

A Review of Forest Policy Trends in Sri Lanka

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Abstract: The establishment of forest rules and regulations goes back to the King Dutugamunu period of 161 to 137 B.C. Generally, the community managed their forest resources with great care, while protecting the natural balance of the ecosystem. A drastic change in land use policy after foreign invasion resulted in denudation of the natural forest. The forest reserve of nearly 80 percent in 1886 was reduced to 70 percent in 1900, 44 percent in 1956, and is nearly 25 percent at present. Opening up of plantation crops, expansion of agriculture, land settlements, rising incomes, and changing life styles have caused over-exploitation of the forest. The policy measures that were taken time-to-time attempted to solve problems and improve the forest resources through sustainable management strategies.

This paper attempts to discuss the trends of forest policy in terms of the historical perspective, implementation strategies, and institutional development. The first forest policy in Sri Lanka was enacted by the British in 1929. After the country gained independence from the British in 1948, the forest policy was modified in 1953, 1970, 1980, and later in 1995. The priorities of the policy changes range from protection of natural resources, increase of the timber supply, and societal involvement in forest management to private sector managed forest plantations. The forest policy issues, based on conserved forest, multiple-use natural forest, watershed management, forest plantation, forest trees in common lands, forest trees in home-gardens and agricultural lands, forests for hermitage, recreation and wildlife, and timber harvesting, are reviewed under the implantation and management strategies. Further, institutional integration, forest research, and forest extension are discussed as institutional developments.

Key words: Forest policy, policy implantation, management strategies, institutional development.

1 Introduction

1-1 Forest degradation

Forests are very important for environmental conservation and as sources of food, fuelwood and minor forest products, such as resins, gums, and medicines. The forest provides space for recreation, shade, and other amenities. In most developing countries, with the increase of population, deforestation is continuing very rapidly. About three billion cubic meters of wood are harvested or consumed annually in the world (Westoby, 1991). The most serious consequences of deforestation and forest degradation are the loss of biodiversity, irregular water supply, shortened life span of irrigation channels and reservoirs, soil erosion, and loss of soil fertility. On the other hand, the low increment of volume of growing stock and high pressures of demand have led to a scarcity of timber, fuelwood, and non-timber forest products.

1-2 Forestry and sustainable management

Forestry can be conceived as the theory and practice of creation, protection, and scientific management of woody and non-woody vegetation (Gupta, 1990). In conventional forestry, traditional foresters gave primacy to the trees and some consideration to wildlife. They included man in the framework as the "number one enemy" of the forest (Aguilar, 1982). Later, the forest became a valuable economic resource. Accordingly, forest management had to change from tree manage-

ment to ecosystem management, in which people play a significant part. The people need the power and responsibility to manage forest resources in terms of their rights to and revenue from forest goods and services. Integrating social factors into forest management should consider the existing rights to lands and resources and the history of peoples use, and claims and counter-claims they have on current and future use (Dubois and Mayers, 1998).

The foresters felt the need to broaden the concept of forestry and address new problems raised by a changing society. Different forms of "social forestry" emerged with a view of man and forest as integral parts of upland ecosystems able to sustain each other (Slade *et al.*, 1986).

Eventually, internationally concerned social forestry emerged during the 1970s and 1980s as a result of three forest congresses: Forestry for Socio-economic Development, Forests for People, and Forest Resources in the Integral Development of Society (Westoby, 1991).

1-3 Forest degradation in Sri Lanka

Sri Lanka's natural forest cover decreased from 85 to 70 percent of land area during the period of British rule, which lasted from 1881 to 1900. The central hills were cleared for export crop plantations, while the dry zone forests were logged for valuable timber. After the country gained independence, 2.9 million hectares (44 percent of the total land area) were still under forest cover, as shown by aerial photographs taken in 1956 (Dissanayake *et al.*, 1983). By 1981 forest cover had been reduced to 1.63 million hectares (25 percent of total land area), representing a decrease at the rate of 50,000 hectares per year (Bandarathilleke, 1991), because of poor land use prac-

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Table 1 Supply of wood and wood-based products (1991-1998).

	1991	1992	1993	1994	1995	1996	1997	1998
Cubic Meters								
Soft-timber	115	33	-	-	290	-	-	-
Other logs	27,635	38,716	46,051	45,663	56,423	58,480	69,610	86,952
Ebony logs	151	48	29	15	44	23	49	30
Sawn timber	5,447	5,038	4,822	3,996	5,705	5,219	6,052	6,607
Fire wood	56,232	75,164	90,904	130,193	191,436	151,959	170,282	169,568
Pulp wood	5,932	648	-	-	245	1,676	-	-
Number of								
Railway Sleepers	18,171	59,779	55,049	77,468	54,035	50,104	65,375	77,092
Electric posts	11,709	26,929	4,613	10,554	21,233	48,295	35,398	39,316

Source: Statistical abstract 1998.

tices in agriculture, massive agricultural land settlements, encroachment by landless poor, and illegal logging. Furthermore, population growth, rising incomes, and changing life styles have also caused over-exploitation of the forests. Presently, forests cover only 1.58 million hectares, about 25 percent of total land area.

1-4 Supply of forest products

The supply of forest products during the period from 1991 to 1998 is shown in Table 1. Compared to other products, supplies of firewood and logs, other than ebony, have increased rapidly.

1-5 Management strategies

The assessment of land and resource suitability for area zoning and classification is required to develop scientific information on land and forest types in order to develop management strategies. Hence, the government has classified forestlands according to the following management strategies.

1. *Class I Forest:* These forests should be strictly conserved or preserved to protect biodiversity, soil and water, historical, cultural, religious, and aesthetic values. Research is allowed in these areas.
2. *Class II Forest:* Non-extractive use, such as scientific research, protection of watersheds and wildlife habitat, and regulated nature-based tourism, should be allowed, as well as the controlled collection of non-wood forest products and dead fuelwood by local people living adjacent to the forests.
3. *Class III Forest (multiple use):* These forests should be managed primarily for the sustainable production of wood for the national interest on the basis of management plans to be developed by the government, and for the sustainable production of wood and non-wood forest products for the benefit of adjacent communities.
4. *Class IV Forest:* These consist of forest plantations and agroforestry systems on government lands. These lands would be managed for the production of wood and non-wood forest products by the

government and non-government sectors. Deforested and degraded government lands suitable for plantation forestry and agroforestry development would also be included in this class.

However, the development of a widely accepted, explicit land use and forest policy and an integrated, comprehensive, long-term framework for the implementation of such a policy is vitally important for finding effective and sustainable solutions to the multitude of problems prevailing in the forestry sector. Hence, the study of the trends in forest policy in Sri Lanka has become of paramount importance for making recommendations for future promotion of forest resources in the country.

2 Forest policy trends—the historical perspective

2-1 The classical period

2-1-1 Environmental and social harmony

Historically, forest management considered the forest and wildlife with the principle objectives of a stable environment and the provision of forest products. The forests were used for temporary agriculture, hunting, grazing, and for gathering a wide variety of forest products. The ancient historical chronicles in Sri Lanka, "Maha-Wamsa," "Rajaratnacari," and "Rajawali," reveal that the village communities were well organized and lived in harmony with the neighboring forest environment even during the period of King Vijaya in 543 B.C. (Maddugoda, 1991). The village forest was an integral part of the village that provided farmers with forest products without encroaching into the natural forest. A large proportion of the rural population sustained itself on the availability of forest produce in the nearby village forest.

2-1-2 Forest regulations

During ancient times, the village community lived in harmony with the neighboring forest environment and had its own privileges and a good deal of self-administration. The establishment of rules and regulations for the protection of the forest and the use of forest

produce can be dated back to the King Dutugamunu period of 161 to 137 B.C. (Maddugoda, 1991). The King was generally considered the rightful owner of the forest lands (Troup, 1940). The natural resources were managed under a common property regime with a complex system of norms and conventions to regulate individual rights (Kariyawasam, 2001). Further, social obligations also prevented the misuse of forest resources surrounding the village. The lands in the low country dry zone were intensively utilized for agricultural purposes, while protecting the vegetation in the hill country watershed area with great care. These rules were continued until the end of the Sinhala Kingdom in 1815.

2-2 Under foreign invasion

2-2-1 Pre-British administration

The Dutch administration had estimated in 1794 that 80 percent of the total land area (6.56 million hectares) was covered with forest. During the Dutch period large quantities of timber of certain species (e.g., ebony) were exported to Holland and other European countries, which resulted in these species becoming almost extinct in the country (Nanayakkara, 1981). The consumption of timber in the country itself was very small, and much timber was available from private lands. The Dutch introduced teak at the end of the 17th century and many plantations were established near the coast (Troup, 1940).

2-2-2 British administration

Denudation of natural forest: The British administration took over all uncultivated land and made drastic changes in land use. During their rule, forests in the wet-zone hills were cleared to plant export crops such as coffee and tea, and dry-zone forests were cleared for export of valuable timber. Almost half of the forest cover (2.7 million hectares) was lost within a period of 150 years, from 1815 on, due to clearing and opening up of plantations (Fernando and Samarasinghe, 1988). Timber felled indiscriminately under licenses before 1835 depleted valuable timber supplies, especially ebony and satinwood (Troup, 1940). Eventually, the major changes in land use and land policy resulted in almost complete denudation of the forest.

Forest conservation: A Forest Ordinance was passed in 1855 to regulate shifting cultivation and forest reservations (Troup, 1940). The Department of Wildlife established 11 national parks (460,000 ha), 5 nature reserves (64,000 ha), and 50 sanctuaries (256,000 ha) in 1885 (Gunaseena, 1993). The first Conservator of Forest was appointed in 1887 and passed on administrative control over the country's main forests in 1899 after creating the Forest Department (Troup, 1940). However, the Government Agent still administered a few less valuable "Provincial Forests" until 1904. They had granted free collection rights to poor rural people both of fuelwood and minor forest produce within a three-mile radius of their villages if located near forest areas (Nanayakkara, 1981). By 1920, Ceylon (Sri Lanka), a country eminently suitable

for the production of timber, was importing wood, mainly chests, from Japan and teak from Burma (Troup, 1940).

Policy issues: The first authorization of national forest policy in Sri Lanka was made in 1929, considering that Sri Lanka had more than enough forest land at the time (Pushparajah, 1986).

The main objectives of the Forest Policy in May 1929 were

1. to make the island self-supporting in timber, fuelwood, and other essential forest products, both by the systematic exploitation of existing natural resources and by the artificial reforestation of selected areas;
2. to provide timber and forest products for export to the world market;
3. to conserve water supply and prevent erosion; and
4. to co-ordinate forest operations with the requirement of the preservation of the indigenous fauna and flora.

They established a regular timber trade after commencement of the coffee industry in 1930. The felling operations were controlled by local village headmen under the permit system issued by the Divisional Revenue Office under the Government Agent (Nanayakkara, 1981). In 1931, the Forest Department was placed under the Ministry of Agriculture and Land. The government decided in 1934 to take measures to make the best possible use of the country's forests for the benefit of the whole community (Troup, 1940). The forests were divided into two categories: (1) forest reserves and (2) other crown forests, which could be exploited for commercial purposes (Nanayakkara, 1981).

2-3 Post-Independence

2-3-1 Forest policy in 1953

Sri Lanka's national forest policy was redefined in 1953, five years after Independence, with the following priorities:

- to maintain, conserve, and create forests for the preservation or amelioration of local climate conditions and soil and water resources, and for the protection of local fauna and flora, where they are required for aesthetic, scientific, historical, or economic reasons;
- to ensure and increase, as far as possible, the supply of small wood for agricultural requirements and fuelwood for domestic consumption;
- to maintain a sustained yield of timber and other forest products for the general housing, industrial, communications, and defense requirements of the country;
- to work the forests to the highest possible economic advantage as is consistent with the foregoing objectives.

2-3-2 Forest policy in 1970

The forest policy in 1970 emphasized

- to reserve and maintain adequate and suitable forest reserves for the amelioration of local climatic conditions, the conservation of soil and water resources, and for aesthetic purposes;
- to scientifically manage the forest resources so as to meet part of the timber requirement of the country; and
- to progressively build up the plantation forest estates to meet the future timber requirements of the country, both for internal consumption as well as for export, and also to contribute towards conservation of soil and water.

2-3-3 Forest policy in 1980

The main objectives of national forest policy in 1980 were

- to maintain, conserve, and create forests for the preservation and amelioration of the environment, soil and water resources, and for the protection of the local fauna and flora, when they are required for aesthetic, scientific, historical, and socio-economic reasons;
- To ensure and increase, as far as possible, the supplies of small wood for agricultural requirements and fuelwood for domestic consumption;
- To maintain, as far as possible, a sustained yield of timber and other forest products for general housing, industrial, communication, and defense requirements of the country;
- To work the forest to the highest possible economic advantage as is consistent with the foregoing objectives; and
- To involve the local community in the development of private woodlot and forestry farms through a program of social forestry.

2-3-4 Forest policy in 1995

The main objectives of the National Forest Policy in 1995 were

- to conserve forests for posterity, with particular regard to biodiversity, soils, water, and historical, cultural, religious, and aesthetic values;
- to increase the tree cover and productivity of the forests to meet the needs of present and future generations for forest products and services; and
- to enhance the contribution of forestry to the welfare of the rural population, and strengthen the national economy, with special attention paid to equity in economic development.

3 Forest policy and policy implementation

3-1 Conserved Forest

3-1-1 Forest conservation

According to Kariyawasam (2001), from the 3,650 known plant species in the country, 840 are endemic and 94 percent are found in the rain forest. Further, over 50

Table 2 Protected forestlands in Sri Lanka.

Type of lands	Area (ha)	% of total forest
National reserves and sanctuaries	781,000	31.1
Man and biosphere	119,000	4.8
Steep slope > 30%	50,000	2.0
Elevation > 1500 meters	27,000	1.1
Total	977,000	38.0

Source: Bandarathilleke 1991.

percent of the tree flora in the rain forest are endemic to the country. Unfortunately, the natural forest has been reduced to a critical level from the point of biological diversity and accelerating species extinction (Gunetilleke and Gunetilleke, 1983). Therefore, the government of Sri Lanka has already protected 977,000 hectare or 38 percent of the total forest land of the country in consideration of environmental conservation (Table 2).

The Forest Department preserved 119,000 hectares of natural forest ecosystems under the "Man and Biosphere" program of UNESCO in 1980. The Forest Policy of 1995 also considered that the natural forests were heavily depleted and expressed concern for safeguarding the remaining natural forests for posterity, in order to conserve biodiversity, soil, and water resources.

3-1-2 Community involvement

Effective conservation of protected areas is a very difficult task with the existence of pressures on forest resources by the surrounding community. The opportunity cost of conserving 10,000 hectares of forest per annum was Rs. 45 million in 1986 (Pushparajah, 1986). Therefore, natural forest conservation has to consider the people as an important agent in order to implement the conservation strategies effectively. The term "conservation" as described by the IUCN in the World Conservation Strategy is "the management of human use of biosphere so that it may yield the greatest sustainable benefits to present generations, while maintaining its potential to meet the needs and aspiration of future generations." Therefore, the conservation forestry programs have recognized the importance of local community involvement and consultation in the process of planning and decision-making (Bandarathilleke, 1991).

3-2 Multiple-use natural forest

3-2-1 Common resources

In the fulfillment of rural needs as sources of lands and timber, for regulation of water flows, and stabilizing hillsides, these are seen as common goods and benefits of the forest (Pushparajah, 1986). The disappearance of forests due to the actions of people or "abuse of the common goods," makes the forest benefits no longer available to the community. Montane and sub-montane natural forests have been degraded due to logging for fuelwood supply. The mangrove forests confined to parts of the coastal belt and river estuaries have either been degraded or destroyed due to agriculture, firewood collection, prawn hatcheries, etc. (Nanayakkara, 1983).

The availability of forest products for meeting people's basic needs outside the conservation areas, both from the production forest and non-forest wood resources, would determine the increase in opportunity, cost of conservation, and ultimately, the success or failure of the conservation strategies (Pushparajah, 1986).

3-2-2 Management strategies

The following strategies for the conservation of forest resources were recommended to the government by the FAO's (Food and Agriculture Organization of the United Nations) "Tropical forestry action plan" (1985) and in "Tropical forests: A call for action" by the World Resources Institute (1985).

- Institution strengthening human resources development
- Education, extension, and awareness programs for peoples' participation in forestry
- Annual afforestation of 10,000 hectares
- Man and Biosphere program
- Intensification of forest management
- Restricting agricultural and other land development to areas largely cleared of forest
- Increasing the non-forest wood resource base and yield
- Efficient utilization of wood, both as fuel and timber
- Stoppage of converting natural forests to plantations
- Stoppage of issue of permits for shifting cultivation
- Watershed protection
- Agroforestry
- Forestry research
- Strengthening law enforcement
- National heritage wilderness legislation
- Tree planting programs
- Provision of adequate funds for forestry programs
- Long-term plan for the forestry sector

3-2-3 Regulations

In November 1973, Sri Lanka's Cabinet accepted a policy decision to scientifically manage the forest reserves (Perera, 1978). The National Conservation Strategy in 1988 recommended the cessation of haphazard alienation of natural forests (Gunasena, 1993). Under the National Environmental Act in 1988, all the forestry development projects became subject to environmental impact assessment prior to approval in order to safeguard against adverse environmental consequences. Considering the vital importance of protecting the environmental conditions in forests, a separate Environment Management Division in the Forest Department was established in 1990 to implement the Forest Policy of 1989 (Bandarathilleke, 1991).

Effective forms of partnership with rural people, communities, NGOs, rural industries, private sector groups, including "joint forest management" and "leasehold forestry," had already been accepted by the government in

the Forestry Policy in 1995. Even the Forestry Master Plan in 1997 emphasized the involvement of local people in decision-making pertaining to policies, plans, and processes related to multiple-use forests (Dubois and Mayers, 1998). Therefore, the community management of local forests emerged as the most promising alternative to the state administration of forest reserves (Kariyawasam, 1996). However, the natural forests should be managed only by the government, together with local people and communities, or assisted by NGOs.

3-3 Watershed management

3-3-1 Environmental concerns

All the major rivers in Sri Lanka, including the Mahaweli River, include a watershed or catchment area situated in the hills of the wet zone. The upper catchment of the Mahaweli covers approximately 3,000 square kilometers of the central hills of the country (Weil, 1981). Degraded forest and scrub forest occupy many of the steepest slopes. Land degradation problems in the upper watersheds have become critical, because of the adverse impacts on irrigated agriculture, hydropower generation, and flooding in the downstream areas.

3-3-2 Restoration

The montane zone catchment and watersheds are the main areas in great need of restoration; the maximum potential groundwater recharge can be delivered if the watershed is maintained in its natural state, either as forest or as permanent grassland, without external disturbance. The government's policy was imposed to maintain forest cover above 1,500 meters, valuing forests as watershed and catchment areas. However, the major constraints in watershed management have their origin in social factors, institutional inadequacies, and an inappropriate policy environment (ADB, 1997). Therefore, the number of streams, hectares of land, and how many people would be benefited are concerns for every hectare reforested within the strategic area of watershed management. Further, watershed management would be a successful program if the overall shaping of the environment was integrated with development in rural settlements in hilly areas (Perera, 1978).

Under the USAID (US Agency for International Development) program in 1982, watershed reforestation relied heavily on research to build up the array of acceptable species, the method of propagation, spacing, fertilizing, after-care, etc. (Vivekanandan, 1981). The Sloping Agricultural Land Technology (SALT) system was heavily promoted by the GTZ-funded (German Technical Cooperation Agency) Upper Mahaweli Watershed Management Project. The SALT system was introduced as an ideal system for mid and hill country areas to grow tea and annual crops without causing soil erosion (De Zoysa 1996). The Upper Watershed Management Project, funded by the Asian Development Bank (ADB), was designed in 1997 to address forest and land degradation problems in upper watersheds (ADB, 1997). The project

activities have been focused on integrated and participatory approaches by rehabilitating and protecting degraded lands, promoting conservation-oriented farming systems, and strengthening the agencies in charge of project implementation. Another important objective of the Upper Mahaweli Catchment Watershed Management Project was to protect and preserve soil resources and to increase the uplands productivity to produce fuelwood, fiber, and timber for the benefit of the community (Weil, 1981).

3-4 Forest plantations

3-4-1 Establishing plantations

It has been estimated that about 895,000 hectares, or more than 60 percent of forest land, in the country are degraded forests (Dobois and Mayers, 1998). The Forest Department implemented a large-scale reforestation program to grow over 7,500 hectares per year in the dry zone in 1970. By 1976, about 60,000 hectares of teak plantations were established in the dry zone (Perera, 1977a). And 1,700 hectares of pine trees were raised annually to meet the chipboard demands for log fiber pulp for the paper and chipboard industry. Further, the department successfully reforested 6,935 hectares in 1978, 8,146 hectares in 1979, and 12,494 hectares in 1980 (Nanayakkara, 1981). Further, the Forest Department manages 48,448 hectares of forest plantations under the management plan, where 32,952 hectares are designated as commercial plantations (Kariyawasam, 2001).

In the 1995 national forest policy, it was proposed to establish more than 150,000 hectares of forest plantations, including the regeneration of existing forests, new industrial forests, block plantations, and protection plantations by 2000. This could supply a considerable amount of wood to cover the timber deficit and minimize the population pressures on the natural forests (Bandarathilleke, 1991). The lands suitable for plantation forestry and agroforestry development were categorized as Class IV forest for management under the 1995 forest policy (Hewage 1996).

3-4-2 The Taungya system-A co-operative reforestation scheme

Many degraded natural forests were converted to forest plantations between 1950 and 1970. The Taungya system or "Co-operative Reforestation Scheme" was the main form of establishing forest plantations (Kariyawasam, 2001). The Taungya system is considered as the best method of replacement approaches for combining shifting agriculture with forest plantation. Under the reforestation program in 1970, the local communities were allowed to inter-cultivate food crops between the rows of teak for a period up to three years, until the teak became established (Perera, 1977a). However, the co-operative reforestation scheme was abandoned, due to continuous agitation by environmental groups against clearing natural forests. Later, a much-modified co-operative system, with more financial incentives, was

permitted for planting on very degraded lands by leaseholding participants. Forest plantations were established by the Forest Department on bare lands, grass lands, sandy shores, and abandoned tea lands, supported by departmental planting on a paid-labor basis (Kariyawasam, 2001).

3-4-3 Leasing lands for plantations

The timber production capacity of small holders has been expanded with financial assistance from the ADB and AusAID (Australian Agency for International Development) by leasing 8,500 hectares of land among 20,000 farmers. Presently, plans are being implemented to bring in the private sector for forest plantations on lease agreements (Kariyawasam, 2001). The agreement between the government and non-government sector is considered as a highly innovative step to establish and manage forest plantations by involving private, local communities, and government organizations (Dubois and Mayers, 1998).

3-5 Forest trees on common lands

3-5-1 Forest products and services

Although there are no accurate estimates, forestry contributes about 50 percent of the total energy requirements of the country (Nanayakkara, 1983). Timber tree crops, such as rubber, jack, kitul, tamarind, cane, etc., in common lands provide employment and some income to the people, and also alleviate the pressure by villagers on the natural forests.

3-5-2 The projects

The Department of Forestry, in collaboration with other government and non-government organizations, has planted trees on non-forested lands, including degraded and wastelands, since 1978. The program had distributed about three million plants by 1981 (Nanayakkara, 1983). During 1981, about three million more trees were distributed by the department to plant on homesteads, along roads, avenues, irrigation channel bunds, wastelands, school premises, boundaries of estates, etc. The program was implemented jointly by the Forest Department, the Water Resources Board, the Department of Land Development, the State Timber Corporation, and voluntary organizations (Ratnarajah, 1981). The Forest Department implemented community forestry projects with the assistance of the ADB in 1982. The main objectives of the project were to augment the fuelwood and constructional timber supply, and the growing of fruit trees on community lands. The project attempted to act as a catalyst in creating community awareness and also to build up the institutional capacity within the Forest Department. The Department of Forestry implemented several projects to develop the fuelwood resources of the country in 1983. The major programs were the USAID Reforestation Project, ADB community forestry projects, the Mahaweli Authority Reforestation Project; and integrated rural development projects. These projects planted 5,600 hectares with

about 15 million trees for fuelwood purposes alone. Further, the department organized a country-wide tree planting campaign to plant two million trees on communal lands in order to produce fuelwood, in addition to timber (Nanayakkara, 1983).

3-5-3 Community participation

Community forestry envisages the participation of the community in the production of fuelwood, food crops, and general utility timber, thereby improving the socio-economic condition of the community (Ratnarajah, 1981). Social forestry under the rural development strategy requires the support of the local people, development planners, and implementing organizations. However, the people-driven, people-centered forestry programs, based on "bottom-up" planning and decision-making, have to be facilitated by the government (Forestry Planning Unit, 1995a).

Greater participation of local communities was encouraged in forestry activities through a social forestry program in 1990 (Bandarathilleke, 1991). The government has tried community forestry and participatory forestry on a small scale. Rural people have been encouraged to participate through incentives, such as employment in tree planting and the sharing of produce. However, the success of the projects is heavily dependent on providing funds borrowed from external sources (Forestry Planning Unit, 1995b).

3-6 Forest trees in home gardens and agricultural lands

3-6-1 Land productivity

Generally, trees on agricultural lands and in home gardens are the main sources of wood, bio-energy, and logs for industry. Most families use local fuelwood, particularly the agricultural residues, for their domestic energy needs. With a fast-growing population, the poor and landless have converted the village forests into marginal agricultural land just to survive. Many forests disappeared due to encroachments and clearing for shifting cultivation. The land area under annual food crops has increased during the last two decades. These changes in land-use patterns have further aggravated land degradation problems (Bandarathilleke, 1991). Evidently, much agricultural cultivation has been abandoned after the soil has been so eroded and its fertility so depleted that further attempts at cultivation are hopeless (Weil, 1981). Moreover, a severe scarcity of land has stimulated intense land speculation in rural areas. Because of the land policies, alienation of land has concerned mainly degraded areas where agricultural productivity and income generation are low. The potential has provided few incentives for investment in land (Dubois and Mayers, 1988).

3-6-2 Policy issues

Agroforestry involves a complex and diversified farming system, as it combines the growing of agricultural crops and forest trees in one area. A desirable agro-

forestry system provides a good yield while conserving both soil and water. Based on the people's own needs and long traditions, home gardens are an extraordinary case of successful agroforestry. Agroforestry results in more secure rights over and benefits from lands to the farmers than primary forests, while creating an ecosystem that partially restores forest characteristics.

National forest policy in the 1950s emphasized the importance of forests on agricultural and other lands, considering the social, economic, and environmental benefits. National forest policy in 1953, five years after Independence, was redefined to include the importance of forests in relation to agricultural and other forms of land use (Bandarathilleke, 1991). Forest tree planting on farm lands and in home gardens through social forestry was also an important issue in the national forest policy in 1995. The policy recognized that the home gardens and other agroforestry systems and trees on other agricultural lands play a crucial role in supplying timber, bio-energy, and non-wood forest products, while conserving the micro-environment in those lands (Dubois and Mayers, 1998). The Forest Department initiated the issuance of permits to encroachers who established farms inside reserve areas in order to restore the encroached lands. This initiative gives secure title for tenure rights and usufruct rights of their lands to the landless villagers, with assistance to improve them with tree crops and eliminate their need to encroach further (Kariyawasam, 2001).

3-6-3 Agroforestry programs

The "Cooperative" or "Taungya" reforestation scheme in 1970 developed permanent forestry and permanent agriculture on the same land, adopting the principles of agri-silviculture and farm forestry (Nanayakkara, 1981). The community forestry project, financed by the ADB in 1980, attempted to establish block fuelwood plantations to grow trees on farmers' woodlots for fuelwood (Kariyawasam, 2001). One of the main objectives of the ADB-funded community forestry project in 1982 was to grow fruit trees in home gardens. The Community Woodlot Development Program at the Kirindi-Oya Irrigation and Settlement Project was implemented in 1993, with the assistance of the ADB, in order to recover the vegetation on degraded land. The main agroforestry model was to raise trees together with field crops in the "Tungya" system (De Zoysa, 2000). Homestead development along with agroforestry was one of the models introduced by the Participatory Forestry Project (PFP) implemented in 1993 under a loan from the ADB.

3-7 Forest for heritage, recreation, and wildlife

3-7-1 Hermitage

Buddhist monks are issued permits to use small blocks of natural forests as their residential places for meditation. Buddhist philosophy has had a great influence on forest and wildlife conservation. The chronicles of Sri

Lanka and stone edicts record the profound importance given to forests by past kings, including their reservation as national parks and hermitage forest for the use of forest monks (Kariyawasam, 2001).

3-7-2 Recreation and wildlife

The Department of Wildlife Conservation was created as a separate department in 1949 (Nanayakkara, 1981). The national reserves and sanctuaries under the department cover 781,000 hectares as protected areas. It has been suggested that the National Heritage and Wilderness Areas Act should be amended to include multiple-use management activities (Bandarathilleke, 1991). State forest policy is also needed to obtain the best use of wildlife areas, which comprise 40 percent of the forested area in the country. Because the wildlife forests are poorly stocked with timber, they have to be managed for recreational and tourism purposes (Nanayakkara, 1981). However, the government has considered forest-based tourism, eco-tourism, as a substantial source of income and a wiser use of resources as supplemented income (Kariyawasam, 1996).

3-8 Timber harvesting

3-8-1 Harvesting and supplying

The State Timber Corporation was created in 1968 to handle timber supplies and marketing operations (Nanayakkara, 1981). The policy objective of the corporation was to carry out selective harvesting of timber and to conserve a major part of the natural forests more for protection, rather than as "production" forest (Perera, 1977b). The State Timber Corporation is responsible for harvesting and supplying timber to meet demands for construction purposes, local and export markets, and furniture industries. Further, the corporation supplies sleepers to the Railway Department and transmission poles to the Electricity Board, and fuelwood for industry and domestic consumption. About 12,000 hectares of forest were handed over to the Ceylon Plywood Corporation for timber harvesting by a decision of the Cabinet in 1968 (Perera, 1977b).

3-8-2 Exploitation

The forest has been repeatedly harvested to meet the timber requirements of the country. However, lack of incentives, limited monitoring capacity, and corruption have led to over-cutting and the permanent degradation of many forest tracts (Kariyawasam, 1996). The Forest Ordinance was amended from time to time, especially with regard to control of illicit felling and transport of timber. It is felt that the provisions under the Forest Ordinance have to be strengthened to combat illicit felling activities (Bandarathilleke, 1991). The Forest Master Plan prepared in 1986 emphasized the intensive logging of natural forests and forest plantations. The program was severely criticized by the forestry sector, NGO groups, and the general public (Gunasena, 1993). As a result of public pressure, the government imposed a logging ban in natural rain forests in 1990 (Kariya-

wasam, 2001).

4 Forest policy and institutional development

4-1 Institutional Integration

The Forest Department and the State Timber Corporation are the two separate organizations that closely coordinate to implement the forest policy. Gunasena (1993) stressed the need of an organizational structure and management mechanism to bring together existing government institutions, universities, NGOs, farmers, and the private sector in order to devise cooperative plans and promote policy issues. The National Forest Policy in 1995 emphasized the broadening of the institutional framework and integration of agriculture and forestry, with the intention of improving inter-agency coordination (Dubois and Mayers, 1998). Further, in the Forest Policy it is stated that the carefully planned forestry partnership between the government, local communities, NGOs, and industry is important to prevent over-exploitation and unequal distribution of benefits, which will create an engine for economic development. The policy objective matrix shown in Appendix 1 and Appendix 2 explains the broadening of the institutional framework for management, and defines the roles and responsibilities of various stakeholders in forest policy.

4-2 Forestry research

Although there are many research institutes for agricultural commodities, only a small division handles forest research in the country, despite the fact that about 25 percent of the land area is under forest cover (Vivekanandan, 1981). The Forest Department conducted research from the late 1950s for two decades to determine which species could be grown fast and satisfactorily on many denuded lands (Kariyawasam, 2001). The forest research activities on multi-purpose tree species (MPTS) have become very important to promoting productive and sustainable agroforestry systems. The Man and Biosphere-UNESCO Program of the Forest Department in 1970 emphasized the research and extension activities to promote multi-purpose tree species under the community forestry program. The International Research Center (IDRC), in collaboration with the Forest Department, has carried out a considerable amount of research work on MPTS under the community forestry project (Bandarathilleke, 1991). Forest research on multi-purpose tree species in agroforestry systems was expanded in 1995.

The UNDP/FAO Project on Forestry Inventory for Management Planning was designed in 1981 for the collection of qualitative and quantitative information on forest resources. The objective was to prepare a management plan for productive forests and plantations. The project established permanent sample plots to assess growth, regeneration, and motility. The project further established a data bank for the purpose of long-term

land-use policy decisions, and trained personnel capable to undertake land-use and management planning.

4-3 Forestry extension

4-3-1 Public awareness

Increased awareness on the part of local people of the seriousness of the forest crisis, the effects of forests on climate, ecological balance, social and cultural life, and long-term economic stability is essential for sustainable forest management. Forestry extension (the dissemination of knowledge concerning forestry) has therefore assumed a more dynamic role, encompassing the broad spectrum of social, economical, and political aspects of the community. Foresters, as resource managers and practicing ecologists, have to provide information to the public concerning a variety of environmental problems, including deforestation. Extension education and awareness programs conducted by the Forest Department should be fully utilized to reach the general public to convey the message of conservation. However, conservation education should be imparted at every level-to schoolchildren and adults, villagers and town dwellers, bureaucrats and technocrats (Gunetilleke and Gunetilleke, 1983).

4-3-2 Community/rural development

The National Forestry Extension Service was established, covering 19 administrative districts under the USAID/Sri Lanka reforestation and watershed management project from 1982 to 1985 (Ratnarajah, 1981). The government decided to establish the forestry extension service under the Forest Department to promote forestry for local community development. The forester became a middle-level manager, policymaker, community leader, and rural folk in the smooth implementation of forestry extension programs based on harmonious understanding and the mutual interests of people involved in forestry. The objectives of the forestry extension programs are education and training, applied communication development, social forestry pilot projects, and development activities (Seneviratne, 1982). Further, the forest extension service was responsible for the establishment of fuelwood lots in 5,830 villages during a five-year period that commenced in 1983 under the community forestry project financed by the Asian Development Bank (Ratnarajah, 1981). Extension work with farmers is concerned with agriculture, energy, environment, and forestry (FPU, 1995b). The National Forest Policy in 1995 shows the government's commitment to support forest development on private lands and forest-based rural development through promotion and extension initiatives for other stakeholders (Dubois and Mayers, 1998).

5 Conclusions

The priorities of forest policy in Sri Lanka have drastically changed throughout the country's history. The main objective of forest policy has shifted from sustainable management of forests by the community

during the classical period, a supply of timber by foreign rulers, the protection of forest resources after Independence, and recently, to the management of forests as an economic resource. However, the multiple objectives in terms of conservation, production, and rural development in the current policy show again the increasing trends towards sustainable forest resource management.

The involvement of local communities in effective conservation of protected forests is still a difficult task. Joint forest management and leasehold forestry have become promising strategies for scientific management of a multi-purpose forest, which allows sharing the benefits of forests among the stakeholders as common goods. The integrated and participatory approach in the management of watersheds is directing the community to adopt appropriate farming systems to regenerate vegetation, preserve the soil, and increase the productivity of highly degraded lands. Many forest plantations have been established as a common policy since the foreign administration. The establishment and management approach of forest plantations has been moved from government plantations, community forest plantations, and presently, to the commercial forest plantations by private sector on lease agreements.

With the amendment of forest policy with social forestry in the 1980s, the government has implemented several people-driven, people-centered community forestry programs to grow trees on common lands with the view of producing fuelwood and other forest products, protecting natural forests, and providing employment and some income to the local communities. Compared to community forestry programs on common lands, agroforestry and growing forest trees in home gardens are becoming very popular strategies that provide the rural people with secure rights, indivisible benefits, and restoration of the agricultural ecosystem.

The management of forest resources in national reserves and sanctuaries has not been functioning under scientific norms. In harvesting timber the government agencies do not follow scientific techniques. However, illegal felling, which has led to over-cutting, is still a serious drawback of forest management without proper legal procedures.

Broadening of the institutional framework and integration of forest-related institutions in order to improve inter-agency coordination is a timely move suggested by the most recent forest policy. However, the very small research division of the Forest Department still plays an insignificant role in the development of the forestry sector. Even the forest extension programs are mainly designed as individual projects funded by donor agencies, without national-level strategic planning.

5-1 Policy implications

Usufruct rights as well as community rights have to be granted to the local communities to enable them to participate with foresters in sustainable forest manage-

ment programs. The involvement of the private sector in forest conservation and commercial forest plantations should be encouraged very carefully through continuous monitoring and comprehensive evaluation procedures to avoid any adverse impacts. However, the private forest plantations have to be established with the consent of the local people and their benefits have to be secured for successful implementation.

Careful study of the customary use of common resources and benefit-sharing mechanisms among community members before implementing a forestry program would prevent abuse of the forest resources. Promotion of forestry systems based on people's need and educating them about management practices in order to reap the optimum benefits has become of vital importance to promoting the forestry sector. Further, the communities have to be educated and provided with appropriate technology and facilities to manage the protected forests, forest plantations, community forests, and farm forests, as well as the watersheds, in a sustainable manner.

Integration of forest-related institutions, such as departments, universities, NGOs, private sector, etc., has to be strengthened to perform appropriate research and effectively disseminate the technology required by forestry sector stakeholders. The research division of the Forest Department has to be expanded to promote multi-disciplinary research in diverse fields of study.

The foresters have to be motivated as managers and facilitators of rural development programs. The extension division also has to be restructured in order to implement long-term development programs nationally and short-term programs regionally.

Joint management of forests by the Wildlife Department with the Forest Department will create more facilities for recreation and could earn significant profits from the reserves. A strong forest policy to combat illegal logging, as well as support sustainable logging practices, has become of vital importance to protect forest resources and obtain the optimum benefits.

Appendix 1 Policy objective matrix.

Objectives	Protected areas	Multiple-use natural forests	Home-gardens and non-forest lands	Forest plantations	Industrial production
To conserve forests, bio-diversity, and soil and water	Priority in land allocation. Managed by the state. Rehabilitation by important areas.	Management by rural people. Communities and state activities defined in managed plans allowed. Some logged-over forests rehabilitated.	Priority over mono-cultural plantations, for the sake of bio-diversity and wide range of products.	Conservation of water and soils.	
To provide forest products and services	Protection of biodiversity soils and water. Non-wood forest products.	Products for subsistence and market needs. Harvesting and transport by local people and others in private sector. No industrial concessions.	Subsistence and market needs. Owner managed. Promoted by government. Deregulation of production, harvesting, and transport.	One or more products. Emphasis on private sector and leaseholds. Owner managed. Promoted by government. Wood for local users and industry.	Better use of wood and non-wood products. Liberalized transport and trade. Self-sufficiency in major products. Competitive industries.
To contribute to the welfare of the rural people and to strengthen the national economy.	Support for agricultural production. Nature based tourism.	Subsistence needs. Development of local economy.	Development of household and rural economies. Main source of bio-energy and industrial wood.	Development of rural and national economies.	Emphasis on private production. Promotion of rural industries. Development of rural and national economies.

Source: Forestry Planning Unit 1995.

Appendix 2 Distribution of roles between the government and non-government sectors.

Development partners	Protected areas	Multiple-use national forests	Home gardens and other non-forest land	Forest plantations	Industrial productions
National Authorities	Policy and legislation, finance and audit	Policy and legislation, finance and audit	Policy and legislation, access to finance	Policy and legislation, access to finance	Policy and legislation, access to finance
Forest Department, Forest Planning Unit, Dept. of Wildlife Conservation	Policy formulation, Macro-level planning, Enforcement, Management, Monitoring, Training and Extension	Policy formulation, Macro-level planning, Enforcement, Management, Conservation, Monitoring, Training and Extension	Policy formulation, Macro-level planning, Management, Conservation, Training and Extension	Policy formulation, Macro-level planning, Leasing, Enforcement, Monitoring, Training and Extension, Conservation, Management	Policy formulation, Macro-level planning, Extension, Supply of wood
Wildlife Trust	Management of income generating activities. Patron of conservation. Education of public.	Support in conservation			
Other state institutions	Law enforcement, Industry licensing, Land-use monitoring, Education, Research, Collaboration in extension	Law enforcement, Industry licensing, Land-use monitoring, Education, Research, Collaboration in extension	Law enforcement, Industry licensing, Land-use monitoring, Education, Research, Collaboration in extension	Law enforcement, Industry licensing, Land-use monitoring, Education, Research, Collaboration in extension, Environmental monitoring	Policy formulation, Law enforcement, Industry licensing, Environmental monitoring, Education, Research, Collaboration in extension
Local rural people	Participation in conservation, Authorized utilization	Participation in management and conservation, Authorized utilization, Protection	Management and utilization, Conservation, Protection	Non-resident cultivators, Hired labor, Protection	Labor services, Supply of wood
NGOs	Extension Mobilizing and facilitating, Capacity and skill building, Participation in conservation and management, Advocacy of private rights, Law enforcement, Monitoring	Extension Mobilizing and facilitating, Capacity and skill building, Participation in conservation and management, Advocacy of private rights, Law enforcement, Monitoring	Extension Mobilizing and facilitating, Capacity and skill building, Advocacy of private rights	Extension Mobilizing and facilitating, Capacity and skill building, Advocacy of private rights, Monitoring	Extension Mobilizing and facilitating, Capacity and skill building, Advocacy of private rights, Monitoring
Industry, estates, private sector, etc.	Support to conservation	Support to conservation, Authorized utilization	Harvesting and transport utilization	Management Harvesting and transport utilization	Management Supply of wood to manufacturers

Source: Forestry Planning Unit 1995.

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