

MANAGEMENT OF NON-ARABLE RURAL LAND, INCLUDING FORESTS, GRASSLANDS, AND SHRUB-LANDS

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Summary

The quest to understand management of non-arable lands starts by understanding its base in ideas about these lands. Ideas about nature shape goals and influence decisions about the use of these lands. Management of resources implies conscious decisions about how to relate goals, technology and resources. Sustainable management of non-arable land must take interdependencies among products and resource systems into account. Property rights to resources affect attitudes about management and shape representation of interests in decisions. Social differentiation of resource use is reflected in the socio-economic consequences of management decisions.

Reaching a sustainable use pattern is complicated by (1) problems of governing activities of people when these are interdependent, (2) problems of providing correct and trustworthy information on ecosystem dynamics in relevant decision arenas, and (3) insufficient knowledge of the dynamics of ecosystems as affected by human usage and of how to design public policies to achieve specific objectives in resource management.

The management problem of the non-arable rural lands can be described as the problem of how people balance the dynamic system of market forces, local culture, and ecosystem responses to human usage to achieve stated policy goals without diminishing the values found in these lands, either through state legislation and regulation or local organization and self-regulation.

Current best management practice seems to conform to the following principles: (1) co-management of state and appropriators with legal recognition of the interests of the local stakeholders, usually promulgated by some form of register of property rights and resources, (2) multi-purpose management recognizing the interdependencies and scale effects in the ecosystem as well as the diversity of stakeholders, (3) flexible management sensitive to locally diverse and changing conditions, and (4) equity management with the goal of protecting the interests of the poorest stakeholders within the limits posed by rule-of-law and ecosystem.

1. Introduction

In people's imagination "Nature" is found outside the fence, in the non-arable rural land. Nature is seen as forests, grasslands and shrublands teeming with wildlife. It may promise adventure and danger or quiet and pastoral recreation. To many, nature is also a storehouse of unused resources, frequently considered free for the taking. Maybe the dream of the big catch is not so much fired by gold or timber as the possibilities for discovering a particularly useful gene or unknown medicine. Ideas about nature shape the treatment of non-arable lands in powerful ways. Understanding the management of land-based resources starts by understanding its base in ideas about these lands.

The diversity of goals and the diversity of resources in the non-arable lands lead to frequent conflicts with consequences for both ecosystems and distributional equity. Management of human activities in the non-arable lands seeks to limit and channel the conflicts and to control the impact of human activities on the ecosystem. The management problem can be described as the problem of how the government should

design its legislation and regulations to balance the dynamic system of market forces, local culture, and ecosystem responses to human usage to achieve stated policy goals such as sustainable use of resources without diminishing the values found in these lands. The main body of this text will on the one hand outline the links between human activities and ecosystem development, and on the other hand the links between management practice and human activities. The theoretical approaches are taken from the study of property rights systems and the theory of collective action embedded in a general theory of human culture and agency.

2. Ideas about “Nature”

Management always concerns the routinized goal-directed component in human actions. To understand a goal-directed behavior in non-arable lands, the values that guide the choice of goals must be understood. The point of departure is the western development from pre-industrial to industrial and post-industrial culture. But cultural values have been conceptualized in a way that makes it possible to discuss non-western approaches as well.

2.1. Use Values and Symbolic Values

One somewhat puzzling aspect of western culture’s view of nature is the primacy given to the uninhabited and uncultivated lands. Nature is to be found in areas which are “unimproved” by human activities. In the management of the non-arable lands this is significant. The values associated with “nature” are more salient for these lands than for arable lands. Broadly two classes of values can be distinguished:

- Use values: expressed by those who find in nature the values that they enjoy either through extraction or direct interaction, and
- Symbolic values: expressed by those who find in nature the repository of - or symbols of - individual spiritual or communal cultural well-being.

These values will, however, appear somewhat different in different contexts. One particularly salient cleavage is caused by the organization and technology of industries. A convenient label for this divide is rural and urban (Table 1). The labels “urban” and “rural” are used to denote ways of life associated with a particular division of labor rather than as descriptions of settlement patterns. In the western world as of today the cultural hegemony of rural society is held by the food producing community, in urban society by the academic and bureaucratic communities. The basic difference in perception of these groups is between the urban view of nature as a fragile system in need of protection against human interventions, and the rural view of nature as basically a benign ally in the production of food.

Segment of society	Ideas about nature	Use values	Symbolic values
Urban	Fragile production system for renewable resources and eco-system services	Needed for provision of ecosystem services, and as storehouse of	The home of exotic and invigorating experiences, and a peaceful refuge from

		biodiversity	modern stresses
Rural	Benign production system for biological resources	Production of timber, pasture, and other marketable products.	The home of a rural way of life and of the ancestors

Table 1: A typology of values associated with nature

2.2. Changes in Use Values and Symbolic Values

Neither views of nature, nor their association with particular social segments are static. During the transition from pre-industrial to post-industrial society both urban and rural ideas about nature changed. In this process, the change of the urban segment was the most important. The shift in the urban segment of society was basically from nature seen as a capricious force that humans need to be protected from, to nature seen as a fragile system full of romantic qualities in need of protection from human predation (Table 2). In the rural segment of society the shift was more from seeing nature as a dangerous adversary in the fight for survival to a benign ally with amenities and resources that should not go to waste. In between, during the early modern industrialization period, a dominant view of both segments was of nature as an inexhaustible reservoir of resources just waiting to be put in mankind's service, but with the urban segment taking a somewhat more romantic view of the qualities of the wilderness.

	Pre-industrial	Industrial	Post-industrial
Urban	Nature is a capricious force against which man needs protection	Nature is full of adventure and inexhaustible resources	Nature is a fragile system in need of protection from man's predations.
Rural	Nature is a dangerous adversary to be tamed	Nature is a dangerous ally to be tamed	Nature is a benign system to be used

Table 2: Changing views of nature

The distinction between an urban and a rural segment is a simplification, but it illustrates two of the more important views of nature in the current political debate. The reasons for the shifts in perception in the two segments are found in the changing organization of political power, evolution of technological capabilities and differences in industrial organization rather than in a separate self-contained development. Thus the urban views do not replace rural views (or vice versa), but live on side by side, tied to their segment of society.

2.3. Resources for Economic Growth

In conjunction with the technological developments of the industrial revolution the view of nature as an unused resource came to have an enormous impact on ecosystems around the world. Throughout this process of change, the hegemonic view of the more powerful western states has frequently been imposed on the rest of the world,

irrespective of local conditions. A “high-modernist” perspective guided the government development strategies in the non-arable lands in many countries. Modernizing, industrializing, and colonial regimes of the past as well as expansionist governments today have required settlers to develop their non-arable land to gain legal recognition of their claims. International development agencies have also promoted policies that attempt to generate wealth through the conversion of non-arable rural land to other uses. The broad characterizations of how nature is perceived need to be qualified in several directions. The various cultures around the world see different values in the landscapes surrounding them. This contributes to the variety of management practices seen. Both pre-industrial and industrial values and views of nature live on in sections and segments of the population, not least in established customs and regulations. They are no longer hegemonic in the management discourses of western societies. But their somewhat invisible existence in old established institutions such as statutory property rights should not make us forget that these values still affect management decisions and activities in profound ways. Sometimes they clash with current ideas in unexpected ways and often with unwanted consequences.

2.4. Ideas and Actions

Imagined notions of nature influence decisions about the use of non-arable land and land-based resources. Views of nature as under-utilized resources encourage the transformation of non-arable rural land to other uses. Concern about the fragility of nature motivates the conservation of non-arable rural land. Management strategies involving large-scale extraction and transformation displace small-scale or informal uses of land-based resources, denying their economic value and sometimes even their existence. Large-scale institutions for governance confront difficulties in recognizing small-scale or informal uses of land-based resources. Regardless of scale, governing bodies do not always recognize positive externalities associated with non-arable land. Conservationist policies focus on symbolic values and externalities. They often recognize utilization of land-based resources and their role for people’s livelihood. Usually they see these activities, however, as potentially harmful and unsustainable. For conservationists, the value of nature in its pristine form outweighs the benefits associated with extractive activities.

Both transformation and conservation of non-arable land restrict the allowable uses of land-based resources. Restrictions on the utilization of land-based resources alter the nature and distribution of human benefits from these systems. Both intensification of land-use and the curtailment of extractive land-uses affect the operation of ecological systems.

3. Why Do People Have to Manage Non-Arable Lands?

Managing non-arable lands means developing norms and rules to guide human activities in ways believed to achieve goals in cost effective ways. These norms and rules will at one level tell people what to do with a resource. A more difficult part of the management problem comes with the realization that there are competing activities and incompatible goals. The present section introduces these two issues by considering, first, the diversity of activities going on in one particular forest in Nepal and, second,

the divergent outcomes of the conflict between grazing and regeneration of trees in different management environments in Denmark and England.

In a situation with abundant resources and in the absence of markets there are no reasons to believe that people will make any particular effort to manage their non-arable lands. Only with experience of problems like scarcity of a particular resource, or conflict over its distribution will management become an issue. The diversity of activities and multiplicity of stakeholders in the non-arable lands in conjunction with the complicated dynamic interactions of social system, climate and ecosystem imply that conflicts and scarcities abound. But experiencing a problem does not ensure that it will be solved.

One recurring conflict is between grazing and regeneration of trees. The conflict may lead to destruction of the forests or a management system may develop to accommodate both processes. Looking back in history it is seen that in Denmark the forests disappeared. In England the management system in several instances was able to accommodate both processes for several hundred years. An in depth discussion of why the outcomes were different will have to be framed in terms of differences in the basic governing institutions such as the legal system and the distribution of power.

3.1. A Diversity of Silvicultural Activities in Nepal

The diversity of activities in one community forest in the middle hills of Nepal is illustrated below through a listing of the silvicultural operations (Table 3). In addition to timber and pasture there is the collection of non-timber forest products such as medicinal and aromatic plants. Note how the evaluation of species as inferior or desirable informs several of the activities. Also note how rotation of grazing or outright prohibition is an ordinary management option. The point of the list is to illustrate the great variety of activities one has to consider in the management of non-arable lands and how the values of the actors affect decisions. The list is valid for one particular local community. In other communities the list will be different.

Activity	Summary description
Selective felling	Occasional cutting of trees for local use or sale
Thinning	Cutting of poles in dense stands to meet the needs for small poles; (local intensity of cut is always below the forester's prescription for perceived future security of poles requirement); removal of inferior species
Pruning	Cutting of branches of poles and trees roughly up to two thirds of the tree height to obtain firewood
Cleaning and weed control	Ferns and other less useful shrubs are cut from plantation areas and other parts of the forests. Succulent weeds are left to decompose while other inferior woody plants are accumulated and burnt. In higher elevations thorny and hardy species are retained to shelter tree seedlings against frost.
Leaf litter collection	Generally collected twice a year for making compost as the leaf litter collection time coincides with lowland and upland farming cycle.
Grass collection	Grass areas are divided into a number of plots and each plot is linked to

	a “tole” (hamlet of community households) and further divided to each household; the system is considered to distribute equal amount of grasses to every household.
Grazing	Rotational systems or complete ban on open grazing throughout the forest the year round
Nursery management	Mostly constructed with buyback agreement with district forest office (DFO) or projects, with the purpose of availing seedlings for private and community planting.
Cultivation of cash crops	Planting and management of a number of commercially traded crops such as cardamom, broom grass, <i>argeli</i> , and others; sometimes given to poorest members on lease
Dry twig collection	The people of neighbouring villages are sometimes allowed to collect dry twigs free of charge after a forestry operation is completed.
Multiple shoot cutting and singling	Multiple coppices, mostly in <i>Schima-castanopsis</i> forest, are done in 2-5 years rotation system to obtain fodder, <i>syaula</i> (animal bedding material), and fuel wood.
Establishment and monitoring of trial Plots	Sometimes with outside technical support and sometimes on their own, forest user groups establish experimental/ demonstration plots mostly to observe the effect of thinning intensity on growth and yield of the forest crops.
Water sources protection	Areas where forest users obtain water are specially protected, but occasionally ferns and other less useful herbs and shrubs are removed as they are considered to dry the spring out.
Improvement of wildlife habitat	Part of the forest is kept intact without any cutting as a habitat for common wild animals such as deer and wild birds.
Bamboo propagation	Rhizomes are separated from clumps of bamboo 2-3 months before monsoon begins and planted out in gullies of the forest.
Regeneration management	Grazing and fire are considered threats to regeneration establishment and treated accordingly. Over matured and inferior trees are removed from the forest to allow penetration of light to the forest floor, which encourages seedling growth.
Planting seedlings	Users plant seedlings under cover of other vegetation to protect them from the frost in high altitude areas. They have learned this from their experiences of planting with and without cover.

Source. Hermant R. Ojha and Basundhara Bhattarai (2001). *Understanding community perspectives of silvicultural practices in the middle hills of Nepal*. Forests, Trees and People Newsletter, 44 (April 2001): 57

Table 3: Silvicultural activities in one community in Nepal

3.2. The Conflict between Grazing and Regeneration of Trees

Pasturing has been an important reason for deforestation. Young seedlings are eaten and are never given the chance of growing into tall trees. Overcoming this problem is difficult but not impossible. Denmark provides cases where the problem was not solved. On forest commons the distant landlords owning the tall trees and the local peasants owning the pasture and the shrubs were unable or unwilling to cooperate. After the timber was harvested, grazing prevented trees from regenerating. Property rights can in this case be suspected of being a primary “cause” of deforestation. Parliamentary acts of enclosure dissolved the co-ownership of the commons and thus eliminated conflicts between owners with competing management goals.

One case study of forest management in England describes how medieval manors, with the same type of distribution of property rights as in Denmark, could manage grazing on forest commons by either pollarding or compartmentation with coppicing and fencing of new coppices and rotation of grazing to older coppices. But compartmentation and rotation required a reasonably “strong” and stable management regime. The rotation cycle described was 18 years long with fencing during the first 9 years to keep out cattle. As English society changed the regime became difficult to sustain. It was replaced through the enclosure process.

In both Denmark and England the technical problems of managing interdependent activities of a group of stakeholders were “solved” by transforming the stakeholders into individual owners of separate parcels of land.

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Biographical Sketches

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