

Twenty-Five Years of Community Forestry: Mapping Forest Dynamics in the Middle Hills of Nepal

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The East-West Center (EWC) and the South Asia Research Institute (SARI) hosted an international conference to present the findings of the NASA LCLUC project entitled: Twenty-Five Years of Community Forestry: Mapping Forest Dynamics in the Middle Hills of Nepal. The project documented changes in tree cover in Nepal between 1990 and 2015. The conference, which took place at the Annapurna Hotel November 29–30, 2018, brought together more than 60 participants from 28 institutions. The majority of participants came from Nepal, but there were also participants from Japan, Vietnam, Switzerland, and the U.S., including Dr. Garik Gutman from NASA Headquarters and Dr. Krishna Prasad Vadrevu from NASA Marshall Space Flight Center. Over the two-day period, there were 16 presentations with extensive time for discussion. Participants included the Deputy Director General of the Nepal Forest Research and Training Center (FRTC), the Chief of the Community Forestry Division from Nepal's Department of Forests and Soil Conservation, GIS and Remote Sensing Specialists from the International Center for Integrated Mountain Development (ICIMOD), The Country Director of Helvetas Nepal, senior scientists from ForestAction Nepal, the Director of Resources Himalaya, and scientists from the University of Illinois, and Ciba University, Japan.



The East-West Center and the South Asian Research Institute hosted an international conference on ‘Twenty-Five Years of Community Forestry: Mapping Forest Dynamics in the Middle Hills of Nepal,’ at the Annapurna Hotel, Kathmandu, Nepal, November 29–30, 2018.

After the international conference, a two-day training workshop on Google Earth Engine (GEE) took place on December 3-4, 2018. The training workshop was organized jointly by ForestAction Nepal, Resources Himalaya Foundation, and the East-West Center. This hands-on workshop provided training in accessing and analyzing temporal, spatial tree-cover data through a range of processing techniques using an open-access dataset on a cloud-based GEE platform. Participants learned about the GEE platform, the new 25-year Nepal tree-cover/change dataset including its methodology, accuracy, and derived products, and access and use of Hansen et al.’s (2008) global forest cover dataset. Dr. Jamon Van Den Hoek and Mr. Alex Smith (both of Oregon State University) and Dr. Kaspar Hurni (University of Bern) facilitated the training. Eighteen participants took part from academic and research fields.



Training for entry-level scientists in using remote sensing and Google Earth Engine (Kathmandu, December 3-4, 2018).

The project found a nearly 19% expansion of tree cover over the study period (Fig. 1). The gains in tree cover were similar in the Middle Hills and Mountain regions, but smaller in the Terai (Fig. 2). The project had 90% overall classification accuracy and 87% tree user's accuracy. The project also examined tree cover change at the Village Development Committee (VDC) level, the smallest unit of administration in Nepal, and found that the most gains occurred in approximately 20 VDCs spanning central and eastern Nepal (Fig. 3). These results are striking given that previous research based on the Hansen et al. (2008) forest cover dataset identified much less change and a rather distinct spatial distribution of change. The project also finalized tree-cover frequency and persistence products for broader dissemination and adoption by forestry and forest-management communities (Fig. 4). Members of the project team are now in the process of writing two papers for the peer-reviewed journal, *Remote Sensing of Environment*, on the tree-cover mapping methodology and results and are generating user-ready tree cover products for online distribution with relevant metadata, methods documentation, and accuracy assessments.

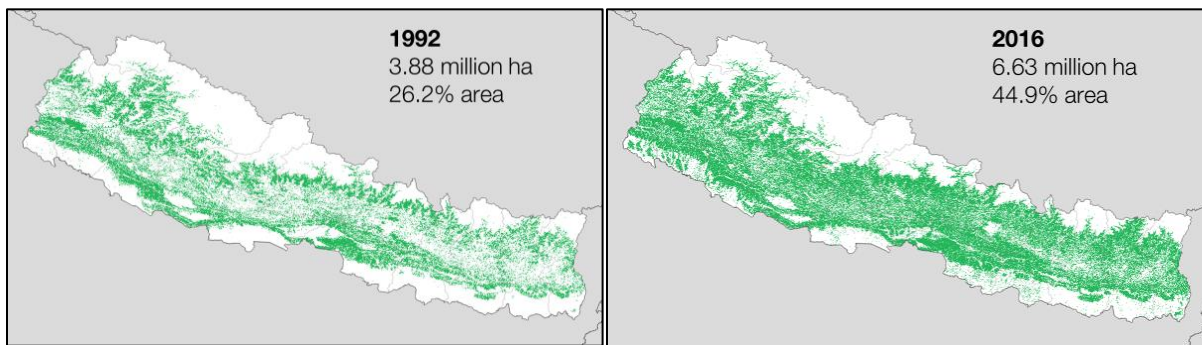


Figure 1. Maps of Nepal-wide tree cover in 1992 and 2016.

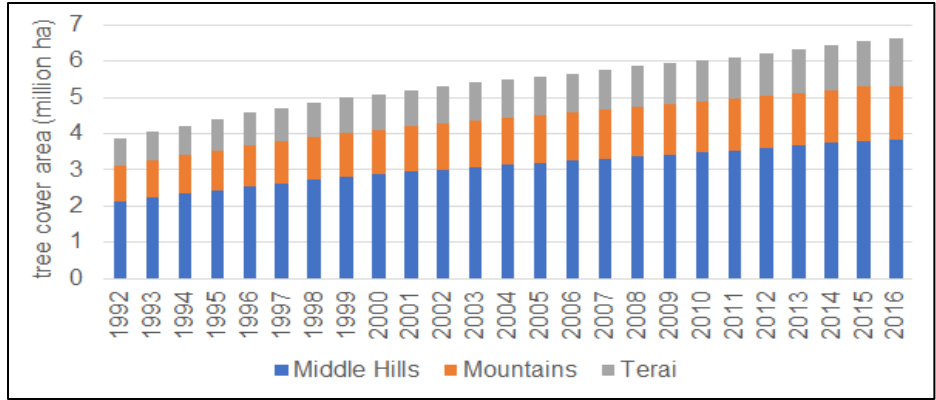


Figure 2. Annual changes in tree cover by region in Nepal.

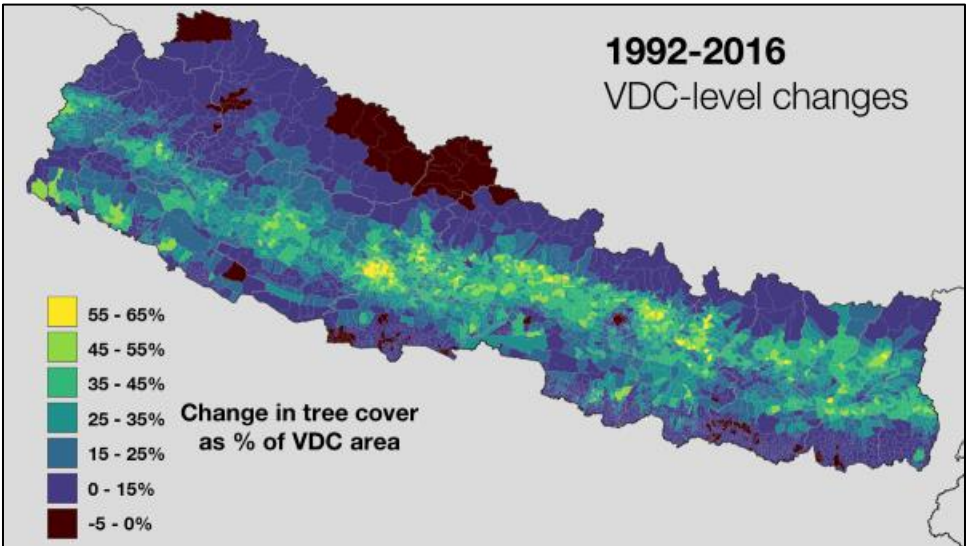


Figure 3. Tree cover change (1992–2016) at the VDC-level.

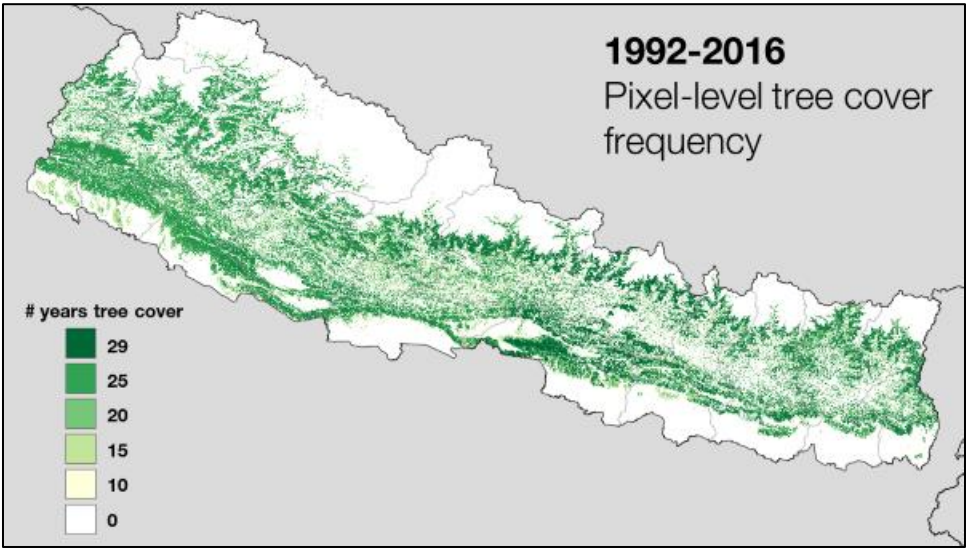


Figure 4. Tree cover frequency (1992–2016) at the pixel-level.