The Role of Community Forestry Program on Forest Cover Change in Gorkha, Nepal

Sujata Shrestha[1, 2]

[1] Department of Biology, University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, MA 02125, USA

[2] Australian Centre for Sustainable Business and Development, University of Southern Queensland, Toowoomba, QLD 4350, Australia

E-mail: sujata.shresth@yahoo.com

Introduction

Community forestry program, initiated in early 80s', has now become one of the major forestry program in Nepal. Currently, 22% of the total forest areas in Nepal are conserved, managed and utilized by local communities in the form of community forests (CFs).

Visual observations or ground survey is the only means to evaluate the role of CFs on forest cover change. This study analyses the change in forest cover in inside and outside the CFs by using the satellite data from before the establishment of CFs and after its establishment (1990-2014).

Photo 1. Ludikhola watershed

Methods

Study area

- Ludikhola watershed of Gorkha district of Nepal was chosen for this study (Fig. 1).
- To compare the forest cover change inside and outside the CFs, thirty-one CFs were selected inside the watershed.

Data acquisition and pre-processing

- Landsat satellite images of the year 1990, 2001 and 2014 were used to analyse the land use land cover change in 24 years of time period.
- Maximum likelihood classification method were followed to classify the Landsat images.
- ArcGIS 10.3 and ERDAS imagine 2013 were used for data analysis.

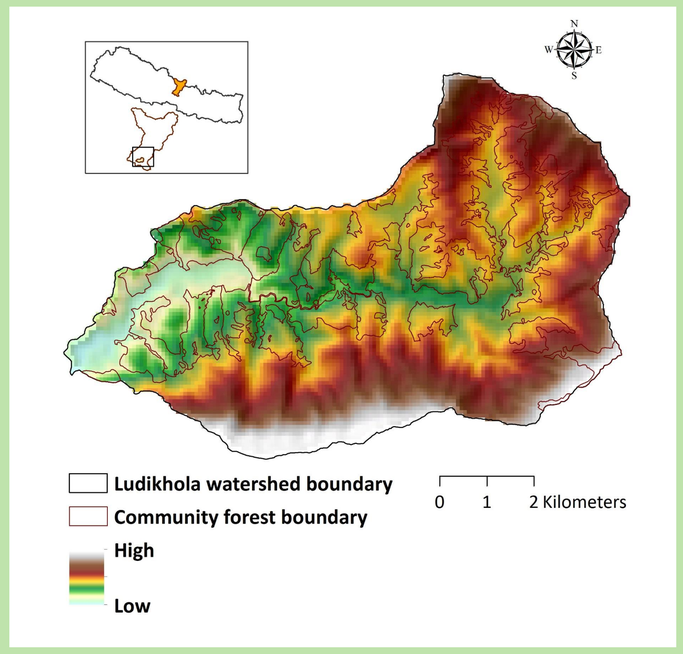

Fig. 1. Map of the Study area

Results and Discussions

1. *Land use land cover change outside CFs from 1990 to 2014*

- Overall, settlement and non-forest areas increased from 4% to 7% and from 46% to 55% respectively. However, the overall forest areas decreased from 50% to 38% (Fig. 2) .
- Increase in settlements, abandonment of non-forest areas and harvest of forest products from outside CFs may be attributed to overall decrease in forest areas outside CFs in Ludikhola watershed.

2. Forest cover change inside and outside CFs from 1990 to 2014

- The forest cover inside CFs was increased by 80 hectares (ha). But it was decreased by 441 ha outside CFs (Fig. 3).
- Twenty CFs showed positive and eleven CFs showed negative change in forest areas (Fig. 4).
- Management activities such as afforestation and silvicultural practices played a significant role in increase in forest cover inside CFs.

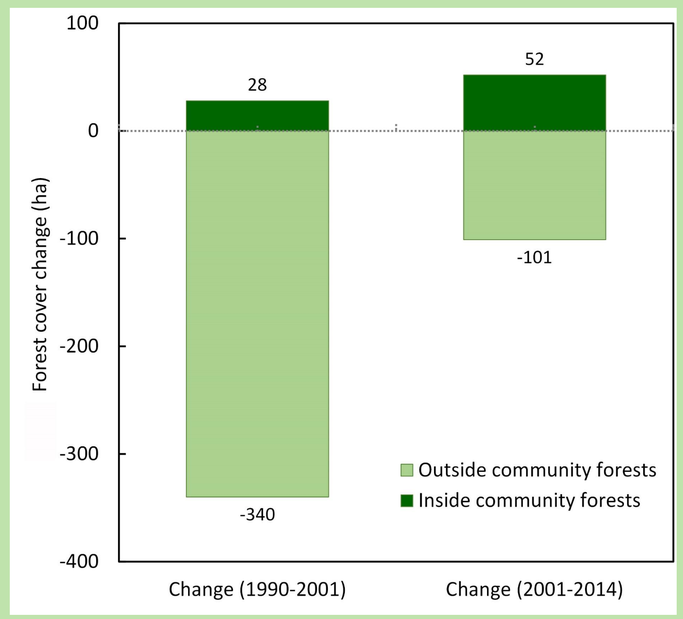

Fig. 3. Forest cover change inside and outside CFs from 1990 to 2014

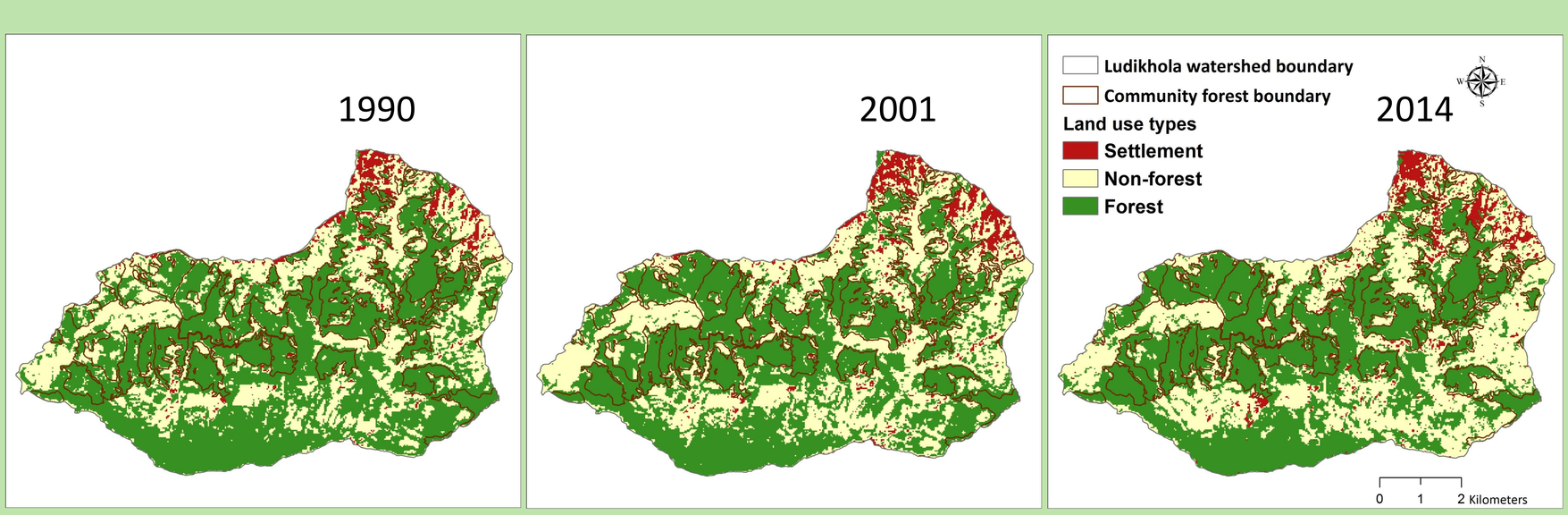

Fig. 2. Land use land cover change inside and outside CFs in Ludikhola watershed from 1990-2014

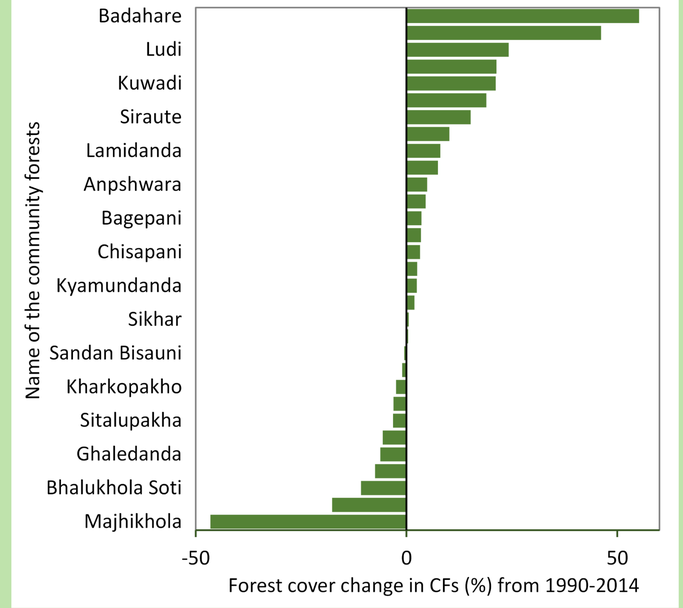

Fig. 4. Forest cover change in CFs

Conclusion

- The community forestry program has played a positive role in increasing the forest cover change.
- There are no significant relationships among the size of the forests, management history, and the number of dependent households on forest cover change inside the CFs.

Acknowledgements

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The Ruffords Small Grants Foundation www.ruffordsmallgrants.org

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