

## **Rural Natural Resources Management: Lessons From Thailand\***

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Thailand's rural natural resources—forests, land and water—have made indisputable contributions to the country's industrialization and economic growth not only by providing food and materials but also by generating investable surpluses and foreign exchange at a critical stage of the country's development. The fact that the rural resource sectors' share in the Gross Domestic Product (GDP) and exports has been steadily falling while their absolute contribution is concurrently rising indicates the success of these sectors in fueling the diversification and sustained growth of the economy. The inherent risk is to infer from this inevitable structural change that rural natural resources no longer warrant special attention because the share of the resource-based sectors is relatively small (under 20 percent at present) and is steadily declining.

### **THE GROWING IMPORTANCE OF THE RURAL RESOURCE SECTORS**

Despite this apparent contradiction, the importance of the rural resource sectors, particularly agriculture, might have increased along with the decline of its share in GDP because of the country's unbalanced structural change and its implications for income distribution and socioeconomic stability. The majority of the Thai population continue to depend on agriculture for employment and income, while the agricultural sector's share in the national income has dropped to 15 percent and continues to fall. This implies wide and growing inequality in the distribution of income. If current trends continue, it is projected that by the end of the decade, agriculture will account for only 8 percent of GDP while it will still employ 40 percent of the labor force—which implies an increase in inequality. At the same time, the national economy will be at least twice its current size. Income disparity will thus worsen as the share of the rural sectors is reduced and the rural interests will become more vocal and articulate.

Therefore, improved rural natural resource management is critical if the rural sector's productivity is to be increased and inequality contained. In the past, mismanagement of the rural resource base may have meant less investable surplus and less foreign exchange for industrialization and therefore somewhat lower growth. Today and in the foreseeable future, failure to conserve and manage the rural resources may undermine the sustainability of the entire growth process.

Of course, there are further reasons why rural resource management and agricultural growth are still essential to industrial and overall growth. Over 44 percent of the value of manufacturing is still resource based, and about 50 percent of trade and services depends on a healthy agricultural sector through backward and forward linkages. Even as the share of natural resources as a source of growth has declined, the share of domestic demand in economic growth has increased from 74 percent in the early 1980s to 78 percent in the late 1980s. With the majority of the population engaged in agricultural activities, faster rural growth means larger markets for nonagricultural products.

### **THE GROWING DEMAND FOR NATURAL RESOURCES BY THE NONAGRICULTURAL SECTORS**

The non-resource-based sectors, industry and services, are themselves placing increasing demands on land, water and forests. Land previously under agriculture or forestry is now demanded for location of industry, development of tourism, expansion of urban areas, and infrastructure. While the land converted

to nonagricultural uses is still relatively small in comparison to the total agricultural area, its rate of growth is high, and the time allowed for adjustment is minimal. Moreover, such land is usually of very good quality (higher-than-average agricultural productivity) and of close proximity to irrigation systems, infrastructure, and markets. Thus, even though the agricultural value of converted land is only a fraction of its value in other uses, the foregone agricultural production and rural income are disproportionately high.

During times of rapid economic growth, industrial expansion, and massive construction activity, the land lost to agriculture in the proximity of urban, industrial, and tourist centers is a multiple of the land actually converted to other uses because of land speculation. Land bought for speculation often lies idle because the buyers, usually urban investors, neither farm nor wish to rent out the land to farmers from fear of losing full control of the land when they want to sell it.

The current inadequate infrastructure and the uncertainty regarding the location and scale of contemplated infrastructural projects further fuel land speculation and pull land out of crop production.

Rapid industrialization, tourist development, urbanization, and income growth also raise the demand for water and energy. Water resources are increasingly diverted from crop irrigation to supply urban centers and industrial users and to produce hydropower. The latter necessitates further water resource development and construction of hydroelectric dams and reservoirs that inundate large areas of land and forests, creating additional pressures on and conflicts over increasingly scarce rural natural resources.

Yet the most latent and perhaps the most potent demand for rural natural resources over the long run is the demand for environmental amenities, open spaces, parks, and recreation areas arising from income growth and urbanization. This environmental and recreational demand for land, water, and forests is now manifested in growing visits to national parks and coastal resorts, the rapid growth of golf courses, and growing support for the environmental movement. As incomes continue to grow and the environment of the cities deteriorates from pollution and congestion, growing numbers of people will increasingly demand the amenities of the countryside, open spaces, rural landscape, natural forest, and unpolluted waters. Soon enough, the second home outside the city will become as much a reality for the urban middle and upper classes of Thailand as it is for those of the developed countries.

For all these reasons, the demand for rural natural resources will not decline, and it may, in fact, increase with Thailand's successful industrialization and rapid economic growth. Not only are the resources expected to provide employment for the majority of the Thai population, but they are also expected to play a critical role in containing inequality and in improving the quality of life of an increasingly affluent urban population.

## **PAST NATURAL RESOURCES MANAGEMENT**

The past and current approaches to rural natural resource management have been less than successful, which is evident from a simple comparison of objectives and accomplishments.

The first three National Development Plans set a target of maintaining 50 percent of the country's area under forest at a time (the early 1960s) when over 50 percent of the area was under forest. Failing to arrest deforestation that had reduced the forest area below 50 percent by the late 1970s, the Fourth National Development Plan (1976-81) set a target forest area of 37 percent. Having failed to hold the set target and with the natural forest down to only 29 percent, at the end of the Fifth Plan (December 1985) the government established a National Forest Plan to increase the forest area to 40 percent, of which 15 percent would be protection forest for conservation and 25 percent economic forest for timber production. Achieving this target would require reforestation of 6 million hectares (ha). However, because the rate of deforestation is ten times the rate of reforestation, the "economic forest" target rate has been an unsurmountable goal thus far. Even assuming an effective halt to deforestation and a tripling of the rate of reforestation, it would take at least 35 years to reach the 40 percent target.

Recognizing these difficulties, the government has sought to involve the private sector in reforestation by making denuded public forestland available for private tree plantations at a nominal rent (63 baht/ha) and

by providing investors with generous incentives such as tax holidays and exemptions for import duties on machinery and equipment. Several large companies expressed interest in participating, each with plans for large-scale plantations covering thousands of hectares of denuded forestland, and for a moment, it appeared that the 40 percent target would become a reality. This belief was reinforced by the fact that in January 1989 the government imposed a nation-wide ban on logging. If deforestation had been stopped and reforestation was indeed accelerating with the infusion of private capital, it was a matter of simple arithmetic to conclude that the country's forest cover would grow to meet the target in only a few years.

Unfortunately, the experience of the two years since private deforestation promotion began and logging was banned has been less than encouraging. The private sector's involvement in reforestation met with serious obstacles from the beginning. In the first place, the denuded forestlands are not vacant but are occupied by farmers who have encroached on the forest reserves in search of land for cultivation. Evicting farmers is out of the question, and where it has been attempted, it has created serious social problems.

Offers by plantation companies to buy off squatters' claims to the encroached land partially solved this dilemma. However, this solution has in turn created two other problems that are equally serious. First, since the land transferred from farmers to companies was untitled and without a legal status for the encroacher who is thus subject to the threat of eviction, some farmers complained that they were forced to sell "their" land, even though they may have been paid a higher price than the market price of untitled land. Second, there is concern (but little evidence yet) that farmers who sold their land have moved into the forest and have cleared new plots of land for farming. If this turns out to be true on a large scale, the government's promotion of reforestation by the private sector may degenerate into replacement of natural forest with plantations.

Further problems with private reforestation arose from the fact that eucalyptus, a fast-growing hardwood, is the preferred species of private plantation companies. While the scientific evidence may not be entirely conclusive, many rural people are convinced that large-scale eucalyptus plantations damage their crops and deplete their water sources. Opposition to the government's reforestation policy is also being raised by rural communities, social groups and NGOs who prefer a community forestry approach to reforestation, and environmentalists, who do not consider eucalyptus plantations as forest.

Under these circumstances, the reforestation effort is at a stalemate, as companies and communities are awaiting a more clearly defined forest policy.

The problems of forest policy easily spill into other rural natural resources such as land and water. First, there is an unreconciled conflict between people's demand for agricultural land and the State's target for a 40 percent forest cover. There is at least a 30 percent overlap between the agricultural land and the forest area. An area of 7-8 million ha is claimed by both the farmers as agricultural land and by the government as forestland. Legally, the area is a public forest; in reality, it is private farmland. The conflict is becoming more serious over time as farmers continue to clear new forest areas to compensate for falling crop yields on deteriorating encroached land while the government tries to do exactly the opposite: stop forest encroachment and bring more of the encroached land under forest.

The government's modest effort to reconcile this conflict by issuing STK (right to farm) certificates to squatters in forest reserve areas had only limited effect because it covered only a limited area (8 million rai) and did not improve the security of ownership or the incentives for reforestation. STKs cannot be used as collateral for loans, while investments in land improvement cannot be liquidated through sale. Similarly, the issue of Sor Por Kors (land use permits) over degazetted public forestland by the Agricultural Land Reform Office (ALRO) has had limited effect on resolving agriculture-forest conflicts because such certificates are neither acceptable as collateral for loans by commercial banks nor transferable via sale. While the restriction of transferability is well intended, aiming to prevent the sale of land and the continuation of forest encroachment, it may turn out to be self-defeating if it constrains investment and productivity growth.

The lack of secure ownership over much of the agricultural land outside the forests is an obstacle to

investment needed to: (a) reduce land degradation from soil erosion, nutrient leaching and salinization, and (b) make profitable the use of modern inputs for increasing yields. Higher productivity on existing land is a prerequisite for containing encroachment of marginal, steep, and fragile lands. Security of ownership and access to capital are also critical incentives for the planting of perennials and treecrops, including forest trees.

Finally, forest management, land ownership, land use and land management are all critical to water resource availability and management. Continued deforestation of watersheds and cultivation of fragile lands and steep slopes result in flash floods, soil erosion and sedimentation of rivers and reservoirs. Insecure ownership limits investment in on-farm water development, and in soil erosion control. Without such investment, sedimentation of water bodies and reservoirs is inevitable. Similarly, some land uses may help retain moisture and regulate water flows, while others may do the reverse. Some land uses such as rice and sugarcane are water-intensive while others are not. Water resource scarcity and the associated conflicts between competing uses dictate more efficient water resource management. Yet the failure to price irrigation water and the under-pricing of municipal/urban and industrial/commercial water supply result in wasteful use and inadequate funding for further water resource development. Moreover, the failure to fully account for the environmental costs of past and currently planned water resource development projects has given rise to strong opposition by local interests and environmental groups to new projects.

## **A NEW APPROACH TO RURAL NATURAL RESOURCE MANAGEMENT**

Obviously, the traditional approach to rural natural resource management formulated during times of relative resource abundance and modified in response to localized scarcity cannot meet the challenge of generalized natural resource scarcity facing Thailand today. A fresh approach that aims to balance demands and supplies at a level of resource use that is sustainable and makes the best use of increasingly scarce resources is needed. A new approach to resource management would recognize and reconcile the conflicts between different resource users, the discrepancies between private and social benefits and costs, and the tradeoffs between present resource use and future availability. At times of generalized scarcity, decisions to use any natural resource by anyone—whether private individual, community, or government agency—impose costs on others, on the society at large, and on future generations that must be duly accounted for. Three major costs must be considered: (a) opportunity costs in terms of foregone benefits from alternative uses; (b) environmental costs in terms of negative impacts on other activities; and (c) user costs in terms of foregone future uses of the resource. Unless these three costs are fully paid for by the users of the resource, demands and supplies cannot be balanced, and shortages and conflicts would be compounded as the gap between demand and supply grows. This precisely describes the situation with forests, land and water in Thailand and in many other countries today.

Indisputably, a limited resource base—especially one that suffers from past abuse—cannot accommodate forever-increasing numbers of people with rising aspirations for a higher standard of living. For example, the forest, land and water resources of Northeast Thailand, already under internal pressure, cannot be reasonably expected to provide the means for raising the living standards of over a third of the Thai population to the level enjoyed by other regions, much less to that of Bangkok. Non-resource-related off-farm employment and seasonal and permanent migration to other regions help relieve some of the pressure on the resource base. But much more needs to be done to encourage more inflow of industry and outflow of people to restore a sustainable equilibrium between demand and supply for rural natural resources.

## **RAISING AGRICULTURAL AND RESOURCE PRODUCTIVITY**

Rural poverty and resource degradation are only partly due to the scarcity of resources relative to the number of people that depend on them. Another important factor is the very low productivity of both land and labor. To reduce the pressure on marginal lands and the remaining forests and to bring incomes more in line with other parts of the country, it is necessary to raise productivity per unit of land and labor. Migration and non-farm activities would help raise labor productivity, since good-quality land holdings per

household would increase. However, for fewer people to work more land, increased mechanization and other capital investments would be necessary. This requires capital and access to credit.

Average land productivity may also rise somewhat as a result of migration and nonagricultural employment since presumably, marginal land of low productivity would be taken out of production. However, this is not certain since those who migrate or take up other occupations tend to be better off and more educated. This is another reason why educational reforms are critical to provide alternatives for those most likely to encroach on the forests and clear marginal lands for cultivation.

The needed increase in land productivity to raise rural incomes to forestall forest encroachment will have to come from an increase in investment in land development, farm assets, and use of modern inputs, especially fertilizer and improved seed. Again, access to credit markets for the necessary capital is critical to any efforts to raise agricultural productivity. Securely titled land is potentially the only asset available to low-income farmers that is acceptable for collateral and for long-term loans from formal financial institutions. Most farm investments are unprofitable at non-institutional interest rates of 30-40 percent.

## **RESTRUCTURING FOREST POLICY AND MANAGEMENT**

Forestry faces two fundamental resource conflicts or imbalances between supply and demand. The gap between desired and actual forest cover grows daily, without any effective measures in sight to stop deforestation and accelerate reforestation. Second, there is a fundamental conflict between a forest policy that aims to achieve a 40 percent forest cover and farmers who aim to clear more forest land for cultivation. It is imperative that a new approach to forest management aimed at resolving these conflicts be developed.

There simply is no forest solution unless the land use issue is also addressed. Land and forest must be considered as one. For developing countries, the issue of conserving a forest must be taken in the light of alleviating the poverty of the farmers who are residing in the forest. The success in alleviating the plight of the farmers in the forest will be the key to the success in protecting the forest from further encroachment and plundering.

To protect a house, first and foremost, we have to rely on the home owner. Similarly, to protect a forest, we have to rely on the farmers, whose livelihood is at stake. Past records establish the fact that government alone cannot succeed in protecting or bringing back the forest. A concerted national mobilization is required, involving the government, the private sector, and the farmers. Community forestry, whereby individual farmers are given incentives to protect and/or replant nearby forestlands, is a promising option that warrants serious consideration.

Worldwide, the protection of tropical forests has been a formidable task because it is intertwined with rural poverty. Without employment alternatives, we can hardly expect farmers not to rely on forest products to supplement their meager incomes. In the absence of better alternatives, resources in the public domain and forests are encroached on at the expense of the society at large, and of the future.

Lack of reliable information on the precise location, boundaries, composition and condition of Thailand's forests has been a major obstacle in the formulation of an appropriate and effective forest policy. Modern technologies such as remote sensing, geographic information systems, airborne surveys, and global positioning systems, enable reliable recording of forest boundaries so that basic information on the size and precise location of natural forest can be accurately mapped and protective measures applied. The knowledge on the protected areas in terms of their fauna and flora and their physical limitations is basic to any successful forest protection program. The remaining natural forests, estimated to cover 28 percent of the country's land area, must be clearly demarcated. Thailand cannot afford to lose any more of its natural forest. The emphasis on economic forests in recent years has diverted attention from the need to save the remaining natural forest, which is essentially a nonrenewable resource and national heritage. At least 25 percent of the total land area of the country should be set aside as protected or conservation forest.

However, there can be no successful forest policy unless the issue of land ownership over encroached forest lands is clarified and settled. The land and forest policies are opposite sides of the same coin and must be addressed integrally and concurrently. Similarly, the alleviation of poverty of farmers in the forest and hence rural development is the key to the success of forest protection from further encroachment and plundering. Therefore, land reform programs that improve the security of land ownership as well as provide infrastructure and development assistance are of critical importance to halting deforestation and protecting the remaining natural forests. It is therefore recommended that the issuing of land titles to farmers over land they occupy be accelerated and such titles be as secure and unconstrained (unattenuated) as possible.

The reforestation policy is urgently in need of revision. The policy of granting public forestland for commercial plantations should be discontinued because it leads to conflicts with the farmers already occupying this land. Once the remaining natural forest is adequately protected and the issue of land rights is settled, commercial forestry should be set on an equal footing with other land uses that involve tree cover.

To be realistic, forest policy must be closely allied with the development policy of a country. If it is considered vital to the national interest to protect the forests, then sufficient funds must be allocated accordingly. The current global interest on reforestation as a means to absorb carbon dioxide, a major greenhouse gas, should provide an added impetus and possibly a source of additional financing. However, issues of insecure resource ownership, perverse incentive structure and rural poverty must be addressed simultaneously if not preemptively.

## **CONCLUSION**

Thailand is no longer a natural-resource-based, predominantly agrarian society but a rapidly industrializing and service-based economy. Primary resource sectors such as forestry, mining and fishery have lost their status as leading growth sectors and major foreign exchange earners. Even agriculture, which made Thailand one of the few major food-exporting countries in the developing world, has lost its predominance and glamour as a source of income growth and export earnings. As increasingly more value is generated from human resources and man-made capital, rural natural resources are gradually losing their quantitative significance. Yet their qualitative significance increases for reasons that range from structural rigidities and policy distortions to changing preferences with urbanization and rising incomes.

A major structural rigidity is found in the imbalance between the rapid structural change of national income and the slow structural change of employment. The increasing income inequality between the 50 percent of the population who depend on agriculture and the 50 percent who don't, heightens the importance of rural natural resources during the transitional stage (over the next ten years). Educational reforms, land titling, access to capital markets, improved agricultural productivity, and increased nonagricultural employment are the key policy reforms necessary for restoring the balance between a still-growing resource-dependent population, rising income expectations, and a limited and partially-degraded natural resource base.

A second force that heightens the significance of rural natural resources is the change of preferences that comes with industrialization, tourism development, urbanization, and income growth. The amenity value of rural landscape, natural forests, open and green spaces, and a clean environment is growing as more people are crowded in congested cities and work in polluted industrial environments. Given the current and projected rapid income growth and the high income elasticity for environmental amenities (of both the local population and foreign tourists), the rapid growth of demand for environmental amenities and related services is assured. The supply is not. The reasons range from continued forest encroachment to unplanned tourist development, and from urban congestion to industrial pollution—themselves the result of market failures and policy distortions.

A new forest policy, land titling with appropriate land taxation, full cost pricing of utilities and amenities, environmental charges, and removal of distortional promotional privileges and market-based incentives are

the policy changes needed to bring about a balance between growing demands and dwindling supplies of natural resources and environmental amenities.

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