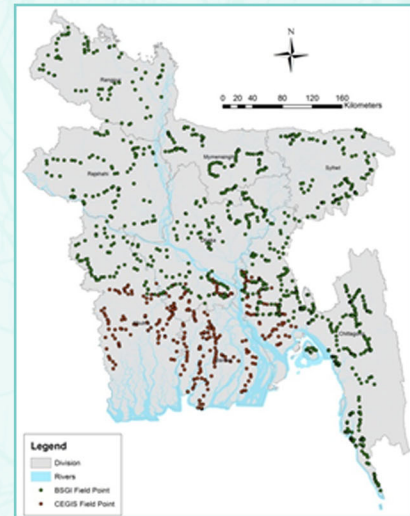
Development process of the National Land Representation System.

Objectives

- To allow comparability and reduce inconsistencies between land cover maps developed by different agencies and for different purposes.
- To facilitate development of multi-purpose and cost effective land cover map by improving interoperability between datasets and overcoming differences in data semantics.
- To build a system to allow past, present and future land cover legends to be represented in a harmonized way.
- To serve as the foundation for building sustainability in land cover assessment and monitoring at national and local levels in Bangladesh.

Process

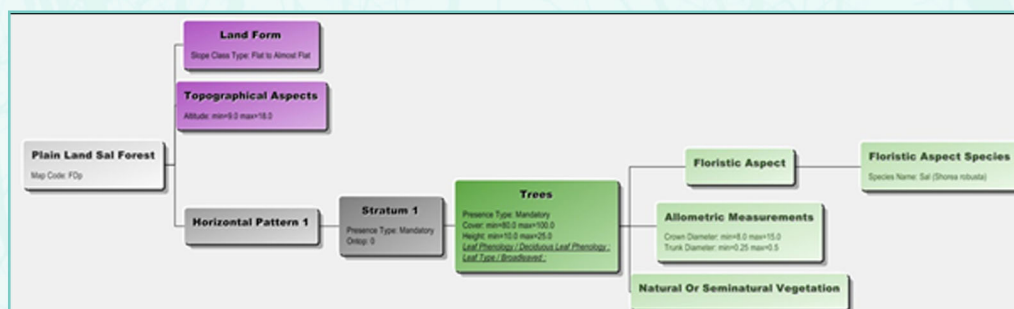
- Stakeholders from nine national organizations were involved in collecting data, translating the existing legends, analyzing them and identifying the gaps of existing land cover/use mapping processes.
- The legends of three existing national land cover/use maps were collected, documented and translated using Land Cover Classification System (LCCS v3). This step identified the gaps in existing legends.
- In parallel, field data were collected from 1,144 locations across the country using Open Foris Collect and androids in order to characterize the national classes of the NLRS.
- Through a national workshop, with the contribution of experts from different national organizations, a draft national land representation system for land cover/use mapping was developed.
- The flexibility and comprehensiveness of the system to accommodate and integrate all possible national classes were tested and recognized during a national consultation with stakeholders from 15 national organizations. Later specific comments and suggestions from respective organizations have been addressed to finalize the document.



Geographic location of field points for data collection.

Results

- Use of Land Cover Classification System (LCCS v3) and NLRS in developing the legend classes for land cover map 2015 allows users to get results for multitude of purposes (i.e. natural resources, forestry, agriculture, climate change).
- An innovative system was prepared to develop a NLRS using free and open source software, androids, field observations from over 1100 locations and existing legends translated into LCCS in a consultative way.
- National Land Representation System (NLRS) document has been produced and published on the Bangladesh Forest Information System (BFIS).
- More than 50 national technical staffs were trained on LCCS and/or participated in national workshop and consultations related to the establishment of NLRS.
- The NLRS has been used to prepare several national land cover maps from 2000 to 2015 at 5 years interval and other maps for different projects and purposes and forms a robust basis for future land cover monitoring at national and sub-national levels.



A diagram representing how the class Plain Land Sal Forest is represented in the NLRS (based on LCML).

Selected references

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