Forest land boundary delineation in Bangladesh

Towards better forest management and conservation and improved land tenure

Accurate geographical information of forest land boundaries is essential for forest management and conservation. Several initiatives were taken in the past, but no complete digitized boundary was available so far, with most documentation remaining as hand drawn, hard copy maps. To amend this gap, the Food and Agriculture Organization of the United Nations (FAO) supports the Bangladesh Forest Department for the digitization and delineation of forest land boundaries.

Context

The Bangladesh Forest Department (BFD) manages land under different legal arrangements including reserved forest, protected forest, vested forest and acquired forest. The current system of marker pillars buried for the demarcation is inadequate or non-existent. BFD therefore relies on hard copy of Cadastral Survey (CS) maps for management of their lands. While remote sensing analysis provides information about the status of forest and field data collection about the stock and the floristic composition, forest administrative boundaries inform us about the forest management and forest land delineation about the land ownership. These three levels of information are crucial to plan, implement and monitor forest activities. Delineation of forest land boundary, in this regard, supports assessing land tenure for effective forest management, conservation and decision-making process. In this context, based on the CS maps forest land delineation was conducted on a pilot basis. CS maps were used because the forest land was notified in the CS maps through different gazette notifications from the first land survey program in Indian sub-continent started in 1888 and ended in 1940.

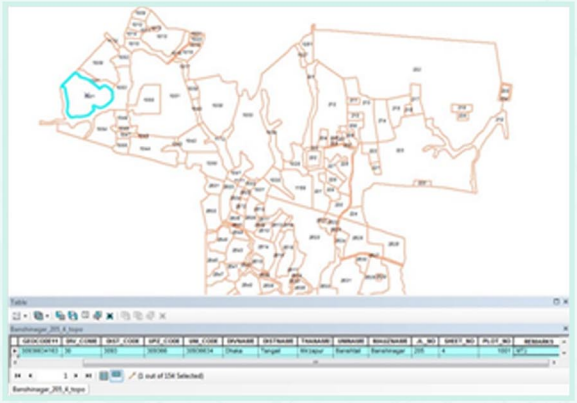
Real-Time Kinematic (RTK) survey for positional accuracy

Process

- To support in planning and inform decision-making for sustainable forest management and conservation.
- To assist in assessing and monitoring forest resources including effects of policy measures within forest land.
- To support land conflict resolution process between stakeholders.

Process

- **Engage national stakeholders:** Development of the methodological approach to delineate forest land boundary involved seven national institutions.
- **Collect the Cadastral Survey (CS) Mouza sheets:** CS maps were selected for forest land plot boundary delineation because the forest land plot numbers were notified in the CS maps through gazette notification. All CS Mouza sheets were scanned into digital image files (at a scale of 1:1).
- **Digitize the scanned mouza sheets:** The plot boundaries were digitized from each scanned digital image using head up digitization technique and attributes of each plot were added with digitized data.
- **Validate the information on the ground:** The digitized data were geo-referenced in different options and the positional accuracy was compared with reference points collected from field using Real-Time Kinematic (RTK) survey.



A part of digitized Mouza sheet of Banshinagar Mouza (Jurisdiction List 205, Sheet No 4)

Forest land boundary of Cox's Bazar South Forest Division.

Results

- Forest land boundary was delineated for Banshtail range, Tangail forest division, Mirsharai range, Chittagong North, Cox's Bazar North and South forest divisions.
- More than 50 national staffs were trained and/or involved in national workshops and consultations related to digitalization of forest land boundaries.
- Manual for forest land and boundary delineation using GIS and field information has been developed and published on the Bangladesh Forest Information System (BFIS).
- One team fully capacitated in BFD for forest land delineation.
- In Cox's Bazar South Forest Division forest land boundaries of about 427 km2 have been digitized and used for planning and implementing forestry field activities

Selected references

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