

MAKING TRIBAL LAND PROFITABLE - A STUDY FROM THE WESTERN GHATS OF INDIA

Many farmers across the developing world cultivate marginalized and degraded land. Such land is often of low productivity. This means that the people who depend upon it are very vulnerable to food scarcity and famine. Boosting the productivity of such land is therefore a key strategy for improving the livelihoods of the rural poor.

A new SANDEE study investigates how this might be done in a degraded hilly region of southern India. The study uses benefit-cost analysis to investigate different land-use options. It finds that there are a number of agricultural alternatives that tribal farmers can employ that would give them better economic returns and in some cases strengthen the environment. For example, the adoption of millet-based rainfed agroforestry, along with the implementation of soil conservation measures, would result in an almost 300-percent increase in farmers' annual farm incomes. Encouragingly, the study also finds that these options would enjoy the support of the farmers themselves.

Such changes cannot be put in place without some assistance from the government and extension agencies. The study therefore recommends that outreach agencies need to provide support and information related to soil and moisture conservation, vegetative fencing and sapling planting to tribal farmers.

The study was undertaken by Seema Purushothaman from the Ashoka Trust for Research in Ecology and the Environment (ATREE). The two-year study investigates the Anaikatty region of India, and looks at ways of improving the agricultural productivity of a tribal community in the area. The study area is a belt of tribal land that overlaps the boundaries of two states — Kerala and Tamil Nadu. The dry forests in the area are ecologically sensitive and constitute part of the Nilgiri Biosphere Reserve.

The Irulas, a tribal community in the Anaikatty region, are in an almost insurmountable poverty trap. Land alienation, soil degradation, drought, wild animal attacks and declining access to forests have all severely debilitated their livelihoods. At 2001 prices, the average per capita income of study respondents was less than one third of that for their respective state. While the Irulas are dependent on non-farm income,

labour opportunities are generally confined to seasonal planting activities undertaken by the forest department. Other livelihood options such as migration in search of employment are a remote possibility. This means that, even though agricultural income constitutes only approximately 20% of annual household income, land is still a key productive asset.

TRIBAL COMMUNITIES AND THE IMPORTANCE OF LAND

The land dependency of tribals is the main reason behind the study's overall objective - finding an appropriate management strategy for land. The study aims to understand what kinds of land uses prevail in the region and whether alternative 'ecologically superior' land-use strategies would be economically feasible.

The problem of un-productive marginalized land affects a large number of India's poor. Of India's 84 million tribals, approximately 55 percent live in and around the dry

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tropical deciduous forests of central and southern India. Over the years, many land-based development schemes have been formulated and implemented to assist tribal communities. However, some of these schemes appear to hinder rather than support the socio-ecological resilience of these communities.

SHORT-LISTING THE OPTIONS

To find land-use strategies that work, Purushothaman first identified existing land-use practices in the study area and then looked at what other options might be implemented. In all, over 120 households were interviewed using a detailed questionnaire to get information about existing and feasible land-uses. The preferences and perceptions obtained from this household survey were discussed with technical experts in order to develop a final list of potential land-uses. Transect and field walks helped assess the impact of prevailing land-use practices.

A set of 13 specific land-use practices was short-listed as potential strategies that the Irulas could try. Six of these options were farming-based, five were plantation-based and two involved mixed forest stands with a fodder grass component. A number of aspects of these 'new' systems

were not familiar to the local COSTS AND BENEFITS

The major benefits from the different land-uses considered in the study are food grains, fruits, fodder, firewood, timber and soft-wood. Soil conservation and sequestered carbon are other key benefits. Benefits from farming and other bio-mass outputs were quantified and valued using farm gate, forest gate or nearest market price. Growth pattern and bio-mass yields of trees were based on either information from rain-fed plantations or from secondary sources. It was assumed that carbon benefits would result from the land management regimes that produce an output of hardwood or that result in an increase in soil carbon. Costs are chiefly associated with labour and material inputs for crop protection, planting, cultivation and harvesting; and yield losses due to soil erosion and animal raids.

The financial assessment of different land uses indicated that un-irrigated teak would be the most profitable option. This land-use strategy would increase the returns to land by more than 10 times (compared to the current land use practice). The next most profitable land use among those analyzed - dry-farming practiced with soil conservation measures - would raise the value by up to five times.

WHICH OPTIONS ARE ACCEPTABLE?

Purushottam finds that the land-use option that is most acceptable to respondents was an agro-forestry system with trees on bunds. Indeed, 54% of respondents were willing to modify current land-use by planting trees on bunds. This approach ranked fourth in terms of economic profitability (after Teak, Dry-farming with soil conservation, and Cashew farming) among the 13 land-uses that were assessed. In other words, the best three land-uses from the benefit-cost analyses were not the farmers' preferred choices although they are economically superior. In fact none of the respondents preferred a pure silviculture system like the un-irrigated teak system that scored most highly from an economic point of view.

Taken as a whole, millet-based rain-fed agro-forestry, dry-farming with soil conservation, and dry-farming with protection from animals had the highest overall ratings in terms of economic viability and social sustainability. The potential incremental annual net benefits to farmers from these alternate land-uses amounted to Rs.5518 for dry-farming



practiced with protection, Rs. 6861 for millet-based agro-forestry, and Rs.7295 for dry-farming practiced with soil conservation.

These land-uses are not too different from the current land-use system the Irulas use. However, they result in increases in annual income per hectare of between 244 to 322 percent. These represent huge increases in resources for the poor communities in this region. Thus, these are clearly land-uses that should be promoted, particularly since farmers

seem willing to adopt them. Indeed, this type of change would support and revitalize the millet-based land-use economy in the region and would not need dramatic adjustments that might have negative social implications.

Table: Ranking of Land-uses according to Incremental Net Present Value (NPV) and the Stakeholder Attitudinal Survey

Land use	Rank	
	NPV	Attitudinal
Improved fallows with tree legumes for five years and dry-farming resumed	7	5
Dry-farming practiced with protection	6	3
Multi-purpose trees for 10 years and dry-farming resumed by retaining some trees as in agro-forestry	5	6
Agro-forestry (millet based) from now on with two tree species	4	1
Un-irrigated Cashew	3	4
Dry-farming practiced with conservation	2	2
Un-irrigated Teak	1	7



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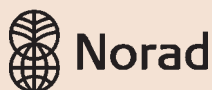
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POLICY IMPLICATIONS

In order to assess how the Irulas might be helped to implement more effective agricultural systems, Purushothaman looks at why better options are not currently used. The reasons are many-fold. Ignorance about the benefits and methods of simple soil conservation stops the farmers from undertaking conservation measures. A lack of information on tree farming and the poor availability of planting materials prevent good agro-forestry practices from being implemented. Moreover, a paucity of resources makes it difficult to protect farmland from grazing by cattle and wildlife.

In order for any of the new systems to be adopted, the Irulas' lands need to be better protected with vegetative fencing, bunds and mulching. For such actions to be sustained in the long run, incentives are required. The timely provision of saplings would also help ensure success. Other essential steps include the provision of assured rights over trees grown on farms and continuous technical support covering the cultivation of multi-purpose trees and soil-moisture management.

The three recommended land-uses are based on rain-fed millets. But the economic advantage suggested by the results may not be achieved if soil moisture levels continue to be depleted. Currently, access to ground water is skewed away from marginal land-holders. It was observed in the study area that, while financial support for large-scale extraction in the form of subsidies for electricity and water were in place, there was no incentive or support available to practice low-cost irrigation (e.g., pot and wick) and soil conservation techniques (e.g., soil mulching with dry leaves). Such incentives need to be introduced if the profitability of the Irulas' agriculture is to be improved and the farmers lifted out of the poverty trap they find themselves in.

