Valuation of ecosystem services and functions from Secure Commons

- Findings from Rajasthan and Odisha

FES has been using the International Forest Resources and Institutions (IFRI) framework (a collaborative research program on forest governance) and Natural Resource Accounting System (NRAS) Framework to analyse human and nature interactions in diverse socio-ecological systems, institutional arrangements for local governance of natural resources and build economic evidence and its significance for different production systems. In the last three years we have established 15 longitudinal monitoring sites across different project locations to understand how governance arrangements shape forest outcomes and its role in enhancing livelihoods and adaptive capacity of peoples, conserving biodiversity, and promoting greater sustainability in carbon sequestration.

Initial analysis was undertaken of two locations, one from Rajasthan and another from Odisha in the current year with different social-ecological conditions, time period of restoration efforts (with the village from Rajasthan under governance for 5 years and that from Odisha for a period of 27 years) and governance arrangements. The measurement of the ecological and biophysical changes in biodiversity, biomass and soil in both the locations has shown a marked improvement in standing biomass, non-timber forest produce (NTFP) availability, biomass productivity, biodiversity and nutrients availability leading to increased crop productivity and availability of fodder and fuel-wood.

The first case is of Kundaliya-Joramahua village from Pratapgarh, Rajasthan. The village has secure rights on 125 acres of common land which is

In order to understand the true value of the benefits from the restoration of commons, we initiated the Natural Resource Accounting System (NRAS). While monetary transactions are easily monitored through the conventional accounting systems, the economic valuation captures the value of all the goods and services provided by the environment such as fuel wood, fodder and biomass, irrespective of whether market prices are available. NRAS goes a step further as it allows for the valuation of even indirect benefits from the regeneration of the Commons such as increased soil fertility, carbon sequestration and soil erosion prevented.The parameters of enquiry include a range of ecological aspects including green biomass, fertility of the soil, soil erosion, carbon sink, and other direct and indirect social and economic benefits accruing from the common land.

managed by village committee from 2009. Over a period of five years the investment on the common land was around INR 4.16 million on 125 acres and against this investment the total direct and indirect gain including standing biomass is INR 15.6 million which is almost three times the investment. Soil nutrients such as nitrogen and potassium increased by 26% and 11% respectively, with a slight decrease in Potassium. As compared to a total of 16 trees and shrubs species in 2009, 19 species of trees and shrubs is recorded in 2013, showing increase in floral diversity. Carbon sequestration increased from 1.2 to 12.62 (MT/ha.) based on the increase in green biomass 4.5 to 46.4 (MT/ha.) over the five years.

The second case is of Papsara village from Angul, Odisha. The village has secure tenurial rights on 108 acres of common land and about 450 households of the village have access rights on common land. The villagers organised a Tree Growers' Cooperative Society in the year 1987 to revegetate the revenue wasteland to meet their biomass and water requirements. Over a period of twenty-seven years the investment on the common land was around INR 0.69 million and against this investment the total direct and indirect gain including standing biomass is INR 51.11 million which is almost 75 times the investment. Total standing green biomass (above ground level) of trees and shrubs has increased from 1.22 MT/ha. to 91.31 MT/ha which leads to increase in the total value of standing biomass in INR. 42.5 million over a period of twenty-seven years. As compared to a total of 2 trees' species in 1987, around 21 species of trees were recorded in 2014, showing an increase in floral diversity. This leads to a reduction in diversity index from 0.45 to 0.29 (lower the diversity index more is the diversity). Increase in the density of trees has lead to an increase in Carbon Sequestration from 0.33 MT/ha to 33.97 MT/ha. NTFP availability has significantly increased and TGCS members have got benefits to the tune of INR. 6.6 million from the NTFP collection. The major NTFP available from the TGCS plot are Tendu leaves, Mushroom and tuber crops. Including the value of bamboo and fuel wood derived from the protected common land the total monetary value to the community has been of INR 8.5 million.

All the two cases highlight the value of secure tenure rights and local institutional arrangements in achieving better ecological and economic outcomes. They also highlight the potential of these lands in reducing carbon emissions and the need for enabling policies and programmes for improving property rights of local communities to address issues of climate mitigation and adaptation.

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