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# INNOVATIVE TOOLS TO MANAGE HEALTHY INDIAN FORESTS

Forests hold most of the planet’s terrestrial biodiversity. That biodiversity supports the ecosystem services forests provide us. Forested landscapes and ecosystems are the major terrestrial regulator of the climate, the planet’s fresh water storage and filtration system, and a gene bank of possibilities for humankind’s exploration and use. In the past century, the world’s peoples have come to realize that ecosystem services from forests are precious and limited, and that forests must be protected and managed if they are to continue to provide for a growing human population.

## MODERN TOOLS MEET PRESENT NEEDS

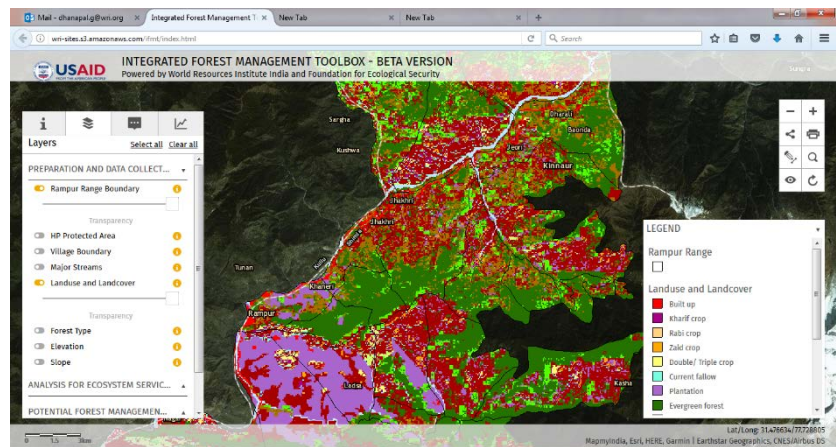
India’s foresters and government and the government of the United States have recognized that need. Through USAID Forest-PLUS, an integrated set of tools and materials has been collaboratively developed in India to foster an ecosystem approach to forest management. Leveraging the best practices and abilities of both country’s professionals, the materials support Indian forest managers to understand the theory required, and the tools support planning and management for ecosystems and their services from forested landscapes.

## LEARNING

Based on an open-source learning platform, the Forest-PLUS Learning Management System (LMS) is a flexible online system for professionals and students interested in the forestry sector. It contains courses focused on forestry in India and can be customized for the needs of any institution. The LMS contains material developed and used by Forest-PLUS, focused on bringing those familiar with the forest sector up to date on the latest developments and best practices. All the courses have been used in classroom trainings for hundreds of learners throughout India over the last four years.

## PLANNING

The Indian National Working Plan Code, 2014 (NWPC) sets out the requirements for forest management plans in India. It calls for management of forests for a range of ecosystem services. The Forest-PLUS Integrated Forest Management Toolbox (IFMT) consists of a suite of tools that together collect and collate geo-spatial and ground level data, analyze flows of ecosystem services, identify potential forest management activities and provide a stakeholder consultation mechanism to identify trade-offs between ecosystem services and finalize working plan prescriptions. In doing so, the Toolbox assists officials of the forest department to operationalize the NWPC.



## MONITORING

In order to effectively and efficiently manage forest and monitor activities, it is necessary to use imagery, either from aerial photography or from satellites. This is known as remote sensing. In the Indian context, degradation of forests (reduction in the number of trees in a forest without conversion to another land use) is the most important management question. In response, Forest-PLUS has developed and introduced innovative remote sensing methods and data analysis and collection tools that allow for the efficient measurement of degradation for the first time in India. These include optimal remote sensing tools that allow better quantification of forest degradation, radar-based tools that penetrate cloud, and mobile applications that facilitate data collection in the field.

## INDIAN FORESTERS RISE TO FUTURE CHALLENGES

Used together or individually, these tools have helped the Forest Research Institute in Dehradun extend its reach through learning management system, helped the Sikkim forest department monitor forest cover change and stocks, and assisted the Himachal Pradesh Forest Department plan the management of a forest division for the next decade. They will continue to be a valuable resource, and can be obtained and used in other institutes by request to USAID.