# People, Forests and the Environment

by

S. BALASUBRAMANIAM

(Professor of Botany, University of Peradeniya)

Indiscriminate destruction of vegetation cover rapidly brings about environmental deterioration and creates areas inhospitable for human habitation. The decline of many ancient civilizations are attributed to ecological imbalances created by early man. Sustained food production, general welfare of people, overall economic growth and stability of countries depend on balances maintained between life supporting ecological processes and human activities.

Here I will outline some of the beneficial roles of forests on maintaining a congenial environment for human habitation and then highlight some of the effects of rapid population growth on forest destruction in developing countries of the tropics. A brief examination of forest conservation, land use planning and environmental protection activities so far adopted in Sri Lanka will be appropriate as we commemorate "World Environmental Day" today under the joint sponsorship of the IFS and the CEA.

## Some beneficial roles of forests

Forests have many beneficial functions and uses for man and wild life. Forests mitigate climatic fluctuations and create appropriate micro-climate conditions for the survival and perpetuation of many species. Forests also serve as water catchments and prevent soil erosion and floods. Naturally occurring tropical forests in particular are extremely rich biomes harbouring many species of plants and animals. Biologists have still not fully documented all the diverse organisms found in these luxuriant forests of Amazonia, Congo Basin, Indo-Malesia and other regions of the tropics. Some of these forests can be expected to yield new pharmaceutical substances and new industrial raw materials.

At present man relies mostly on twenty or more food plants for his sustenance. Many of these have been made genetically uniform for intensive, mechanised monoculture. They are liable to attack by pests and diseases. Some wild relatives of our small number of crop plants are known. But

the natural habitats where these wild relatives of important crop plants grow are fast disappearing. There is growing concern over the extinction of these wild species. We certainly would need them for future genetic improvement or modification programmes. While ex-situ conservation of some of these have been attempted, it is no substitute for in-situ conservation in natural habitats. Natural habitats and especially the evergreen forests of the humid tropics, are regarded as natures gene banks. FAO, IUCN, UNESCO and other agencies are all in agreement that adequate areas of reserves must be set aside and protected for our future needs and for posterity. Many hitherto underutilized and unknown species may come to our rescue to meet challenges associated with pollution, pests and diseases. In our continuing search for new drugs and new industrial raw materials, wild plants of the tropics will certainly be a very promising resource base.

At present only natural forest ecosystems can effectively function as genetic reservoirs for future tapping. Some of the other functions and uses of forests can be served both by natural and also man-made forests. In Sri Lanka local people living in the vicinity of rain forests obtain poles (kekiriwara), thatch (beru and bata), resins (dorana, kekuna), medicines (weniwel), cane (wewel), juggery (kitul) etc. Thus in addition to providing the major requirements of timber and firewood, forests supply a variety of other minor products to local inhabitants in all parts of the world.

According to Norman Meyers the world requirements of wood in 1974 was approximately 2500 million $m^3$. Of these 47 percent was used as fuel (80 percent of this in developing countries), 43 percent for building and other purposes (more than 66 percent of this in the affluent countries) and 10 percent for paper (mostly in the developed world). The world's demand for timber will increase and this exposes the forests of developing countries to the great danger of over exploitation. FAO has already warned governments of developing countries that unless they take immediate and drastic action against deforestation, their economies will suffer. This then brings us to my next topic of population expansion and forest destruction.

## Population growth, forest destruction and environmental damage

The worlds population has already exceeded 5 billion. Over 90 percent of this increase was in developing countries. The resulting increased demand for food, shelter and fuelwood will place a very heavy demand on the limited forest resources of most countries. Overall there will

be extensive forest clearing for more agricultural land, timber and firewood. This is already happening in many Asian countries and in other tropical regions. Landless peasants will continue to encroach on forest areas and practise subsistence level slash-and-burn farming causing soil erosion and the creation of more unproductive wastelands (illuk, mana and kekille lands). This will further aggravate rural poverty and encourage migration to cities creating slums and other socio-economic problems. Population growth is thus one of the major causes of forest destruction and environmental damage. The future appears very gloomy unless appropriate measures are taken with long-term objectives of population control, forest resource management and environmental protection. The problem is both a regional and a global one and has to be tackled at the national and international level with support from the United Nations and other agencies.

National governments must give high priority for long-term integrated plans of forest resource management and environmental protection. It is extremely unwise to exploit the dwindling resources of non-renewable tropical forests for short-term economic gains without sufficient study and environmental impact assessments. Many developing countries have population control reforestation and environmental protection programmes. Community forestry, village woodlots and agro-forestry programmes are some activities pursued in these countries to meet the timber, fuelwood and other requirements of rural people. Such programmes have been gathering momentum in countries like India and China and will probably mitigate some of the problems of rural people and environmental degradation.

Viewed in the current conflict of man, forests and environment the future is indeed very bleak. Science, technology and political wisdom will hopefully come to the rescue of many developing countries. The United Nations agencies have warned governments of poor nations that unless they take immediate and drastic action to check further deforestation, their economies will suffer; (a) Agro-forestry (b) community forestry (c) fast growing multipurpose trees (d) efficient nitrogen fixing trees etc., have been researched upon and are being tried out to meet some of the challenges facing developing countries. Research and development efforts are continuing and are heavily funded by national and international agencies. They should go a long way to meet the wood, energy and other

requirements of communities living in ecologically over exploited and vulnerable areas. Instead of clearing non-renewable tropical humid forests, efforts should be made to re-vegetate derelict lands and create more forest plantations. Multinational companies and local administrators with only short-term economic interests will continue to exploit high value rainforests. Careful reflection will show that this is not in the best interests of the people and the state. On a long-term basis we run the risk of ending up with more city slums, dust bowls, a crippled economy and more poor people. Planners and some economists may argue that conservation minded citizens and scientists are affluent people living in ivory towers and they are insensitive to the needs and tribulations of the rural poor. Careful study of already available reports and research publications will, however, show that these problems are real and have been studied or examined on a regional and on a global scale.

The likely consequences of further forest depletion are alarming. We certainly must debate these issues and make the right decision in the interests of our people and for posterity.

Population control, resource management and environmental protection are extremely important but very complex and in many ways very sensitive issues. Holistic or integrated planning is necessary at the national level to meet the many problems that emanate from these subjects from time to time. In recent years Sri Lanka has established a Central Environmental Authority. This is a move in the right direction. This Agency has to work in close liaison with the Forest Department, Wild Life Department, the Water Resources Board, the Agricultural Ministry, the Urban Development Authority, Land Use Division, Health Ministry and non-government organisations to manage our resources and our environment.

## Forest conservation and land rehabilitation in Sri Lanka

Having discussed the problems of population growth, forest destruction and environmental damage in general terms, let me briefly examine forest conservation and land rehabilitation in Sri Lanka. Based on satellite pictures and other sources of information the Survey Department recently (1981) prepared a forest cover map of the island. According to this survey about 25 percent of our land area is under some sort of forest cover (natural forests, man-made forest plantations and other non-forest plantations). Over 80 percent of these forested areas are in our dry

zone and are represented mainly by seasonally dry monsoon forests and low scrub jungle. The forest inventory of 1956 and later reports (Perera, 1971) estimate the area under wet zone natural forests as being 136000-164000 ha. This figure represents the lowland rain forests as well as the upper montane cloud forests or montane rainforests. On a land area basis these forests occupy about 8 to 9 percent of the wet zone of Sri Lanka. It is generally agreed that at least 30 percent of the land area of a region must be under permanent forest cover to maintain the life supporting ecological processes. May be, if we compute the existing rubber plantations, tea lands and man-made forest plantations found in this zone, we will approach the theoretical minimum required for maintaining the necessary ecological balance. Accurate surveys and inventories are necessary for the wet zone of Sri Lanka. In the interim period all the natural forests in the wet zone must be protected and efforts should be directed to reforesting the derelict lands in these heavy rainfall areas. Under the Man and Bioshpere Programme some natural forests in the wet zone have been protected (eg. Sinharaja MAB Reserve). The Horton Plains area and the Adams Peak wilderness are our major montane rain forests declared as protected areas and well-known to local and foreign naturalists. Most of our National Parks are in the dry zone and they receive protection and are under the custody of the Wild Life and Nature Conservation Department. With the opening up of the Accelerated Mahaweli Project, the Maduru Oya National Park and Wasgamuwa National Park have been established. We, however do not have a mangrove area outside the existing national parks as a reserve area. We have reasonably large areas of protected forests and other natural habitats and are better off than many other developing ocuntries. We, however, have to be vigilant that these protected reserves are well managed and serve the educational, research and recreational needs of the country. Such forest reserves and national parks will stabilize the environment and conserve the distinctive flora and fauna of our island. Conservationists, however, feel that more areas of lowland rain forests (parts of Kanneliya forest reserve) and montane forests (the Knuckles area) should be protected to conserve many more of our endemic species.

Since most of the natural forests in the wetzone have to be protected, we must direct our efforts at rehabilitating our derelict

patana lands and establish plantation forests in these areas to meet our timber and fuelwood requirements. Recently, the Central Environmental Authority, and the Institute of Fundamental Studies initiated some plans for rehabilitating wastelands in the Kandy Area. The programme is still in the planning phase and if successful it will be a model for other areas.

Forests or forest-like plantations are necessary for maintaining environmental stability, as water sheds, and as a source of timber and fuelwood. Natural habitats and natural forests are necessary for preserving our rich flora and fauna. In major development projects we have to bring to bear a multidisciplinary approach from the planning phase onwards. Subsequent monitoring of the environment is necessary for warning signals and remedial action. It is only then we can hope to maintain the ecological balance between man and nature and avoid the major calamities faced by ancient civilizations.