

FOREST ECOSYSTEMS

UP FROM THE ROOTS: REGENERATING DHANI FOREST THROUGH COMMUNITY ACTION

Dhani Forest has reincarnated itself from the roots up. The stubbled, degraded slopes of a decade ago have regenerated more rapidly than many thought possible. Protected from uncontrolled grazing and harvest, root stumps have sprouted new branches, grasses have flourished, streams have recharged, and wildlife have returned. So, too, have the livelihoods of local villagers who traditionally made their living harvesting forest products, such as fuelwood and siali leaves used in making leaf plates. Under the supervision of a committee of local villagers, limited harvesting of forest products has resumed, steadily increasing the flow of benefits from Dhani to the five communities that flank the forest.








The rebirth of this mixed deciduous forest in the state of Orissa in India marks a new approach to managing the State's depleted forests—one that returns limited control to local communities. In fact, the State has had little to do directly with the forest's regeneration. The five villages surrounding the forest initiated the restoration effort. They crafted a detailed plan to regulate forest use, to carefully husband what remained of the forest and enhance it where they could, to distribute the forest benefits fairly, to educate their children in forest conservation, and to resolve disputes arising from their plan. They nursed the forest back to health because it had stopped giving them what they needed. In doing so, they became leaders in a trend toward community forest management that has spread across Orissa State and all of India.

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Box 3.8 Overview: Dhani Forest

Twenty years ago, Dhani Forest in Orissa State was badly degraded. Commercial harvesters had removed much of the forest canopy; local residents had cleared slopes for crops, gathered fuelwood relentlessly, and allowed cattle to graze the forest floor heavily. Today, this mixed deciduous forest is reborn, thanks to a five-village effort to ensure its survival. These villages have become leaders in a trend toward community forest management that is spreading across India.

Ecosystem Issues	
Forests 	<p>The 2,200 ha Dhani Forest is a primary source of food, fuel, building materials, fibers, and medicines for local people. Their dependence makes Dhani both extremely vulnerable to overuse and critical to protect.</p>
Agriculture 	<p>At various times, villagers have cleared lower slopes of the forest to expand agricultural areas and feed their families. Clearing forest, however, decreased their supplies of leaves that serve as farm fertilizer and food and other resources that cushion the effects of drought and crop failure.</p>
Freshwater 	<p>Local stream flows and water tables are vulnerable to changes in Dhani's forest cover and soils. Diminished water flows, in turn, affect the health of soils and crops in adjacent agroecosystems.</p>
Management Challenges	
Equity and Tenurial Rights 	<p>Today, villagers' rights to manage and use part of Dhani Forest's output is legally recognized—a far cry from the 1950s when the Orissa Forest Department ignored villagers' use rights and granted permits to contractors to harvest timber there. Yet some people argue that the State still does not treat the villages' forest protection committee as an equal, and some believe that the State should completely surrender title to Dhani Forest.</p>
Economics 	<p>Dhani Forest's renewed health is essential to both local subsistence and local market economies. The State also reaps economic benefits; local management has lowered its forest protection expenses and is creating an asset from land that might otherwise be unproductive.</p>
Stakeholders 	<p>Dhani's restoration and protection require collective decision making among the five villages who crafted the forest's protection plan, plus the cooperation of other neighboring villages who might infringe on this open-access forest. Restoration also depends on the State's willingness to respect community management and the value of nontimber ecosystem goods and services.</p>
Information and Monitoring 	<p>Dhani Forest's successful restoration has largely depended on folk knowledge, wisdom, and commitment; the same is true of many similar projects in India. Orissa State has contributed some technical expertise, but more scientific analysis to complement local management is needed—guidance and research that are beyond the resources of the Dhani community.</p>

Timeline

- Pre-1799** Most forests in India are managed sustainably at the community level.
- 1799** British rule of India introduces commercial timber production and soon exhausts many forests.
- 1865** The British colonial government asserts state monopoly over forests with the Indian Forest Act.
- 1878** Purview of the Indian Forest Act is expanded and local control is further diminished. Dhani Forest remains under the control of Orissa's Raja until 1947 and is generally well managed.
- 1914–18** World War I massively increases demand for Indian timber.
- 1920s** Railway lines reach Orissa, providing easier commercial access to Orissa's forests.
- 1940–45** India serves as the sole supplier of timber to Allied forces in the Middle East and Persian Gulf during World War II; forests are also under siege for fuelwood to offset the loss of coal to the war effort.
- 1947** Indian independence and state socialism put an emphasis on industrialization and use of forests for timber production and commerce rather than local use.
- 1940–50s** Population in villages near Dhani begins to increase notably, intensifying pressure on the forest.
- 1950s** Land Reform Bill declares forests on the boundary of a village to be village forests. Villages begin protecting and regenerating these tracts. National Forest Policy reinforces the state's exclusive control over forest protection, production, and management.
- Late 1950s** Tribal groups mount a sustained challenge to the continual denial of their rights to use forests.
- 1960** Orissa's Forest Department takes control of Dhani Forest and begins to permit commercial timber harvests; traditional conservation and community management systems decline.
- 1971** Beginnings of Joint Forest Management in Arabari in West Bengal and other districts.
- 1979** State permits a second major timber harvest in Dhani Forest.
- 1987** The villages closest to Dhani form a forest protection and management system to protect about one-third of the forest.
- 1988** Orissa becomes the first state to formally recognize local forest protection committees like Dhani's.
- 1991** Several other villages begin protecting another section of Dhani Forest.
- 1993** Orissa enters into a Joint Forest Management agreement with the villages surrounding Dhani Forest.
- 1997** Orissa awards the Dhani villages the *Prakriti Mitra* (Nature's Friend) award.
- 1998** Dhani Forest's canopy has filled out and the forest supplies increased goods and services.
- 1999** A cyclone severely damages Dhani Forest and the livelihoods of forest-dependent groups.
- 2000** A total of 400,000 ha is now under the protection and management of some 10,000 local villages throughout Orissa. The Dhani villages are active in the local federation of forest-protecting villages.

From Restricted Use to Overuse

Traditionally, local village folk did not own or manage the 2,200 ha of Dhani Forest. Nonetheless, they accrued many of the forest's benefits to augment their subsistence through a well-regulated system of forest harvesting.

Until Indian independence in 1947, the Dhani Forest lay within the domain of the Raja of Ranpur, one of 30 feudal states in Orissa that maintained a semi-independent status during the British colonial period. In Ranpur, as in other nearby feudal states, the Raja, or king, regulated access to forests and all forest products. During British rule, the Raja acted like a landlord, paying taxes on the forest estate to the colonial government. Some forests were essentially off-limits to local use. In others, villagers were permitted to meet their needs for timber and other forest products in exchange for modest royalty payments to the Raja or in exchange for free labor. Sometimes special considerations were given to the poor and to local tribal peoples with particularly high dependence on the forest.

After obtaining the required permit, villagers could gather a variety of products for personal use, from bamboo and wood for housing and agricultural tools, to fruits, fibers, leaves, and flowers. The forest rules banned cutting of selected "reserved" trees, and it was forbidden to sell or export trees without a permit from the ruler. The royal family also retained the privilege of hunting all wildlife within the forest.

The Raja maintained a separate administration of rangers, foresters, and guards to manage the "reserve forests," as forests like Dhani were known. The rangers strictly enforced the forest rules, both to prevent overuse by locals and to capture any commercial revenues from timber sales. Even without free access, villagers faced no shortage of forest products. During the Raja's tenure, the picture was one of a generally healthy forest with an abundance of resources.

In the early 1950s this picture began to change. Population was increasing rapidly, and agricultural land to meet local food requirements came into greater demand. Villagers cleared some of the forests on the lower slopes for planting using traditional swidden cultivation methods. More important, the era of the Raja's strict control had ended and the states of the newly independent India struggled to forge a "modern" forest policy—one that favored commercial uses of timber over meeting local needs. In 1960, the State Forest Department, which now controlled Dhani Forest, began permitting commercial contractors to harvest timber and remove much of the canopy in Dhani's low-lying areas. Villagers pressed some of the cut areas into crop production, and the State tried to establish teak plantations in other sections.

Over the next 2 decades, commercial cutting continued and local use intensified. Village cattle grazed the forest floor intensively and villagers gathered fuelwood relentlessly. Some came from more distant villages where forests were already

exhausted. Sometimes even rootstocks were extracted for sale. Illegal timber cutters also took from the forest, smuggling out timber to meet growing urban lumber demands.

In 1979, the State allowed a second major timber harvest that left the forest devoid of large trees. Alarmed by the access given to outsiders, local villagers accelerated their own timber cutting in a rush to claim some of the forest goods and associated income for themselves. By the mid-1980s, the whole of Dhani Forest was degraded, much of it badly.

A Time for Action

The degradation of Dhani Forest had far-reaching impacts on the lives of local people. Materials from the forest on which they had always depended fell into short supply. People had to traverse long distances to collect fuelwood and to obtain small amounts of timber for house construction and farm tools. Firewood for traditional cremations dwindled. Fruits, tubers, herbs, and leafy vegetables that had long augmented food supplies during lean times gradually disappeared. The lack of forest productivity removed the cushion that the forest had always provided during dry periods and crop failures.

With the forest canopy removed, the forest soils dried out, reducing stream flows and decreasing local water tables. Because agriculture is the main occupation in the surrounding villages, soil moisture and water availability were prime concerns. Soil erosion also became a problem, affecting fertility in some neighboring fields. Loss of forest canopy also meant loss of the leaves and other sources of "green manure" that farmers had depended on for fertilizer.

Dhani Forest's worsening condition struck directly at the local economy, too. Without sales of products collected from the forest, many villagers had no source of cash. Selling fuelwood was the primary commercial activity, but the sale of leaves from kendu trees and siali vines was also important, particularly for women and poorer families. Approximately 50 Harijan families (the lowest castes and those with little land and high daily use of forest products) depend on the income from siali leaf collection in Dhani Forest. During peak season after the rains, one person working all day can collect as many as 3,000 leaves, which can then be stitched together into leaf plates or sold in bulk in Chandpur, the nearest town. Mats woven from date palm leaves were also sold locally; tubers like tunga, karba, and pichuli, as well as medicinal plants and vines, brought substantial local income. As these products dwindled, the pressure to migrate out of the nearby villages to urban areas for wage labor increased.

By the mid-1980s, villagers were convinced that Dhani Forest's poor condition was a serious community matter. They had begun to realize that it was they who were losing the most—not the private logging contractors or the State Forest

Department. It also disturbed them that future generations would inherit a depleted ecosystem. In early 1987, a respected village elder, Kanduri Pradhan, organized a meeting among the five villages that lay closest to Dhani Forest—Barapalli, Arjunpur, Panaspur, Balarampur, and Kiyapella. In ensuing meetings, a group of residents from all five villages discussed their options for collectively protecting Dhani Forest. A few villages in the Ranpur area had already begun to protect their forests, and this encouraged the group to commit to a joint program of action to guard and manage more than one-third, or 840 ha of Dhani Forest.

The decision to jointly manage Dhani Forest was a significant social and political event for the villages. Close cultural ties already linked the villages—they shared the observance of some local festivals, for instance, and a common school. Prior to their decision to protect the forest, they had formed an inter-village committee to coordinate collective activities. Yet they were also socially diverse, comprised of an assortment of tribal peoples and Hindu castes, including Brahmins (the most influential caste), Khandayats (farmers), and Harijans (the least powerful castes). Each of these groups lived in its own enclaves. Indigenous tribal people, the Saora and the Kandha tribes, populated Kiyapella and Panaspur villages. Balarampur village had a mixed tribal and Harijan community. In Barapalli and Arjunpur villages, Khandayats and Brahmins dominated. Dependence on the forest, however, linked them all, and village representatives realized that any hope of real forest protection lay in joint action.

A Plan for Life

By September 1987, the five villages had formalized their commitment to protect Dhani Forest. They formed a forest protection committee called the Dhani Panch Mauza Jungle Surakhya Committee. Out of lengthy discussions on the causes of the forest's poor condition and the possible ways to relieve pressures on the forest came a plan to restrict human uses of the forest.

From the beginning, the effort to protect and rejuvenate Dhani Forest was a true community affair. The elders of all households in each of the villages sat on the general body of the forest protection committee, which made all policy and budgetary decisions. A smaller executive committee included two members from each village to help implement the general committee's decisions. Community members were also required to take turns serving on the 25-person patrol squad that kept a daily vigil at the forest, restricting public access and preventing further degradation.

At first, the protection plan was simple: keep people and cattle out except for very restricted uses. Gradually, as the community's experience with protection evolved, so did the protection plan. The forest protection committee drew up an

elaborate set of regulations and a schedule of fines. Cutting a valuable timber species like teak, for example, drew a fine of 1,001 rupees—a stiff penalty in the context of local incomes. In essence, the committee forbade any unsupervised cutting or collection of forest materials and set strict limits on those goods that could be harvested. The committee banned anyone entering the forest from carrying an ax or other sharp implement that could be used to cut woody material. It also banned grazing during the rainy season (July–September) to encourage regrowth of ground vegetation and restricted human access during the summer months to prevent fires. To help restore the lower slopes of the forest, the committee negotiated with local farmers to end the practice of periodically cultivating these areas.

It did not take long for Dhani Forest to rebound. Although they had lost much of their foliage, many of the trees and shrubs still had intact root systems and a number of these species were naturally fast growing; simple protection from defoliation allowed them to spring back. Still, Dhani is not the forest it once was. Some valuable species that were once abundant, like Sissoo, mango, Kendu, and Harida, are now scarce. The original forest species composition has been altered further with the planting of nonnative species like eucalyptus.

But even casual observers can see the improvements in the forest's condition. By mid-1999, the forest canopy had filled out and Dhani Forest boasted more than 250 plant species and 40 bird species. Other wildlife had begun to return as well. Soil erosion had diminished and stream volumes had increased, benefiting the agricultural fields that border the forest.

However, nature dealt the Dhani restoration a setback in October 1999 when a powerful cyclone battered Orissa, uprooting some 90 million trees in its path (Watts 1999). Although Dhani Forest is about 60 km inland, its forest canopy sustained considerable damage, losing many large teak, eucalyptus, and other valuable trees. Fierce winds uprooted bamboo bushes as well and destroyed many siali vines, ruining the siali leaf crop for the year (Singh 2000). In spite of the damage, Dhani Forest remains a functioning forest—testimony to the careful management that in just a little more than a decade transformed a degraded forest patch into a living community resource.

Sharing the Benefits

Conflicts with villagers who were harvesting against the rules were fairly frequent in the initial days of forest protection. But as the protection scheme gained acceptance within and beyond the local villages, cooperation increased. Soon the patrolling squad dropped to 10 people—two from each village—and in 1992 a professional watchman was appointed. At first the community paid the watchman with households' contributions of

rice or cash donations. Gradually, revenues from sales of bamboo from the forest increased enough to fund the watchman's salary.

Locals' acceptance of the protection plan has been reinforced by a steady increase in the benefits they reap from the fast-regenerating forest. The forest protection committee has capitalized on the fact that short-term benefits demonstrate progress and breed long-term community support. As the forest has grown healthier, the committee has gradually raised the allowable harvest of different forest products, while taking care to make sure these uses are sustainable and do not impede long-term forest recovery.

Today, local villagers enjoy a much-increased supply of traditional forest products. Firewood from an annual cleaning and thinning operation is shared equally among the five villages, and locals can enter the forest any time to collect fallen branches, leaves, fruits, berries, and tubers at no cost. They also can collect green wood for cremations. With a permit, villagers can obtain poles and timber for a nominal fee, but they must appear before a committee and justify their need and the exact amount they require. Likewise, they can purchase up to 100 bamboo stalks for a fee. All materials are for personal use only and cannot be bartered or sold.

The forest protection committee has also taken care to extend the benefits of their management beyond the five villages. With permission and payment of a higher fee, neighboring villages can obtain many of the same forest goods as local villagers. Special concessions are made for community festivals if a village does not have access to any other forest. Victims of house fires can get timber for repairs at no cost.

Beyond Timber and Fuel: Pursuing Social Goals

The community effort to restore Dhani Forest has always been motivated as much by social as by biological goals. The community's forest management plan has grown to include much more than simple protective measures and rules for distributing benefits.

The Committee's local economic development efforts are perhaps its most ambitious work. The Committee has focused on improving the incomes of local people—mostly tribal peoples and Harijans—who are most dependent on the forest for a living and who effectively lost their livelihoods when the forest was closed to unrestricted use in the early days of Dhani's protection. At the Committee's urging, the State Forest Department has donated two leaf-plate stitching machines and trained local women's groups in siali leaf processing. The Committee was also instrumental in bringing a State-supported dairy program to the area; 40 forest-dependent families each have received one cow to provide a small income from milk.

The community also has decided to augment the natural growth in the forest by interplanting fruit trees, like cashews, that produce a crop that can be consumed locally or sold for cash. Other trees that produce collectible products are planted to help diversify the products that local people can harvest and to increase their production and dependability.

To fund the forest augmentation work and other community development activities, the forest protection committee aims to market any excess bamboo that remains after villagers' needs are met. A state survey of bamboo stocks (pre-cyclone) in the forest suggests that this can be a significant and sustainable source of revenue.

A related activity is the forest protection committee's efforts to pass on the traditional values of this forest-based community to the next generation of forest managers. Once every few months, the village children accompany the forest guard in his rounds. The guard familiarizes them with the plants, and teaches the children their common uses and local religious significance. The children also take part in raising seedlings and planting them to augment the forest stand. Children from Dhani visit various schools in the region to share their understanding of the forest and its importance with children whose villages are not yet involved in forest protection.

Equity and Other Challenges

Community forest management efforts like those in Dhani Forest have become quite common in Orissa and elsewhere throughout India. More than 6,000 rural communities in Orissa alone have made some attempt to protect local forest parcels for common use (Nayak and Singh 1999:8); 120 of these are in the Ranpur area (Panagrahi and Rao 1996:2). Like the Dhani villages, many of these communities have shown remarkable ingenuity, sophisticated planning, and success. But as with any group endeavor, forest protection by rural communities faces many obstacles. In some cases, the protection effort breaks down after a few years because of conflict within or between villages over how to manage the site. The problem becomes more acute once the forest regenerates and trees become larger and more valuable, increasing the temptation to harvest.

One source of internal conflict stems from the social structure of the community itself. Local forest protection programs have evolved in the same social context that has traditionally given rise to caste, class, and gender inequalities. An elite group often dominates the village decision-making process, which may marginalize women and lower-status sections of the community.

Also, the very act of protecting forests by limiting access to them tends to adversely affect the poorer and more forest-dependent members of the village, who have few other options for fuel and livelihood.



There are approximately 2,000,000 villagers living in some 10,000 villages across Orissa. More than 400,000 ha of forest is under JFM by village communities, but what they want is sole rights over the forests they protect and manage. They have formed a state-level forum to fight for ownership.

Dhani reflects both of these problems. The impetus for forest protection—and control of the forest protection process—has always been strongest in the villages populated with higher castes that owned land and had less absolute dependence on the forest. Conversely, the villages populated by tribal people and Harijans have shown greater reluctance to participate and have complained of less power over the forest's management. The forest protection committee's attempt to provide more income sources for the poorest members of the community has evolved as a response to this tension.

Likewise, the Dhani villages have wrestled with gender issues. Until 1995, the general committee (the main body of the forest protection committee) consisted of family elders, usually men. Since then it has included two members—one man and one woman—from each family in the five villages. The executive committee, a group of 21 villagers who implement the decisions of the larger general committee, has also included women since 1995, but only three and they are not routinely consulted when important decisions are made. Including women in the forest management makes sense because women are the predominant forest users, collecting most of the firewood, leaves, and other plants that enter local commerce.

Conflict with outside villages is another typical complication in forest protection efforts. Villages that have tradition-

ally made use of a forest, yet have not been part of the effort to protect it, sometimes resist when a community group tries to limit free access to the forest. The conflict may remain latent as long as the forest is degraded, but once the forest regrows, neighboring villages may want a share. This was the case in Dhani. Kadamjhola, another village bordering Dhani Forest, declined to participate in the original forest protection plan but now wants to share in the project. The five original Dhani villages have agreed to involve Kadamjhola in the protection and management scheme.

Other neighboring villages have also sought a share of the replenished flow of forest products. In earlier years, these villages regularly infringed on the protected forest patch, causing many disputes. But in 1991, with the encouragement and advice of the forest protection committee, several of these villages joined together to protect their own piece of Dhani Forest—a section adjacent to the parcel that the five Dhani villages have under management. The efforts of the two groups will reinforce each other and reduce pressure on both parcels.

The Dhani Forest protection committee also has helped other community forest management groups resolve conflicts through their role in the recently formed regional federation of forest-protecting villages that has sprung up in the Ranpur area.

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Box 3.9 History of Indian Forest Management

Although overuse of Dhani Forest did not begin until the 1950s, Indian forests have been systematically exploited for centuries. Many of the policies and inequities in wealth and political power that permitted historical forest destruction still influence the use and restoration of forests like Dhani.

British rule in India (1799–1947) left an indelible imprint on Indian forests, both through the outright destruction of forests for commercial timber and by dismantling centuries of local traditional forest governance systems. Certainly Indian forests had been altered prior to the arrival of the Europeans—for settled agriculture, for example—but in 1799 most were relatively unpressured. Pepper, cardamom and ivory were the only forest products for which there was significant commercial demand, and land for subsistence hunting and gathering was ample. Many forests in India were managed locally, with village systems and cultural traditions that carefully regulated members' harvesting practices.

But in the 19th century, the British turned to Indian timber for the royal navy's ships, for gun carriages, and to construct and fuel an expanding railway network. Large landowners, called *zamindars*, also promoted the conversion of forests to agriculture to make money and meet the tax demands of the colonial administrators.

By the mid-1800s, the British were concerned about rapidly dwindling supplies of teak, sal, and deodar—the best timbers for railway construction—and the government sought to expand its legal purview over Indian forests. They criticized villagers' customary use of forests as random and unscientific; colonials complained that rural Indians had become accustomed to grazing cattle and cutting wood wherever they wished. Although some colonials recognized that there were, in fact, complex systems of local forest governance that warranted praise and strengthening, their voices were overwhelmed by the assertion of the proprietary rights of the colonial government to India's forests.

The 1878 Forest Act dismantled the last vestiges of rural community control and instituted new classifications for forests: the compact and most valuable areas were labeled "reserved" or exclusively claimed for the state, others were classified as "protected"—places where the local people were given certain privileges but no formal rights. Eventually the colonial government converted many protected areas into reserve forests. Large areas of forest under the control of India's princes were also drawn into the colonial Act. Leases with local landlords and rajas divested surrounding populations of their forest rights. By World War II, the Forest Department's instructions were to produce the maximum output possible.

Traditional conservation and community management systems went into decline. In some areas, sale or bartering of for-

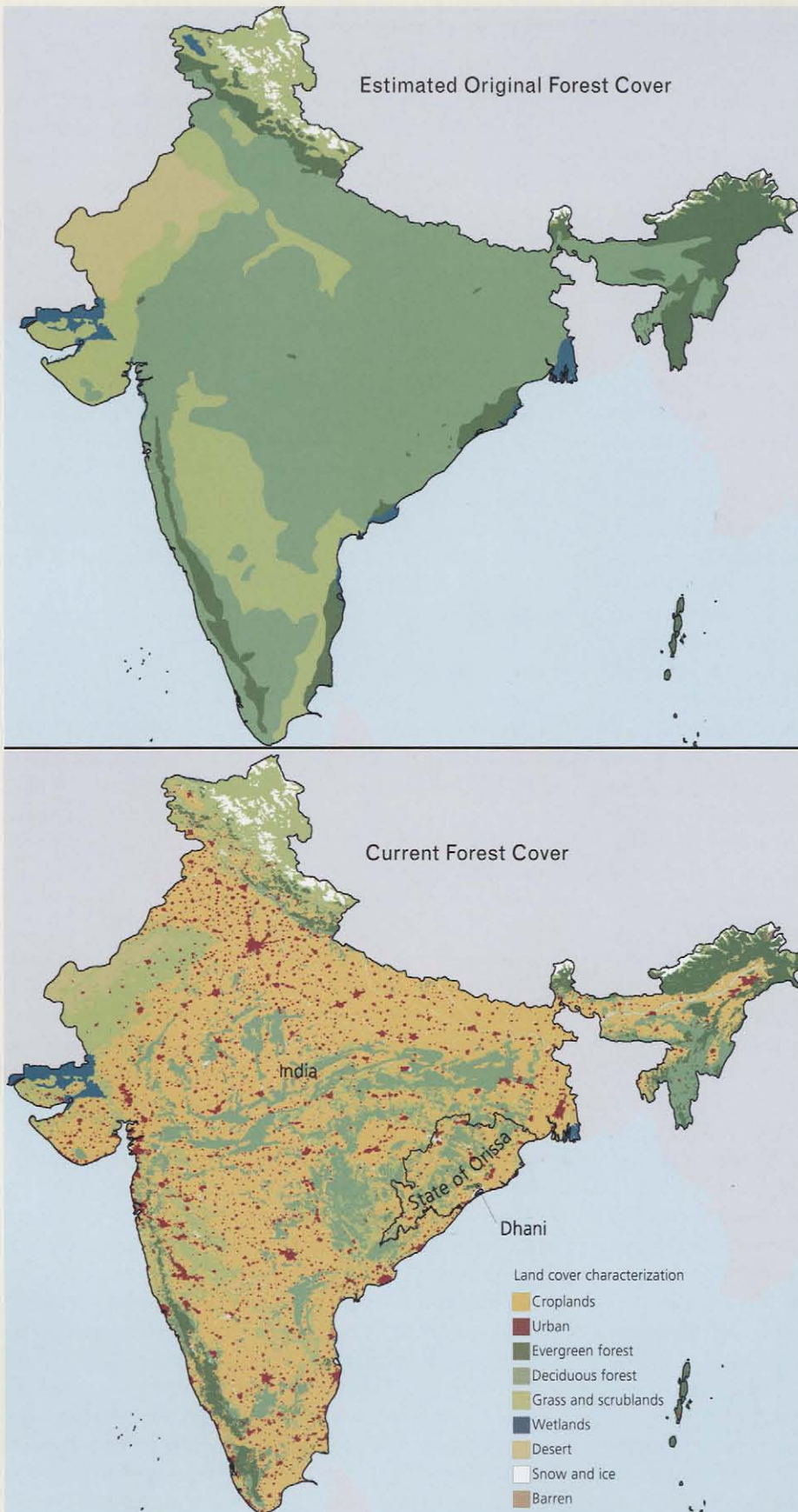
Clarifying the Forest Classifications

The terms used to describe forest-use rights and access privileges have specific connotations in the context of Indian forestry laws.

- **Reserve Forests** are those for which all rights are recorded and settled by the state. They represent the highest degree of state control—the state grants privileges but not rights to people.
- **Protected Forests** represent a lesser degree of state control, whereby rights are recorded but not yet settled.
- **Village Forests** constitute a fuzziest category. These are forests under management of representative village bodies, but the nature of these bodies and the kind of control they have varies. In the 1930s, for example, the state granted to village bodies some isolated, unprofitable (for the state) forest patches in western India in a bid to renew and bolster traditional management practices; these, for example, are referred to as village forests.
- **Common Property Lands** are lands with no individual ownership where resources are shared according to some established social norms. Grazing lands traditionally used by village communities are an example. Village forests can also be thought of as common property lands.

est produce was prohibited. New laws restricted small-scale hunting by tribes and British foresters. Indian princes sought to ban the traditional use of *jhum*—the shifting clearing and cultivation of forest in rotation—with the hope of enhancing the commercial value of their forests. Even in the few places, such as Madras, where the classification of *panchayat*, or village forests, lingered, bureaucratic government rules impaired their functioning. Loss of control induced a sense of helplessness among villagers, and protected areas became vulnerable to exploitation by both residents and outsiders.

With Indian independence in 1947, the domain of the Forest Department grew and the scope for local community management shrank still more. The Indian government took over extensive forests owned by landlords. But before surrendering their lands, many landlords cut as many trees as possible.



Sources: MacKinnon (1997) and Global Land Cover Characteristics Database Version 1.2 (Loveland et al. 2000).

Industrialization was an important objective of the newly independent Indian government and state timber plantations and production of paper and other wood-based industries were subsidized.

By the 1970s, when government forests were largely exhausted, some of the best tree stocks in India were what remained of locally managed village forests—like Dhani. The forest industry turned to some of these village forests and attempted to extract timber without the consent of local leaders.

At the same time, a growing population put those remaining forests under extreme pressure to be converted to other uses or to produce more wood, fuel, timber, and non-wood products. One survey found that between 1950 and 1980, the number of people supported by a single hectare of common property went from 4.9 to 13.7, with poor families deriving 77 percent of their fuel and fodder from such lands (Pachauri and Sridharan 1998:126, citing Jodha 1990).

In the early 1970s, however, experiments in Joint Forest Management were initiated, and would lead to a new era of forest co-management.

The pressures of population growth and forest conversion continue, yet Dhani and other forests are beginning to regenerate. Villagers are testing their rights to manage, reap, and perhaps even gain title to the lands they have restored. And governments at all levels are starting to realize the economic benefits of managing a forest for its nontimber goods and services—from leaves to healthy soils—as well as for its commercial timber potential.

State vs. Local Control: Who Should Reap the Benefits of Regeneration?

Title to Dhani Forest—both the land and the trees themselves—rests with the State of Orissa, yet it is only through the efforts of the Dhani villagers that a functional forest exists on the formerly degraded site. A similar situation exists on most of the forests in Orissa that have been regenerated through local community forest management—a total of approximately 400,000 ha, or about 7 percent of the State's forest lands (Mahapatra 1999:34). This tension between legal state control and de facto local control has been a source of local dissatisfaction and political friction for years.

In 1988, responding to pressure from a rapidly growing number of forest-protecting communities, Orissa became the first state to formally recognize the legitimacy of local forest protection committees. Soon after, it established a joint forest management (JFM) program through which it allows villages to co-manage local forests while sharing forest products with the state. Under the JFM formula, local communities are entitled to 100 percent of minor or intermediate harvests of commodities like fuelwood and nontimber products like leaves, grass, and fruits, and 50 percent of major harvests of timber.

Although the state maintains this is an equitable division, many local villagers throughout Orissa disagree. The State, they argue, has shown little interest in local forest management until now, when forests have begun to regrow and their value has risen. They complain that the State treats them like junior partners in the management effort, even though they have done the bulk of the restoration work. Many of these villages believe the State should surrender title to forests entirely to the local communities that protect them. Local activism over the subject of forest ownership has increased steadily in recent years, and the question of the State's role and right to harvest weighs heavily in the future of local forests like Dhani (Mahapatra 1999:32–42).

Dhani's own experience with the State has been more positive than most. Orissa State showed little interest, interference, or involvement in the beginning of the protection effort. In 1993, however, the State entered into a JFM agreement with the Dhani villages and has since been forthcoming with support. Lately, the State has cleared up one of the gray areas in the JFM rules: how to share the bamboo harvest. The state has also actively supported economic development initiatives of the Dhani community and offered technical help in improving the forest stand.

Even while it has maintained good relations with the State, the Dhani community has been active in the regional federation of forest-protecting villages. It has also taken a more visible role beyond the borders of Orissa, becoming a major learning center for those who want to study community forest management. In recognition of the Dhani villages' success in protecting and restoring the forest, Orissa State awarded them the *Prakriti Mitra* (Nature's Friend) award in 1997.

Forest Regrowth, Community Renewal

For the past 15 years, Dhani Forest has served as an 840-ha classroom. It has offered the community—and the world—some basic lessons in the value, degradation, and restoration of forest ecosystems.

The forest has always been a central feature—both spiritual and economic—in the lives of the communities around Dhani. It has been a source of livelihoods, a place for ritual, and the tangible abode of nature. As the forest condition degraded and these forest benefits dwindled, the fabric of the community began to fray. Both local subsistence and the cash economy suffered. Food supplies became less stable. Periodic migration out of the community for wage labor increased.

But the years of forest scarcity had a positive effect as well. Desperate to regain the benefits of the forest, the Dhani villagers came to a collective decision to act on their own—a grassroots campaign that provided a common rallying point among villagers and helped renew their traditional link to nature in the form of “Mother Forest.”

Their efforts have brought tangible and significant financial reward to the communities. They have added money to the common village fund. They have also brought economic opportunities to the poorest and most forest-dependent villagers, the residents hardest hit by the original decision to limit access to the forest and an essential element in the long-term success of the restoration effort.

On another level, the Dhani experience emphasizes the importance of granting local residents a voice in how the ecosystems they live in are managed. Annexation of Orissa's forest lands by the State left locals with little control and stripped them of most of the forest's benefits. This set up the conditions for Dhani's demise. In contrast, when locals reasserted their control, they quickly established a workable management plan that garnered the community's and eventually the State's support. In this instance, and in many villages throughout India, community forest management has been far more effective than state management. Although Orissa State has acknowledged this truth in the form of its JFM program, there are indications that it still is unprepared to relinquish the level of control that local communities feel they deserve.

The Dhani example nonetheless demonstrates that the state can play a useful role in supporting community forest management. By lending financial and technical support to the community's forestry and community development goals, Orissa State improved the Dhani's prospects for success over the long term (Singh 2000). Experience here and in many other villages shows that community institutions such as the Dhani Forest protection committee tend to get stronger and more effective once they achieve financial and institutional independence. To the extent that the state has helped hasten that independence, it has nourished the roots of Dhani's restoration.

Box 3.10 The People of Dhani's Villages



Harijan women stitching siali leaf plates.

The five villages that manage Dhani Forest are home to 1,244 people in 212 households. Twenty-four percent of the households are families of the lower castes of Indian society, 29 percent are tribal, and 46 percent are upper caste families. Since 1935, the number of households has increased from 28 to 224—an increase of 700 percent. The economies of these villages are heavily forest dependent—75 percent of their income comes from a combination of forest resources and agriculture. Populations increased most in villages where families in the upper castes predominate, but lower caste and tribal families are the most dependent on forest products.

Caste Composition

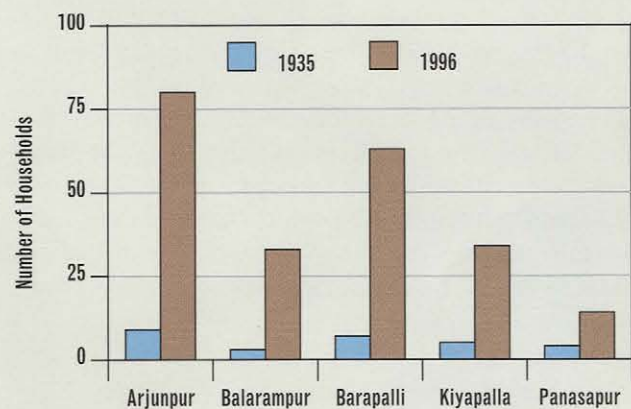
Caste refers to the hereditary social classes of Hinduism; it governs the occupations members can aspire to and their associations with members of other castes. The division is based on wealth, inherited rank or privilege, or profession.

Villages	Number of Households			Total
	Upper Castes	Lower Castes	Tribals	
Arjunpur	52	21	—	73
Balarampur	4	11	18	33
Barapalli	43	19	—	62
Kiyapalla	—	—	30	30
Panasapur	—	—	14	14
Total	99	51	62	212

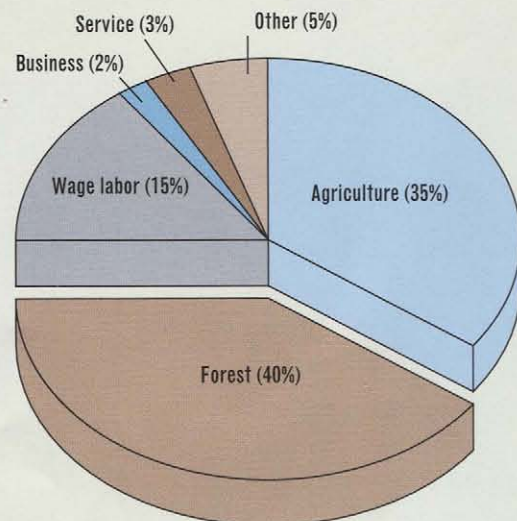
—, Data not available.

Source: Nayak and Singh 1999.

Population Trends in the Five Villages that Manage Dhani Forest, 1935–96



Sources of Primary Income in the Dhani Villages



Box 3.11 Joint Forest Management in India

India's Joint Forest Management (JFM) initiatives are based on the concept of collaboration between local people and state authorities. Local people participate in forestry activities on land that remains, essentially, under state control; the Forest Department provides financial assistance and technical advice.

Joint Forest Management grew out of the tension in the 1970s and 1980s between Forest Department staff and local communities. This was an era of political upheaval in many states. Villages had increasing need for forest resources but decreasing access to them, as the government aggressively promoted state plantations in barren and degraded forest lands that had always been used by local people. In fact, by 1980 nearly 23 percent of India's land area had been placed under state management; the majority of the affected rural population were denied access to their traditional resource bases. Nonetheless, Indian forests were losing ground, converted to other uses. For example, during 1959–76, Indian forests lost 2.5 Mha to agriculture, mostly to encroachment by the people living on forest peripheries.

During this period, Dr. Ajit Banerjee, a young Forest Service officer posted at a small research station in West Bengal, was exploring alternative methods of forest management. In 1971 Banerjee initiated an experiment in Arabari in which local villagers would work with Forest Department staff to jointly manage forest patches adjacent to their settlement. The idea



A woman carries a "head load" of wood from rejuvenated Dhani Forest.

was to provide residents with a supply of biomass and sources of income through the sale of nontimber forest products—fruit, leaves, mushrooms, twigs, and fodder grass—and in exchange the communities would help restore and protect the forests. Soon, 618 families from 11 villages were working with the West Bengal Forest Department to restore more than 1,200 ha of forest, salvaging sal trees where good rootstocks remained and planting barren patches with fast-growing species like cashews. Some of the deforested areas were cultivated with rice, jute, and maize. The produce was sold to member families at a nominal price. The members could get firewood and fodder free for their own use.

By the early 1980s, jointly managed forests in Arabari were flourishing. Today, West Bengal, Orissa, and other states have formally endorsed the "Arabari experiment" as a general model for jointly managing forests. Widespread replication of the JFM model—with corresponding regeneration of forests—offers strong evidence that the recognition of traditional rights of local people to use forest resources could be the most important condition for managing a forest sustainably.

There remain several challenges to the further success of JFM. Marketing of nontimber forest products is still under the control of an organized lobby of large merchants. The state-run corporation responsible for marketing timber remains vulnerable to a group of contractors who keep prices low at auctions. Moreover, the efficient functioning of forest protection committees still depends on, in many cases, the personal efficiency and willingness of concerned Forest Department officials.

Community Managed Forests in 15 of 30 Orissa Districts

District	Villages (no.)	Land Under Protection (ha)	District	Villages (no.)	Land Under Protection (ha)
Angul	630	6,000	Mayurbhanj	750	35,000
Balesore	450	7,000	Nabrangpur	150	1,000
Baudh	25	2,500	Nayagarh	650	110,000
Bolangir	600	24,000	Puri	250	6,000
Debgarh	110	4,500	Raigada	75	8,000
Dhenkanal	732	8,000	Sambalpur	650	80,000
Ganjam	80	2,500	Sundargarh	125	5,000
Koraput	125	12,250			

Source: Mahapatra 1999.