

LOCAL PROTECTION OF TROPICAL DRY NATURAL FOREST, ORISSA, INDIA

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ABSTRACT

Due to the deforestation in tropical areas where a growing population depends greatly on forest products, local protection of state-owned natural forest to promote regeneration has emerged as a form of forest management. This thesis focuses on the effect on forest and people connected to local forest protection in Orissa, India. It also explores the possibility of monitoring vegetation change by remote sensing and tests a support tool system based in a geographical information system.

In the study area, local protection of natural forest promotes regeneration, without moving the pressure to adjacent forest areas. Large-scale remote sensing analyses of vegetation index showed a vegetation increase of four percent from 1992 to 1996 over both the locally protected areas and the whole forest area. Small-scale analyses showed that with ten years difference in protection, the forest had developed statistically significant greater tree diameter, height and succession, while soil properties showed few differences from only ten years. A remote sensing monitoring study was conducted using small-scale biophysical data. The result suggests that a two-class index of high and low vegetation can be statistically distinguished. The older regeneration area had 59 percent high vegetation, while the younger regeneration area had 35. The internal variations within two studied forests show signs of spatial differences related to use in the past. By combining economic and remote sensing analyses, it was shown that villages with tree plantations increased regeneration through local protection in natural forest more successfully than villages without. The villagers' perceptions of local protection were analysed using a questionnaire survey among protectors. The most obvious result was the over-all positive attitude and optimism for the future among the 234 respondents. Differences were found in dependency, involvement and attitude due to gender or caste and these will have to be taken into account when dealing with local protection communities. A support tool system, consisting of ten layers of information about biophysical and social characteristics and five risk analyses, showed promise for forest management involving local protection. It promotes a dynamic and flexible system that can increase objectivity and optimise resource input in areas of need.

The work shows that local initiative can lead to an improved natural forest, which should be seen as valuable for both users and owners. Remote sensing and geographical information systems have great potential for large-scale monitoring, but can not replace local field data. Due to these variables, generalisation should be conducted with caution.

Key words: *local protection, forest management, satellite monitoring, support tool system, tropical dry natural forest, regeneration, succession, empowerment, participation, sustainability, GIS, India, Orissa, NDVI, vegetation change, gender, caste, soil status, human perception.*