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ENVIRONMENTAL LAWS AND INSTITUTIONS
OF
SRI LANKA

Assessment
for
USAID/Colombo
by
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ACRONYMS

ADB	Asian Development Bank
CEA	Central Environment Authority
CEQ	Council on Environmental Quality
CISIR	Ceylon Institute of Scientific and Industrial Research
DWC	Department of Wildlife Conservation
GCEC	Greater Colombo Economic Commission
EFL	Environment Foundation, Ltd.
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
IEE	Initial Environmental Examination
LUPP	Land Use Policy and Planning
MC	March for Conservation
MEP	Mahaweli Environment Project
NARA	National Aquatic Resources Agency
NARESA	Natural Resources, Energy and Science Authority
NBRO	National Building Research Organization
NEA	National Environment Act
NGOs	Non-Governmental Organizations
NORAD	Norwegian Development Cooperation
SLIDA	Sri Lanka Institute of Development Administration
UDA	Urban Development Authority
UNDP	United Nations Development Program
WNPS	Wildlife and Nature Protection Society

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SUMMARY

Sri Lanka has strong, comprehensive laws to protect its environment, and its environmental institutions have achieved significant successes. A Central Environmental Authority oversees government policies and problems and has implemented an environmental impact assessment process affecting industrial development projects. A system of wildlife parks and reserves covers about 10 percent of the country. Land use planning for environmental protection has been applied to state land sale and settlement programs. Parliament recently established a comprehensive law requiring regulations and permits to control air, water, and land pollution. Despite public turmoil, the media gives almost daily attention to environmental issues. Universities provide significant expertise, and non governmental organizations (NGOs) influence government decisions on energy, forestry, and industrial development.

Yet the gap widens between Sri Lanka's environmental goals and its achievements. Rapid reduction of its magnificent natural forests and erosion of its soil diminish sustainable development opportunities. Pollution of surface and ground water endangers the health of urban and rural dwellers. Degradation of estuaries, wetlands, and inland waterways reduces their capacity to provide food and other essential "free" services. Poaching and encroachment in wildlife reserves rob future generations of the economic and intangible benefits of Sri Lanka's rich biological diversity.

Institutional failures make each problem more vexing. Among the most serious are inadequate management skills, narrow project planning, poor enforcement, confusing procedures, and inadequate training and facilities. Similar government-wide deficiencies were identified and forcefully criticized by Sri Lanka's Administrative Reform Committee. They are particularly important in the environmental sector, which involves so many different agencies and disciplines. Poor agency cooperation, inefficient use of existing data, and lack of policy leadership waste Sri Lanka's economic resources and frustrate the efforts of able, highly motivated environmental professionals in and out of government.

To reform this picture requires public peace, but even in turmoil much can be accomplished, and much environmental harm prevented. The most significant environmental needs:

- o Energized leadership by an elevated Central Environmental Authority to establish environmental policy priorities, and require compliance with the natural resource management and pollution control provisions of the National Environmental Act;
- o Continuous, well-funded programs to train large groups of government staff, at every level and across agency lines, in natural resource management, pollution regulation, and environmental assessment;
- o New programs to enhance and apply ecological and economic understanding of the functions and values of natural systems and the costs of natural resource abuse;

- o Vastly expanded public environmental education programs, now spotty and deficient, fed by data from government agencies and carried out by the existing environmental non governmental organizations;

- o Routine public participation in environmental decisions to help depoliticize proposals and ensure their early environmental assessment.

Since the early 1970s international donors have supported and initiated environmental programs in Sri Lanka. Among the most important: agencies of the United Nations, the World Bank, Asian Development Bank, and the governments of Canada, Germany, Netherlands, Norway, United Kingdom, and the United States. These programs sustain Sri Lanka's hopes for sustainable economic growth. They have enhanced environmental data bases, still deficient concerning functions and values of natural forest, estuarine, and coastal ecosystems, but they have often encouraged isolated, uncoordinated development of Sri Lanka's environmental institutions.

USAID can help Sri Lanka improve its professional and institutional capacities for environmental management by virtue of US experience with natural resource planning, impact assessment, pollution regulation, and the contributions of non-governmental environmental groups. Recommendations:

- o Training, technical, and funding assistance to help the Central Environmental Authority (CEA) vigorously oversee agency compliance with the National Environmental Act, including early integration of assessments with all natural resource management plans and water resource, road, energy, and other projects:

- o Technical assistance and training for the CEA and other agencies in pollution control monitoring and enforcement;

- o Technical assistance for environmental management plans in major agencies that will establish goals, schedules, program reviews, job descriptions, and training activities;

- o Funding for an environmental training program to give short- and long-term courses in-country on all aspects of environmental and natural resources management, to teach government employees at all levels and from all the relevant agencies;

- o Financial and technical assistance to the major environmental NGOs to support expanded public environmental education, and support for grass roots environmental groups;

- o Technical and financial support to develop data and policy studies on economic, social, and ecological values of natural systems that can be applied to existing resource management and regulatory programs;

- o Technical and financial support for a cooperative NGO program to develop indicators of environmental trends in soil conservation, reforestation, water quality, wildlife habitat, and other critical subjects, and for publications to make the results widely available.

Purpose and approach of this report

USAID/Colombo commissioned this assessment to help identify problems, gaps, and opportunities appropriate for a future USAID program in the environmental sector. The author reviewed laws, reports, and other materials, listed in Appendix A, and interviewed people in government, universities, and non governmental organizations, listed in Appendix B. Programs with which USAID is thoroughly familiar, notably work of the Mahaweli Environment Project and the Mahaweli Authority, were not subjects of this review. During the research period, from September 15 to December 1, 1988, the author had daily contact with USAID's environmental officer, Malcolm Jansen, who gave invaluable assistance, and regular discussions with USAID staff.

The report has four basic sections: background on environmental problems, laws, and recent institutional achievements; analyses of major agency programs in terms of legal authority, staff capabilities, and resources; findings and conclusions concerning institutional capabilities, gaps, and needs; and recommendations for USAID. Topics requiring further study are noted at the conclusion.

Two caveats need emphasis: First, those to whom the report appears too negative might bear in mind that it intentionally focuses on the adequacy of Sri Lanka's response to its environmental problems. Underlying most environmental assessments in developed or developing countries is the notion that environmental problems progress so rapidly that institutional responses must be employed ever more quickly and effectively just to keep up.¹ Sri Lanka has taken many positive actions and possesses unusual environmental resiliency, but it faces the same needs.

Second, and more important, Sri Lanka's environmental condition must be placed in context with the country's continuing political, economic, and social turmoil. Unrest has restricted or curtailed environmental programs in the field and shifted government priorities in Colombo. Work stoppages and anxiety have affected the morale and attention of environmental professionals in and out of government. Disruptions widen the gap between environmental goals and results, and accelerate the loss of experts to the environmental field and to the country. The serious institutional problems highlighted in this report largely stem from causes independent of the recent turmoil, but without peace and prospects of economic improvement, Sri Lanka will not resolve them or achieve sustainable environmental development.

I. BACKGROUND

A. Environmental Problems and Trends

Land use pressures dominate Sri Lanka's environmental perspective. Sri Lanka's 16.2 million acres (6.56 million ha) make it about the size of Ireland, or West Virginia. Its far larger population of 16.5 million has increased 129 percent since independence in 1948. Population may exceed 20 million people by the year 2000. Despite a relatively low birth rate and a natural annual increase of about 1.7 percent, land use planners cite the present "man/land" ratio of about one, and falling, as cause for concern; over 75 percent are now involved in agriculture, and the increasing numbers without land ownership seek it. Encroachment on state land, over 80 percent of Sri Lanka, is serious; about a million families had encroached on 942,000 acres of state lands in all parts of the country by 1980.² Demands for wood are high; about 90 percent of Sri Lankan households depend on it for cooking.³

There is ample evidence of serious environmental stress on Sri Lanka's land and water despite uneven data on conditions and trends. Most critical is the loss of forests and soils required for sustainable production of food, fibre, and other renewable resources.

Forests: Natural forest cover,⁴ roughly estimated at 80 percent by the Dutch in 1794, 70 percent in 1900, and 40 percent in 1956, is about 20 percent today, possibly lower, but no one knows for certain.⁵ The Forestry Department estimates annual deforestation for fuel wood and lumber of 25,000 to 30,000 hectares, with replanting (only a few species) of 3,000 hectares in 1988 and far less planned for 1989. The extensive forests of tall satin trees found a century ago in the dry zone are gone; two thirds of this region is degraded and natural forest cover is mostly scrub. Encroachment, plantation agriculture, and illicit timbering have contributed to the diminution of wet zone forests and their ultimate degradation.⁶ Forests there have been broken into small patches -- the 160 km² of forests in the Matara District occur as thirty patches, each 50 to 1000 hectares.⁷ In the central catchment area for all Sri Lanka's rivers, forests that covered 22 percent of the land in the mid 1950s are down to 9 percent.

Soil erosion and land degradation: Soil erosion has been serious for years, particularly in the largely deforested catchment areas for all Sri Lanka's rivers. The result: diminished agricultural productivity and reduced capacity of downstream irrigation works. Erosion has been estimated at 40 tons per hectare per year in high elevation tea lands over the past century,⁸ over 400 tons per hectare per year in the Maha Oya catchment, and it is severe in the upper Mahaweli upper catchment.⁹ Hill country landslides have increased --19 major and 11 minor slides since 1970.¹⁰ Soil erosion is also severe in the poorly managed farms of the dry zone, where soil loss reduces yields. Poorly managed tobacco and tea plantations, and cultivation in mountains of the Intermediate Zone have caused losses of 70/tones/hectare/ year compared to tolerance levels of 9 tones per year.¹¹

No less important in the long-term but less easily quantified are losses of Sri Lanka's wildlife habitat and related biological resources.

Wildlife: As forests go so goes the wildlife that enriches Sri Lanka biologically, culturally, and from tangible tourist revenue. Sri Lanka has 815 species of endemic plants found throughout the island, and mostly in the wet zone,¹² and many animals, although up-to-date fauna inventories are spotty. Wide-ranging mammals are first to feel the pressures of encroachment and the breakup of large forests into patches and islands, and their diminishing populations auger ill for forest birds and other wildlife.¹³ Asian elephants are on the threatened list, with populations estimates that range from 2,000 to 4,000,¹⁴ and so are the leopards. Illegal hunting has nearly eliminated the 5 percent of tuskers existing in Sri Lanka.¹⁵ Organized taking of animal flesh and skins, and live birds, as well as timber poaching, has been prolific in protected forests and preserves. Law enforcement is lax, and government negligence or even complicity has been alleged.

Coastal resources and wetlands: Mismanagement continues but trend data are spotty and evidence of many problems is largely anecdotal:

-- Destruction of coral reefs continues to be a major coastal problem, but current trends are hard to assess. A survey of a reef lagoon in Hikkaduwa found that less than 20 percent was live coral and nearly 40 percent was dead coral and coral rubble.¹⁶

-- Permit regulations cover actions within a narrow coastal zone and the 46 lagoons and estuaries covering 40,000 hectares are poorly protected. The 6,000 acre Muthurajawala wetlands, largely outside the protected zone, is one of Sri Lanka's largest wetlands, but piecemeal development continues without understanding of its hydrologic and biological functions.

-- Other wetlands face development pressures without regulation, including the critical lower deltaic plain of the Mahaweli River.¹⁷ Inland wetlands that have been filled have contributed to costly floods of Colombo and other developed areas. Building on riparian floodplains along the Kelani River in Colombo has contributed to declines in production and rising costs of the leafy vegetables for urban markets.¹⁸

Industrial and urban development have created health and welfare problems for Sri Lankans, although the trends are difficult to quantify.

Pollution: Comprehensive data on pollution in Sri Lanka is weak, but water pollution is nationally the most critical concern, due to poor sanitary facilities and industry. Fish kills in the Kelani River result from tannery and heavy metal pollution. "gross pollution" of the Walawe Ganga from the paper factory at Embilipitiya,¹⁹ and Colombo's Beira Lake suffers from eutrophication. Pollution of domestic water wells by toxic nitrate from septic tanks in Maharagama and excessive use of nitrogen fertilizer in Jaffna have recently been noted.²⁰ Air pollution, from the 20,000 Sri Lankans directly exposed to lead poisoning in their

work place to those exposed to benzene and other pollutants Colombo, is an increasing health concern.²¹ Indiscriminate use of pesticides in vegetable growing has been cited as a major health hazard of the agricultural sector.²²

Urban development: Urban sprawl in Colombo, Kandy, and elsewhere has substantially changed land use, although urban population growth peaked at 6.2 percent in 1963 and declined to 1.2 percent in 1981.²³ In Greater Colombo, the estimated 3,000 hectares of agricultural land existing in 1977 is expected to be reduced to about 755 hectares by 2001.²⁴ The result has been haphazard development patterns and unmet demands for adequate roads, sanitation facilities and services, open space and recreational areas (estimated now at about 5 percent of developed areas),²⁵ and loss of agricultural products near markets.

B. Government Institutions and Environmental Laws

1. Constitutional Structure

The Constitution of the Democratic Socialist Republic of Sri Lanka was established in 1978 and drew on U.S. and French models for a strong Presidency. The President appoints the Prime Minister and the heads of ministries.

The country is divided into 25 Administrative Districts, which are headed by Government Agents appointed by the President. Districts are also served by District Development Councils. (In 1987 the Thirteenth Amendment to the Constitution established nine new Provincial Councils, to be headed by Governors appointed by the President, but these have not yet functioned due to political uncertainties.) Lower levels of local authority include municipal councils in major townships, urban councils in minor townships.

The national legislature has one branch, an elected Parliament of 168 members serving 5 year terms. Legislation is proposed as a bill published in the Government Gazette. Government bills are drafted by the Legal Draftsmen's Department within the Ministry of Justice and must be generally approved by the Cabinet.²⁶

Sri Lanka's judiciary is headed by its Supreme Court, the highest appeals court, with exclusive jurisdiction over fundamental rights cases. The Court also reviews the constitutionality of bills proposed to Parliament by the government. In recent years the Supreme Court has become more receptive to the review of government action under the new Constitution's Bill of Rights. Legal developments in India in the field of social action, allowing its Supreme Court to appoint investigators and render judgements following individual petitions of grievances, and constitutional law and judicial precedent in the United States have become increasingly relevant.²⁷ US legal developments in the field of environmental impact assessment have also been cited by Sri Lanka's Chief Justice.²⁸

2. Environmental laws

The Constitution states that "[t]he State shall protect, preserve and improve the environment for the benefit of the community."²⁹ It also states that "[t]he exercise and enjoyment of rights and freedom is inseparable from the performance of duties and obligations and accordingly it is the duty of every person in Sri Lanka to protect nature and conserve its riches."³⁰ Beyond these Constitutional provisions, however, about 80 statutes enacted over the past 100 years concern some aspect or other of environmental management or protection. The most important of these:

Forests and Wildlife

- o The Forest Ordinance of 1907, as amended by Acts No 13 of 1966, No. 56 of 1979 and No. 13 of 1982, established the Forest Department, authorizes reserved and village forests, and regulation of timber operations;

- o The Felling of Trees Ordinance, No 9 of 1951, provides for prohibition and regulation of environmental damage from timbering;

- o The Fauna and Flora Protection Ordinance, 1937 as amended by Act Nos. 44 of 1964 and 1 of 1970, protects plants and wildlife, and provides for establishing and managing National Reserves and Sanctuaries;

- o The National Heritage Wilderness Areas Act, No. 3 of 1988, prohibits any interference with state lands designated by the Minister of Lands and Land Development as Wilderness, and authorizes entry only for study;

Land Use

- o The Land Development Ordinance, 1935, provides for mapping of state land to prevent soil erosion, protect forests, and to preserve catchments, and authorizes regulations on alienation of state land over 1,500 meters in elevation;

- o The Crown Lands Ordinances, Nos. 8 of 1947, 9 of 1947, and 13 of 1949, authorizes the reservation of lands to protect streams, tanks, reservoirs, and canals; requires permits from the Government Agent for water diversion, construction along banks of public lakes or streams, or bridges or causeways over a public lake or stream; and requires surveys before state land grants;

- o The Mines and Mineral Law, No. 4 of 1973, provides for regulations of mining and prospecting;

- o The Soil Conservation Act, No. 25 of 1951, authorizes programs of the Department of Agriculture to control and mitigate soil erosion, protect soils from floods, and designate, regulate, and protect erosion-prone areas;

- o The Agrarian Services Act, No. 58 of 1978, established the Agrarian Services Department to develop and enforce standards for agricultural land management and responsibilities of cultivators and occupiers;

o The Thirteenth Amendment to the Constitution, November 1987, Appendix II, calls for a National Commission to prepare a National land policy including "general norms concerning land use, including soil, climate, rainfall, soil erosion, forest cover, environmental factors, economic viability, etc.;"

Urban and Town Development

o The Town and Country Planning Ordinance, 1915, authorizes planning and zoning for the conservation and management of environmental resources;

o The Urban Development Authority Law, No. 41 of 1978 as amended, authorizes development plans and regulations, including zoning and permitting, for designated Development Areas, which now include about 15 percent of the country;

o The Housing and Town Improvement Ordinance, 1915, provides for the regulation and development of housing and related facilities in Municipal Councils, Urban Councils, and other declared development areas;

Water Development and Irrigation

o The Water Resources Board Act, No. 29 of 1964, provides for integrated planning and conservation of water resources, the coordination of river basin surveys and studies, and other measures to control economic uses of water (The Water Resources Board);

o The Irrigation Ordinance of 1900, as amended by No. 48 of 1968, provides for irrigated water supplies and their protection;

o The Mahaweli Authority Act No. 23 of 1979, established the Mahaweli authority to implement provisions for economic development activities in the Mahaweli river basin, manage watersheds and control soil erosion in its jurisdiction, and to administer or modify provisions of other specified laws concerned with forestry, flood protection, irrigation, mineral development and wildlife protection;

Aquatic and Coastal Resources

o The Fisheries Ordinance, No. 24 of 1940, provides for protection of fish in Sri Lankan waters, and the regulation of fishing;

o The National Aquatic Resources Research and Development Agency Act, No 54 of 1981, established NARA and provides for research into the conservation and use of natural aquatic resources;

o The Sri Lanka Land Reclamation and Development Corporation Act, No. 15 of 1968, as amended by Act No. 27 of 1976 and Act No. 52 of 1982, authorizes the government corporation to reclaim and develop areas declared by the Minister as Reclamation and Development Areas as low-lying, marsh, waste or swampy areas, for building, industrial commercial or agricultural use;

o The Coast Conservation Act, No. 57 of 1981, established the Coast Conservation Department and made it responsible for carrying out coast conservation programs, developing a coastal zone management plan, and carrying out a regulatory permit program for the coastal zone between 300 meters landward and two kilometers seaward, and the waters of rivers, estuaries, and lagoons within two kilometers of their sea entrance;

Tourist Development

o The Tourist Development Act, No. 14 of 1968, provides for promotion of tourist development, the control of outdoor advertisement along "Protected Highways" and "Scenic Reserves" declared in the Act;

Pollution, Pesticides, and Toxic Substances

o The Nuisance Ordinance No. 15 of 1862, as amended, complements the common law of nuisance for abatement of public nuisances in the Code of Criminal Procedure by prohibiting the keeping of filthy houses, the fouling of drains, the keeping of stagnant and foul water, the selling of unwholesome food, and similar nuisances, enforceable by the Board of Health;

o The Control of Pesticides Act No. 33 of 1980 established a Registrar of Pesticides and provided for the licensing of pesticides and regulation of imports, packaging, labeling, storage, formulation, transport, sale, and use of pesticides;

o The Marine Pollution Prevention Act, No. 59 of 1981 provides for prevention, reduction, and control of pollution in Sri Lankan waters and gives effect to international conventions on Prevention of Pollution of the Sea by Oil, 1954; Civil Liability for Oil Pollution Damage, 1969; Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971; Intervention on the High Seas in case of Oil Pollution Casualties, 1969; Prevention of Pollution from Ships, 1973.

Environmental Policy and Education

o The National Environmental Act No. 47 of 1980 established a Central Environmental Authority, assisted by a 22 person inter-agency Advisory Council to: develop policies, standards, studies, and educational programs concerned with environmental and natural resources; carry out environmental programs at the District level through District Environmental Agencies, appointed by the CEA; and to encourage public participation in its work.

o 1988 amendments to the National Environmental Act require new air, water, and land pollution standards and discharge and emission permits by the Central Environmental Authority, and establish environmental impact assessment and public comment procedures for development projects.

International Treaties

Sri Lanka is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), The Convention on the Conservation of Migratory Species of Wild Animals (The Bonn Convention), The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Trust Convention), and the treaties concerned with the prevention of oil pollution on the seas noted above.³¹ It has not yet ratified the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (the Ramsar Convention).

C. Sri Lanka's Environmental Achievements

These laws establish comprehensive requirements for environmental resource management in Sri Lanka and show significant recognition of the country's environmental problems. Institutional achievements have also been significant, as indicated by several examples.

- o Sri Lanka is one of a handful of Third World countries with an environmental impact assessment procedure, which has functioned for several years. In 1982 the Cabinet approved an ambitious requirement for environmental impact assessments for development projects needing government approval, and the program was recently authorized by statute with new public participation requirements. In urban areas a basic assessment system for industrial development proposals has become increasingly routine.

- o The Central Environmental Authority has conducted critical reviews of government environmental problems and programs and contributed to broad public interest in environmental affairs. It has cooperated with other agencies in developing new standards for air and water pollution.

- o The government has field staff and is developing facilities for the parks and wildlife preserves that constitute an extraordinarily high proportion of the country -- nearly 14 percent of Sri Lanka's land base.

- o Sri Lanka has established comprehensive land use planning capabilities in the central government and programs for implementation at the district level, backed up by well-established land use mapping capabilities. Planning capabilities support the land development and distribution policies of the State Land Commission.

- o Programs for coastal and ocean resources conservation have developed rapidly. A comprehensive coastal zone management plan has applied and integrated substantial information on coastal problems and opportunities, backed up by a regulatory permit program. The government has programs to assess ocean mineral and coastal ecosystem resources and has recently research on inland waters.

- o Sri Lanka's giant Mahaweli development project, one of the world's most ambitious water resource schemes, includes large programs for reforestation and creation of new parks and wildlife reserves.

II. ANALYSIS OF INSTITUTIONAL FUNCTIONS AND CAPABILITIES

A. Environmental Policy and Planning

It is axiomatic that effective national environmental management requires institutions to develop policies, coordinate government functions, carry out plans, implement regulations, and conduct research and public education. This section examines how and by whom these actions take place in Sri Lanka.

1. The Central Environment Authority (CEA)

a. Structure and Responsibilities

The CEA established by the National Environment Act (NEA) of 1980 is primarily responsible for developing national environmental and natural resource policies, public education, and, under a subsequent Cabinet Order, implementation and oversight of the environmental impact assessments.

Basic structure: CEA is in some ways modeled after the U.S. Council on Environmental Quality (CEQ), created by the National Environmental Policy Act in 1970. Like CEQ, the CEA is a three-person board, assisted by a small staff of professionals, charged to recommend policies on all aspects of environmental conservation and natural resource management, conduct studies, investigate problems, and report on remedies and legislative needs. Like CEQ, it developed and has overseen, an environmental impact assessment process for other government agencies. Similarly, CEA is often the last resort for citizens complaining about environmental problems, and it devotes valuable staff time to responses in behalf of the Prime Minister. But there the similarities stop.

Governmental status: The CEA functions within a line Ministry, the Ministry of Local Government, Housing, and Construction. Although the current minister is also the Prime Minister, and the CEA Chairman is the Prime Minister's Secretary, CEA itself is not located at the highest level of government, as is the CEQ, which functions within the Executive Office of the President. CEA staff lack the real or perceived status to review government environmental budgets, or coordinate and direct governmental environmental operations routinely. Policy recommendations do not go directly to the cabinet but must first be cleared through its Ministry. Major CEA actions require consultation with the Environmental Council, a large advisory group which represents all major ministries.

Pollution control responsibilities: Because the country has no Environmental Protection Agency, CEA has sole responsibility for assessing and developing Sri Lanka's environmental pollution control approach. The NEA directs CEA to conduct and coordinate research on environmental degradation and to develop environmental protection criteria and standards.²² Newly passed NEA amendments vastly increased this role. In contrast, the natural resource problems for which CEA must recommend policies, such as forestry, land use planning, wildlife, fisheries, and soil conservation, are primary responsibilities of other agencies.

Explicit educational responsibilities: Unlike CEQ, CEA also has explicit responsibility "to provide information and education to the public regarding the protection and improvement of the environment."³³

EIA oversight: Until the 1988 NEA amendments, CEA's development and oversight of Sri Lanka's Environmental Impact Assessment process was authorized by a Cabinet Order, without sanction in the National Environment Act. The new amendments essentially incorporate the existing procedures and give CEA clear authority to require an EIA for any project subject to the proscribed list if it would have significant environmental effects. Provisions for public comment on the initial assessments as well as EIAs have also been added by the amendments.

b. Budget and Staff

Budget: In 1988 CEA's operating budget totaled Rs 9.3 million, of which NORAD provided Rs. 2 million. The budget roughly divided as follows:

Salaries	Rs 3 mil.
Equipment	
laboratory (sampling)	
transportation	
library	
total.....	Rs 2.5 mil.
Studies.....	Rs 2 mil.
District Env'l Committees.....	Rs .5 mil.
Env'l ed., promotion.....	Rs 1.3 mil.

Staff Structure: A full-time professional staff of about 25 includes 15 environmental professionals with university degrees, and supporting staff of about 100. Staff are organized under four basic divisions: The Secretariat (administrative) Division, the Environmental Planning Division (training, analysis, planning, and external relations), the Environmental Management Division (natural resource management), and the Environmental Protection Division (EIA review and pollution monitoring and enforcement). Each division is directly responsible to the Director General, as are the District Environmental Agencies in the field.

Part-time leadership: Of the three CEA members, only one, the working member, serves CEA full time. The Chairman functions essentially full-time in his capacity as secretary to the Prime Minister, and the other member is part-time. Down the line, the Director General of the CEA is also part-time, serving as Chairman of the National Housing Development Authority within the Ministry, and the Director of Planning, who also serves as Deputy Director of Water Supply in the Ministry, and the Director of the Secretariat and the Deputy Director of Services.

District Environmental Agencies: CEA provides stipends for government agency representatives to attend monthly meetings of District Environmental Agencies, which are essentially committees, headed by the Government Agent, that discuss environmental problems of the district without technical staff support.

c. Policy Accomplishments

o Policy Recommendations: Part IV of the National Environmental Act (NEA) required CEA to recommend a land use scheme for the nation and specific policy recommendations on other natural resources. One of these has been completed. CEA participated in and published an inter-ministerial committee report on soil conservation in 1986. The report critically appraised soil conservation programs and offered specific recommendations for reform. In the field of pollution control policy CEA will be publishing a similar inter-ministerial study on vehicular pollution.

o National Conservation Strategy: Sri Lanka is one of many countries preparing a national conservation strategy following the IUCN's World Conservation Strategy of 1980. Its program began with Cabinet approval in November 1982, and, consistent with its overall policy responsibilities, CEA was to provide secretarial and other support to the working task force. A workshop was held in 1986 after completion of 27 topical papers and the completed strategy was expected to be finished in 1987. Widely viewed as an essential guide to Sri Lanka's future approach to environmental issues, the report is, at this writing, still unpublished but expected soon.

o Pollution control policy development: The 1981 NEA required CEA to develop pollution control criteria, for which CEA has relied on the capabilities of the Sri Lanka Standards Institute and other institutions. Water pollution standards have received highest priority. In 1983 CEA issued Interim Standards for certain pollution discharges to help meet statutory requirements. Under CEA auspices, permanent national standards on industrial effluents into inland and coastal waters, potable water standards, and coastal water standards, have been developed by interagency committees organized by the Sri Lankan Standards Institute. No use classification has been developed for Sri Lankan surface waters, however.

o New pollution control permit legislation: Over the past several years CEA and the Ministry of Justice prepared major amendments to the NEA to alter and enlarge CEA's authority substantially. The new act, passed in late 1981, prohibits any discharge or emission of pollutants to the air, water, or land without a permit authorized by CEA in accordance with CEA standards. Pollution control responsibilities, policed with the help of the EIA mechanism, may now dominate CEA, including establishment of standards for effluent discharge and air emissions, permit procedures, and monitoring and permit enforcement procedures.

Dutch support for CEA: Although by the time of passage CEA had no plans for implementing these pollution control requirements it envisages the need for 10 to 15 new staff. Its resident Policy Advisor, provided by the Dutch Government, has outlined a program of institutional strengthening (including technical assistance, policy studies, and training) to develop CEA's pollution control capabilities during 1989, amounting to about 1 million guilders (about \$500,000) in technical assistance and 160,000 guilders in financial assistance. Additional Dutch support for environmental protection and management projects could amount to 4.1 million guilders in TA and 1.5 million guilders in financial assistance.

Norwegian support for CEA: Continued additional support will be forthcoming from NORAD, amounting to approximately Rs 30 million for 1989 and another Rs. 3 million for smaller projects. NORAD has supported the development of water pollution monitoring laboratory equipment in CEA and will fund development of an air pollution laboratory in the future. For the last several years it has helped CEA strengthen its support of the District Environmental Agencies.

d. Establishment of Environmental Impact Assessment Process

Cabinet origin: Sri Lanka's Environmental Impact Assessment (EIA) process is its single most important regulatory control for environmental protection, although its potential is still largely unrealized. It resulted from the initiative of the CEA Chairman, following his attendance at an EIA seminar in Bangkok, who subsequently obtained a Cabinet Order in December 1982³⁴ establishing EIA's in Sri Lanka. The Order required that the 15 state development agencies (identified as Project Approving Agencies) make all state and private sector development projects subject to a EIA, beginning in January 1984, that CE. prepare comprehensive EIA guidelines, and that legislation be drafted to effectuate the order.

CEA put strong emphasis on developing EIA guidelines, based on experience gained from an EIA prepared by TAMS for USAID on the Accelerated Mahaweli Development Project and on assessments carried out for the Industrial Promotion Zone at Katunayake, north of Colombo. With help from USAID, CEA held a two-day EIA training seminar for 25 policy officials, mostly agency directors, in September 1984, and later a three-week workshop for 40 senior officials of the project approving agencies responsible for EIA compliance.³⁵

The 1988 NEA amendments put the existing administrative requirements for Initial Environmental Examinations (IEEs) and EIAs are firmly into law, with added provisions for public notice and opportunity for comment.

EIA process: CEA's EIA process closely resembles the model developed by the United States in the 1970s.³⁶

1. Initial assessment: All development projects requiring agency approval are subject to an IEE. Developers must provide basic data on the nature, location, and impacts of their proposed project. CEA's IEE data requirements was based on the form prepared by the Greater Colombo Economic Development Commission for its two industrial zones around Colombo. The 1988 amendments require the approving agency to publish a notice of an IEE in English, Sinhala, and Tamil newspapers. The public has 30 days in which to review and comment. A notice of final decision on an IEE must also be published by the approving agency.

2. Scoping: IEEs are reviewed by the approving agency and other interested national and local agencies, and the CEA, to determine if an EIA is required and what issues it should address. If no EIA is needed the developer may receive conceptual project approval from the approving agency and detailed location approval from local town councils.

3. EIA preparation: If an EIA is required it should be used in the feasibility phase of project planning. It should contain detailed descriptions of the project, the existing environment, project impacts and impacts of reasonable alternative plans, mitigation measures, and recommendations.

4. Environmental Action Plan: Following an EIA the Action Plan must be prepared to describe the planned mitigation measures, the work plan and schedule for implementation, and staff and resource requirements.

The EIA Process and CEA's Role in Practice: Only two EIA's have been required since 1984. One project was dropped, so only the EIA on the proposed Trincomalee Coal-fired Power Plant has been completed. Even this EIA was required under the explicit EIA requirements of the Coastal Conservation Act, not the Cabinet Order. One oft-cited reason for the few EIAs is that the requirement has not been sanctioned in law, making CEA reluctant to require agencies to carry out expensive studies.

IEEs, however, have become far more routine. Most developers send their IEEs to CEA's Environmental Protection Division for approval. CEA has three to four staff available to review the 15-20 IEEs it receives each week and carries out site inspections for each one. CEA takes about two weeks to reply to the local authorities with their conclusions, but it may take longer because data bases are inadequate and IEEs frequently lack accurate site maps and impact descriptions.

CEA regularly participates in scoping sessions held about twice each month by the Greater Colombo Economic Commission (GCEC) and in five to six sessions held each month by the Foreign Investment Advisory Committee (FIAC) of the Ministry of Finance and Planning, which approves all foreign investment proposals.

CEA's IEE review is largely limited to projects requiring approval of the Urban Development Authority (see below), GCEC, and FIAC. Some developers have resisted compliance with the EIA and IEE requirements because they are not authorized by statute. More importantly, government agencies never prepare IEEs on their infrastructure projects -- roads, irrigation projects, and so forth. (See discussion of the Muthurajawela and the Sri Lankan Reclamation and Development Board, below). The NEA amendments will vastly strengthen CEA's project review authority.

e. Public education

CEA has no public education program, although it contributes to public education through its publication of reports, articles and speeches of its members. Publication runs are limited, however, so much of CEA's work fails to reach the public. It has sponsored workshops for environmental NGOs, and provided secretarial support to help the Environmental Congress become established. It holds monthly press conferences on specific topics, has sponsored a system of about 50 Environmental Pioneer Brigades in the schools, and seeks to create local environmental societies, linked in some fashion to the government.

f. Comments on CEA

CEA has carried out only a few of its mandates to coordinate and formulate policies, and it has not implemented the promising proposals for research, library and data systems, and public education services envisaged in the early 1980s.³⁷ It lacks what is best described as "clout" with other agencies because of its subordinate position, even within its own ministry. It occupies an essential policy niche, but the breadth of its responsibilities, and the economic, social, and political effects of its environmental decisions, have overstretched its resource and staff capabilities.

CEA suffers from part-time leadership and from having a Chairman understandably torn between the functions of environmental advocacy and, as Secretary to the Prime Minister, political balancing. Its staff is small, and with important exceptions it lacks training, seniority, and will to take bureaucratic risks that might make CEA more effective despite institutional constraints. Rather than vigorously support the budding independent environmental NGO movement in Sri Lanka with informal encouragement and constant supplies of information, as its counterpart CEQ has done in the US, the CEA has sought to manage NGOs or to keep its distance from them; it has largely neglected its role as public educator on environmental affairs. It has not vigorously pushed agencies to integrate environmental assessment with their natural resource development plans, nor is it yet prepared to assume the daunting pollution control duties required by the newly-passed NEA amendments.

CEA must nevertheless oversee environmental policy, coordinate and initiate environmental programs, and educate the public. To do all of this it may need to delegate, with effective oversight, its new regulatory responsibilities, perhaps to a number of existing agencies, if only for a few years. Otherwise CEA may be swallowed up by its need to be a permitting and EIA-reviewing agency, neglecting its overall policy coordinating function and its critical role in natural resource management and public education.

2. Land Use Policy and Planning

a. Scope of Land Use Planning

Sri Lanka's need for an integrated land use plan has oft been cited in reports by environmental experts,³⁸ but no such requirement exists and a detailed national plan may be practical. At the regional or district level, however, Sri Lanka has recognized the need for protection of critical catchment and habitat areas, and specific needs to relate on-going state land management and alienation policies with environmental criteria.

There are three major categories of land in Sri Lanka -- private land (about 9,050 sq. km, or 14 percent),³⁹ land on which titles are unsettled (mostly in dry zone), and Crown (state) land, including:

- o lands belonging to agencies (Forestry, Wildlife, etc.)
- o alienated land (land under large development projects)
- o unalienated land (8,000 sq. km).⁴⁰

No comprehensive land use act exists for these state lands. Although several laws cited above affect land use planning and regulation on state and/or private land they have limited scope or effect.

Most land laws concern the distribution of state land, rather than the determination of appropriate land use. The Land Development Ordinance of 1935 did, however, require the mapping of state land for villages, forests, chena cultivation and other purposes on a national basis, without regard to district boundaries, giving primary consideration to conditions of slope, water availability and suitability for habitat. The Crown Lands Ordinance of 1947 also sought to protect streams, waterways and public lakes, and it restricted alienation of land over 5,000 feet in elevation through a centralized, but often locally delegated, alienation authority.⁴¹ After independence, however, the authority to sell state land diffused under corporations established by the Industrial Corporation Act, the National Housing Development Authority, and the Urban Development Authority. For example, approximately 12,000 hectares of marginal land have been given for disposal to Lanka Estates Development, Ltd, and another 20,000 hectares to Government Agents.⁴² Alienation decisions of the Land Commission have, at least until recently, become increasingly divorced from central land use planning considerations.

b. Land use planning and soil conservation

The first step to improve land use planning after independence was the Soil Conservation Act of 1951, which Parliament passed unanimously after serious landslides in Kotmale Valley. Soil erosion problems had been recognized on plantations and tea estates since the 19th century. The law envisaged comprehensive soil conservation in the hill country by the Ministry of Agriculture and Lands, which at the time had sole jurisdiction over nearly all cultivated and cultivable state lands.

The Act has been ineffective, without a single documented case of its application.⁴³ One reason is the dispersal of land management responsibilities due to the large number of government agencies and authorities created since the 1951 act; soil erosion control is now the responsibility of several divisions within the Ministry of Agricultural Development and Research. Forestry, irrigation, and soil erosion policy is now under the jurisdiction of the Ministry of Lands and Land Development. In fact, unlike the US Soil Conservation Service, which is the single most important part of the Department of Agriculture, Sri Lanka's soil conservation functions are spread among 25 of the 38 agencies concerned with the problem in various ministries.

Lack of trained staff to monitor and provide technical assist to land owners and "lack of Government will to enforce soil conservation regulations"⁴⁴ are other reasons for its failure. Whereas in 1962 the SCS had 63 staff, by the end of 1986 it had one part-time senior officer and three field officers.

More basic reasons for the law's failure: its reliance on regulatory and technical controls which can only work as a supplement to strong support

for conservation measures that provide immediate, measureable benefits to rural farmers.⁴⁵

The soil conservation report published by CEA in 1986 recommended several reforms:

-- "[A] new Act embracing the complementary areas of Land Use and Soil and Water Conservation should replace the present Soil Conservation Act," giving regulatory authority to the Department of Agrarian Services and leaving research to the Department of Agriculture;

-- Provisions for imposing penalties, removal of crop or building, similar to provisions of Irrigation Ordinance that authorize Government Agents to remove any unauthorized obstruction or encroachment to a channel, watercourse or tank, and to require owner to pay for expenses.

-- A National Co-ordinating Center for policy making and compliance monitoring;

-- Require all land use-related institutions to have a soil conservation component;

-- Require land use management based on watersheds. A soil conservation specialist should be in each admin. district, with more in the districts declared erodible.

An interim report of the National Land Commission in 1986 (a temporary institution created in the 1920s, 1940s and in the mid 1980s, to address specific land tenure and related problems) also recommended establishment of a Watershed Management Authority.⁴⁶ Revisions of the Soil Conservation Act are being developed by the Land Use Policy Planning Division of the Ministry of Lands and Land Development (see below).⁴⁷

A UNDP consultant's report on land use programs in Sri Lanka was skeptical of the benefits of increasing the authority of the Soil Conservation Service and adding a new watershed authority because of the profusion of existing authorities. Instead, it recommended more coherent use of existing authorities, a program of soil conservation research, training for farmers, technical manuals on practical soil conservation measures, and cooperative arrangements with field extension agents. Most important of all, soil conservation needs to become an integral part of rural development programs and land use planning at the district and national level.⁴⁸

c. Land Use Programs of the Ministry of Lands and Land Development

To help rationalize land use planning, the government established the Ministry of Lands and Land Development in 1978, held a land and water resources conference the next year, and established in principle an Inter-Ministry Coordinating Committee for Land Use and Development, a Land Use Policy and Planning Division (LUPPD) in the Ministry, and District Land Use Planning Committees. In 1983 the government sought help from FAO to implement these programs with funding from the UNDP.

The UNDP/FAO project, renewed in 1985, lasted until May 1988. Phase I focused on analyzing existing land use data and data systems, coordination of land use planning within the Ministry, and guidelines for mapping and planning. Phase II added training of national personnel, memoranda on planning needs for the Land Commission, and operational support. Total UNDP assistance for the two phase project amounted to \$668,000, and the government contributed an additional Rs. 2.8 million.⁴⁹

The project faced substantial barriers, in part because of the involvement by multiple agencies. As one commentator described the situation mid-way through the project.

There is hardly any linkage between departments and other agencies as to the need or the priority in the appropriation of land resources....[T]here is hardly any organization either at the village level, District level, or even the national level where programmes of various organizations, whether private or public, are discussed and decisions made as to the [land use] priorities.⁵⁰

By one estimate, 14 separate government ministries are concerned with land use planning, which includes the 25 often competing agencies within ministries and 26 authorities, boards and corporations. For example, in Hambantota, the Integrated Rural Development Project counted 64 government and non governmental organizations with whom they had to work.⁵¹ The UN project listed 33 agencies associated with the LUPP Division and the project.⁵² Even by US standards, with local, state, and federal permit reviews, decision-making is complex.

Aid for Sri Lanka's Land Use program continues. The Asian Development Bank is currently providing Sri Lanka with \$23 million over five years to improve the land-use planning process by strengthening technical and analytical capabilities (digital mapping, aerial photography), supporting the development of data bases on soils and property ownership, and helping the LUPP Division establish district land use planning capabilities.

Mapping Capabilities for National Land Use Planning: Sri Lanka has had an ongoing land mapping program. From 1925 to the mid 1960's the Survey Department, now under the Ministry of Lands and Land Development, prepared topographical maps of 1":1 mile (about 1:63,360) approximately every five years. In 1979, with help from USAID, the Department converted the system to metric scales. Ninety-two maps have been completed at 1:50,000, of which about half have been printed, and 150 maps have been published on the scale of 1:10,000, out of the 1,800 planned. Publication generally comes three to five years after data gathering.

In addition to the Survey Department's portion of ADB support (\$12 million) its land use mapping program has been carried out with technical assistance and Rs. 2 million annually from the Swiss Government's Remote Sensing Project over the past several years. Land use maps at a scale of 1:100,000 are being published by District. The Survey Department has completed more than half of the 25 districts, using topographical maps and areal photos of 1:20,000. Land Satellite data will be used to revise these

maps, and Sri Lanka has an arrangement with Thailand to buy spot data as needed. The Department is now preparing a National Atlas of Sri Lanka with 58 multi-color maps (1:1 million), including maps showing land use, major crop production, irrigation, settlements, public and private sector industries, electric facilities, transport facilities, and so forth.

Soil mapping under the ADB grant is being carried out by the Irrigation Department of the Ministry of Lands and Land Development. Its Land Use Division was set up in 1956 under a cabinet circular to do land use planning for the entire country, but its staff has been cut and many of its functions transferred to the LUPP Division in the Ministry.⁵³ A National Soil Survey map was completed in 1986, following US Department of Agriculture soil classifications.

National Land Use Training: The District Land Use Planning Committees established in name in 1979 are chaired by the Government Agent, composed of representatives of major agencies in the district, and charged, among other duties, to map state lands of the district for specific uses, prepare plans, and evaluate development proposals prepared by line agencies. The ADB program intends to follow up work begun by the UNDP/FAO and will give these committees technical support through District Planning Officers and the LUPP Division of the Ministry.

Under the ADB program the LUPP Division is training about 20 Planning Officers for districts outside the north and east. The initial six week training by visits to the major agencies in Colombo has been completed, and each candidate is now in his district working with local assistant land commissioners for 2 months, after which all will return to Colombo for 48 weeks, including 15 weeks field training in an array of technical subject areas. Technical guidelines on land use planning have been completed and published for district personnel.⁵⁴

National Land Use Analysis: The philosophy of the LUPP Division is that for Sri Lanka the major land use planning question is not what needs to be done but what can be done. While easy to identify needs -- for ecosystem and watershed planning, for example -- it is more difficult to undertake what is also practical. Presently the LUPP Division funds a professional staff of 9 (Director, three Deputy Directors, 5 Assistant Directors) in addition to the approximately 20 District Land Use Planners being trained and 4 cartographers. ADB funds support a senior land use planner (foreign consultant) and a national consultant. Overseas fellowships and study tours are also supported by ADB.

Service to the Land Commission: By concentrating on the unalienated state land, encroached upon and unencroached, the LUPP Division directly serves the needs of the Land Commission, another agency of the Ministry of Lands and Land Development. The Commission, with 5,000 employees, is responsible for the development and conservation of all state land available for settlement except land under the Mahaweli Authority and the 900,000 acres taken from private owners in 1972 and now under the Land Reform Commission.⁵⁵ The Commission seeks to conserve lands needed for stream, watershed, and irrigation system protection, and will reserve for

reforestation all lands not otherwise suitable for agriculture. The rest it will distribute to respond to pressing social and political problems of the unemployed in rural areas. The amount of land in this category is unclear, however, and its boundaries are uncertain. District maps (1:100,000) show the land but the scale is too small to define boundaries, nor do they show ownership. The immediate need is to identify where this land is, how much there is, and what the land is best suited for. The LUPP Division intends to focus on these questions. District offices will determine land suitability and use, based on information supplied by the Division.

Future directions: After this work the LUPP Division plans to identify forest land ownership and use and identify landslide hazard areas and erodible land. Recommendations of the UNDP/FAO consultancy report on its now-completed land use program encouraged more attention to soil conservation, including planning for viable holdings, farm units, and sustainable production, through the LUPP Division and its District Land Use Planning Committees.⁵⁶

d. Comments on the LUPP Division and the land use program

This program has benefited from substantial and relatively long-term UN and especially ADB support for the LUPP Division and supporting technical mapping and data base capabilities. Continued political turmoil complicates the development of District Planning Offices and the training of new district planning officers, but attempts are being made to build local capabilities to make sound land use decisions. The ranks of qualified land use experts are thin, however, so the whole program is vulnerable to delays and disruption if key people depart.

The potential policy and district implementation role of the LUPP Division will be important to encourage. Its capacity to meet the needs of the Land Commission rapidly and on a sustained basis is particularly critical. Beyond the organization's sustenance, mechanisms are needed to apply its data to programs of other agencies, such as the Forest and Wildlife Departments.

[Note: The Thirteenth Amendment to the Constitution gives Provincial Councils most basic land use authority subject to specific provisions. It also calls for a (technical) National Land Commission to develop technical criteria for land use evaluations, including a range of environmental factors. Provincial Councils are to give "due regard" to the national land use criteria of the National Land Commission. This Commission has not been established, and the fate of Provincial Councils is unclear.]

E. Environmental Management Programs

This section assesses the environmental role and capabilities of key agencies concerned with forestry, soil erosion, aquatic and coastal zone resources, and pollution control. The sketch is general, and more information is needed to determine fully how each agency functions, whether and how it achieves its goals, and the quality of its work.

1. Forestry and the Forest Department

a. Jurisdiction of the Forest Department

Of Sri Lanka's 2,525,000 ha of forests and scrub lands, 1,471,000 ha are in the dry zone, 278,000 ha in the wet zone, 664,000 ha are shrubforests and scrublands, and about 104,000 ha are forest plantations. About 656,000 ha of forests, or 26 percent, are protected areas managed by the Wildlife Department.⁵⁷ The Forest Department manages another 127,000 ha of forests, which represent different ecosystems, as Man and Biosphere reserves, of which Sinharaja Forest (8,500 ha), and Hurulu/Anolundawa (542 ha) are designated International MAB Reserves. Most of the remaining land, approximately 1,700,000 ha of "productive" forests, is managed by the Forest Department.

b. Programs and Staff

The primary concern of the Forest Department has been to manage forests for timber production, although timber harvesting on state forest lands is the job of the State Timber Corporation. Recently, the Department's major activity has been reforestation,⁵⁸ largely supported since 1980 by USAID. Reforestation of chena lands and other degraded lands with pinus, eucalyptus, and acacia in the Upper Mahaweli Catchment and in the dry zone peaked at 7,000 ha per year in the early 1980s. It declined to 3,000 ha in 1988 with minimal reforestation planned in 1989 after the USAID program ends. Replanting falls far short of the recommended reforestation of 10,000 ha per year (minimum coverage of 30 percent and more in the catchment areas) that was recommended by a Parliamentary subcommittee in 1984.⁵⁹

Other programs include silvicultural and entomological research (seven professionals); planning and inventory work (12 professionals); forest protection and enforcement (over 4,300 forest offenses registered of which five resulted in jailings); community forestry (46 professionals); forestry education and extension (which sent 52 officers to the U.S., Philippines, and Thailand, and 14 trainees to Thailand).

The small forestry research program seeks to diversify plantings and ultimately to reforest the 1 million ha of degraded lands. A staff of four includes three research scientists.

c. Staff Training

The Department has 14 Forest Divisions throughout the country, served by 58 Rangers, and 328 are Forest Beats. The Sri Lanka Forest College at China Bay, Trincomalee was expanded in 1984 to train forest guards, rangers, and others but has since been replaced by a new college at Nuwara Eliya. Capacity for training 15 students per year as forest rangers exists at Sri Jayawardenapura University, which is judged to be adequate to meet the immediate needs of the Department and the State Timber Corporation. Estimated staff requirements for the forestry sector in the year 2000 are about 180 professionals, 600 technicians, and 1,900 foreman/supervisors.

d. Development of the Forestry Master Plan

Indicative of the Forest Department's institutional perspective and capacity is the Department's process in developing a Forestry Master Plan for Sri Lanka.

The 1980 TAMS report first suggested the need for a forestry master plan to conserve Sri Lanka's dwindling forests.⁶⁰ Following a World Bank forestry review, begun in 1979, the Ministry sought a Forest Resources Development Project to develop a data base and comprehensive forest management program. In 1983, helped by the World Bank and Government of Finland, the Ministry asked the Finish consulting company Jaako Poyry International to develop the master plan. The Department, UNDP/FAO, and the World Bank carried out a National Forest Inventory from 1982-5 to support the plan, and the consultant carried out fourteen other studies on various technical aspects of forestry, under the auspices of the Forest Department and the State Timber Corporation.

The primary goal of the Plan: "to develop forest and non-forest resources so that the country would be self-sufficient in the supply of fuelwood and industrial wood," while at the same time protecting soil and water, flora and fauna.⁶¹

The Plan completed by the consultant in February 1986 proposed a Five Year (1988-92) Investment Program calling for increased timber production through intensive management of the 119,000 ha of forests of the wet zone - those not protected as reserves. A similar plan was not presented for intensive management of the 735,000 of potentially productive, but largely logged-over, forest land in the dry zone. The Program envisaged an expenditure of Rs 2.48 billion, of which Rs 1 billion would be foreign exchange -- 31 percent for establishing industrial plantations, 15 percent for forest management, 13 percent for education and research, 10 percent for forest protection, and 7 percent for forest extension. Annual funding would also complete the Forestry College at Nuwara Eliya.

In May 1986 the Department sent the Plan for review to the Central Environment Authority and the Natural Resources, Energy and Science Authority of Sri Lanka (NARESA). Both agencies criticized the report in government meetings, but a CEA member resigned to protest CEA's failure to object strongly. A revised report was publicly released in September 1986.

Criticism of the Master Plan: The Master Plan evoked strong reaction from environmental organizations in Sri Lanka, voiced in the press and two public seminars held by the Sri Lanka Association for the Advancement of Science and the Ministry of Lands and Land Development. Critics focused on timber-oriented plans for intensive, short-cycle harvest of relatively small and fast-diminishing wet zone forests, apparently without regard to sustainability or environmental impacts. University and NGO spokesmen criticized the Department for failing to involve the public in development of the Plan. When the World Bank announced its intention to support part of the Master Plan's implementation, the USAID/Colombo mission cabled its concern to Washington, pursuant to the "early warning system" of commenting on proposed projects of the multilateral development banks. USAID questioned assumptions and cited problems for the World Bank to address before approving its intended \$42 million implementation program.

Response by the Forest Department: The vehemence and substance of criticism took the Department by surprise, and in response it sought to justify its Plan against comments it believed extreme and misinformed. Environmental groups still seek an EIA on a revision, but the Forest Service intends to implement the Plan, apparently without further change, but much depends on World Bank reaction. EIAs may address parts of the Plan in the future, although the Department lacks experience in applying EIAs to management programs.⁶² The Forest Department apparently never seriously considered an EIA for the Master Plan, and CEA never required one.

Nor did the Department seriously contemplate public participation in developing the Plan. Its forest management planning system does not require or facilitate public involvement at the national or local level. The Department has explained its position by emphasizing opportunities for participation through the community forestry program, meaning village participation in tree-planting and care,⁶³ although some Department officials are familiar with the highly-developed U.S. Forest Service planning and public participation process.

e. Comments on the Forest Department

The Department is responsible for the single most important environmental resource in Sri Lanka, its forests, but it has not integrated environmental information into its plans and decisions. In Sri Lanka, as in so many other countries, traditional timber-orientation dominates forest management. Insensitivity to other valuable forest use was evident in the Plan's estimate that lost timber production from the protected forests cost about Rs 3.5 billion annually, along with the loss of 8,500 potential jobs -- a mischievous observation that diminished the Department's credibility within environmental groups.

The Forest Department appears to have limited ecological information or research programs on the present or potential functions and values of its forests, or on the environmental impacts of forestry practices or proposals. Operational use of environmental data that does exist, and development of clear, publicly understandable planning processes, have not yet occurred. Strong donor assistance has given the Department substantial information on

forest timber resources, however. The planning office has also improved its capacity to carry out computer mapping for watershed planning and forest management, road construction, and harvest. But it is unclear how this capability affects planning decisions, and it is not yet coordinated with the mapping and land use work of the LUPP Division and other agencies within the same Ministry.⁶⁴

Forest planning and management at the district and local level is difficult for outsiders, at least, to understand -- an example of what the Administrative Reform Committee called procedural "mystification" -- and is invisible to the public. How harvest plans are actually implemented by the State Timber Corporation to protect the environment is equally unclear.

The role of the World Bank in reassessing, refining, and implementing a Forestry Master Plan will be critical in determining whether or not the Department will expand its environmental perspective and capabilities.

2. Wildlife Management and the Department of Wildlife Conservation

a. Jurisdiction of the Department of Wildlife Conservation (DWC)

The DWC manages over 700,000 ha of forests, which includes 541,000 ha of natural high forest and 6,000 ha of forest plantations. Lands are incorporated under the following management categories, roughly arranged from the most to the least protective:

- Strict Nature Reserves (no disturbance, entry with permit, 60,600 ha);
- National Parks (no disturbance but public visitation, 420,000 ha);
- Nature Reserves (no park development, existing uses, 3,700 ha);
- Sanctuaries (no disturbance, existing uses, 206,400 ha)
- Jungle Corridors (animal pathways, existing uses, 5,800 ha);
- Intermediate Zones (a classification being eliminated, 36,000 ha).⁶⁵

b. Staff and Management

The Department is situated within the Ministry of State along with the Mahaweli Environment Project. Its 1988 budget is Rs 1.5 million, but its Director requested Rs 14 million to increase field staff and add equipment. It soars to Rs 2 million in 1989. The field staff of 446 includes guards and rangers. Beginning in 1989 DWC will upgrade to the civil service A rank, which may result in more staff and funds.

DWC has a limited public awareness program. It offers a few publications on its parks but lacks a publication program.

New projects planned include the upgrade of Horton Plains to a National Park, to be joined by the Peak Wilderness also as a new park. Plans are underway for a corridor between Uda Walawe National Park to a new park adjacent to Yala National Park in order to protect the range of the 160 elephants in the area from settlement pressures.

Management Problems: The Department acknowledges major problems posed by the closure of most parks to public visits, threats to DWC rangers, and loss of arms and equipment from terrorist raids. It perceives its funding as grossly inadequate, despite the civil service boost. The Director would like more secure funding earmarked from visitations and improved enforcement capabilities.⁶⁶

c. Comments on the DWC

The Department apparently suffers from poor management, sense of mission, paltry budget, and demoralizing program disruptions. It has concern on elephant protection and maintaining facilities and staff with little or no long range strategic approach to its mission. What DWC lacks and needs:

- Professional wildlife and ecosystem management capabilities from top to bottom that can drive DWC programs and priorities;
- Planning and operational links, formal and informal, with the Forest Department and the land use programs of the Ministry of Lands and Land Development;
- A planning process for developing and involving the public and other agencies in new park and habitat protection programs;
- A publications and public education program;
- Involvement in the habitat protection policies of the government, including assessment of the impacts of government actions on parks and reserves, and responsibility for facilitating Sri Lanka's acceptance of the Ramsar (wetland protection) Convention;
- Capacity to commission and publicize studies of the economic importance of wildlife (to tourism and other activities) as well as the ecological requirements and benefits of wildlife and habitat protection.

3. Aquatic Resources and The National Aquatic Resources Agency (NARA)

a. Basic Authority of NARA

NARA was created as a research agency within the Ministry of Fisheries in 1981 in response to Sri Lanka's interest in developing the fisheries and ocean resources available for economic use following the Third UN Conference on the Law of the Sea.⁶⁷ It requires NARA "to ensure the application and utilization of scientific and technological expertise for the implementation of the national development programme on the subject of aquatic resources."⁶⁸ NARA is the principle entity among two others created in the same field -- an advisory National Aquatic Resources Management Council, representing public and private interests, and a Ministerial Committee for Marine Affairs. Although fisheries and ocean resources remain NARA's primary concern, it must also promote and conduct research for "the development, management and conservation of aquatic resources, in the inland waters, coastal wetlands and off-shore areas."⁶⁹

b. Staff and Program

NARA functions as a public statutory corporation, headed by a Chairman, operating under a Governing Board. Its budget of Rs 15 million for 1988 has held steady for several years, with additional funds from foreign donors. UNDP support for a two year and three months NARA Institution Building project, first sought in 1981, was obtained in 1986. The \$780,000 project intended to establish a trained cadre of personnel, an aquatic resource data base, and a pilot study on marine impacts.

Staff: A total staff of 250 includes 50 scientists, 100 mid level technicians, research assistants, and 100 clerks, secretaries, and others. The 50 scientists receive additional training on the job. Eight have Ph.D.'s and another eight are working on them in Sri Lanka, the U.K., and one with Scripps in the U.S. with UNDP/World Bank support.

Facilities: NARA has a spacious campus setting near the mouth of the Kelani River and a laboratory for research. Facilities next door offer training in cooperation with the Sri Lanka Fisheries Training Institute; NARA provides most of the teaching staff, and the excellent facilities cost about Rs 3-4 million -- a gift of the Japanese -- but are now underused. Although NARA's field station at Trincomalee is now gone, it has another at Negombo, where an interpretive center is being set up with NARESA with some World Bank support. A research vessel (the 24.5 meter fiberglass "SAMUDRA MARU"), also donated by the Japanese and upgraded by NARA at a cost of Rs. 2 million, gathers data on physical, chemical, and biological oceanography and conducts some geological studies.

Organization and Current Projects: NARA has seven basic programs, most of which were supported by the UNDP project that ended in 1986.

1. Oceanography: In addition to its 200 mile exclusive economic zone under Law of the Sea Convention has "exceptional continental shelf jurisdiction in respect of a continental margin extending several hundreds of miles beyond the Exclusive Economic Zone," which results in a maritime territory of 500,000 square miles.⁷⁰ Little oceanographic information existed beyond the 200 meter zone before independence, and so NARA's established its oceanography unit in 1982 with one research vessel and another coming in 1990. NARA explored for minerals and found extensive deposits of heavy minerals (strontium, magnesium) in sand and clay bottom sediment of continental shelf, which it estimates is worth \$300 million and is exploitable with a mere \$100 million investment. It is negotiating with the UN Revolving Fund to examine the potential for exploitation, including studies of impacts on fishing.

2. Biological unit: This unit has seven research officers plus other support. Research focuses on specific commercially viable species, and researchers take fish samples at 10 commercial landing sites to measure catch and effort, length and frequency, maturity, feeding.

3. Environmental Study unit: Its major concerns include oil pollution of the sea due to heavy shipping along the south coast, the conservation of the Muthurajawala marshes, and the resurrection of trout fisheries around Nuwara Eliya. The unit also monitors the effluent from industries within the Greater Colombo Economic Commission's Industrial Promotion Zone. NARA tests the effluent twice each month under contract with GCEC.

4. Inland Aquatic Resource Division. Among its major projects is site selection for prawn culture on the west coast south from Puttalam, where four major lagoons are potential sites, and the study of shrimp diseases in hatcheries.

5. Post Harvest unit: It studies the handling, processing, and marketing of fish and shell fish.

6. Information system unit: NARA is developing a system for gathering data, establishing a data base, and making it widely available through directories and reports. The International Center for Ocean Development, Canada, funds the effort.

7. Extension unit: An energetic public relations unit gets NARA views and material out to the public. It has its own offset printer thanks to a UNDP grant. It has concentrated on using television and has regular news items on fisheries. Reports and photographs are available to the press, and the unit takes credit for publicizing NARA's early concerns about the Trincomalee Coal-Fired power plant with information packets for the press, and initiating contacts between press, CEB, and the NGOs. Recently it publicized NARA's concern about development in the Muthurajawala marsh.⁷¹ The unit director recently visited Halifax, Canada, to learn about offshore technology and communication techniques.

c. UNDP Evaluation

A UNDP evaluation report on its NARA project assessed results and found them generally satisfactory, given the range of specific projects intended to enhance NARA's research and training.⁷² Included were projects on oceanography, marine biology, aquaculture research, coastal assessments for prawn culture, environmental studies, data processing, and the establishment of a library and information center. It noted serious organizational, managerial, administrative, and procurement problems but concluded that NARA's capacity had been substantially strengthened. It found the oceanographic results satisfactory and gave high marks to results from the marine biology research program. The team concluded that,

although the calibre and potential of most of the young scientific staff at NARA is outstanding for a developing country, serious difficulties appear to exist for harnessing their full potential, because of the nature of salary levels, contract arrangements, and the private sector and international market that exists for high calibre scientists in these fields.⁷³

d. Future Projects and Needs

NARA has developed a proposal through NARESA for Swedish assistance for a large coastal ecosystem study of Rs 30 mil. over 5 years. As a multi disciplinary study of functions, values, human impacts, and trends, it would result in Ph.D.s for 8 to 10 people. Presumably it will produce material for management plans and models for use elsewhere. The three main projects: study of the Puttalam/Mundal estuarine system; survey of coastal reefs of Sri Lanka; and a study of two important river systems and their pollution transport -- the Kelani and the Kalu rivers.

Identified Needs: Among the needs identified by the Director General:⁷⁴

-- Facilities for studying the rising problem of fish disease, and to identify viruses that have been introduced and cannot be attributed to pollution. Australia has a strong program on this that NARA should tie into.

-- Fish populations are definitely decreasing in Sri Lanka due to pollution. One example is the Batticaloa fisheries adversely affected by paper mill pollution, and the lack of fish in the Kelani River since its pollution over the past 20 years.

-- Data on fishery resources and trends.

-- Coral reef protection. A proposal had been developed for protecting coral reefs through a marine park at Hikkaduwa, but tourism essentially destroyed the reef. NARA is now supporting a proposal for a marine park at Unawatuwa.

-- Rejuvenate NARA's training facility to address three audiences in 6 to 10 week courses: at the craft level, to train teachers of fishermen; fish inspectors; extension people concerned with fishery biology.

e. Comments on NARA

NARA has greatly benefited from able, energetic leadership. It has a relatively high percentage of scientists and Ph.Ds, excellent facilities, and exercises effective public communication. Its focus on conservation of the Muthurajawala marsh and Trincomalee power plant shows willingness to engage other agencies and get public attention.

NARA's future depends on the quality and utility of its scientific research and its service to other program agencies. The lack of close working relations between CCD and NARA is unfortunate. NARA should meet CCD's needs for surveys of estuarine functions and values, and data on coastal water quality. CCD should be closely associated with NARA's proposed coastal ecosystem study. Similarly, NARA's inland fishery and marine park interest should support work of the Department of Wildlife Conservation and the Inland Fisheries Department. NARA's cooperation with other on-going agency research, such as the work of the National Building Research Organization on Bolgoda Lake (see below), also needs attention.

NARA's strong emphasis and high investment in oceanographic work is justifiable but deserves assessment in terms of opportunity costs to other possible priorities, such as environmental monitoring of aquatic impacts. NARA's concern about the effects of industrial and urban development on coastal and inland water quality is well-placed, however. Facilities and training are needed to assess the effects of pesticides, heavy metals and other pollutants on natural systems, and to assess the functions and values of these systems. Laboratory equipment and expertise should be shared among several agencies.

An underlying weakness affecting all environmental research entities in Sri Lanka, is the lack of support and opportunity for scientists -- low salaries, limited facilities and information, and so forth. NARA, however, is relatively well-fixed compared to the Departments of Forestry and Wildlife. Its encouragement of in-country training for Ph.D's, supplemented by training abroad, is a practical, if limited, response to the salary and training problem.

4. Coastal Resources

a. Jurisdiction of the Coastal Conservation Department (CCD)

The CCD, also located within the Ministry of Fisheries, exercises regulatory control through a permit program and ability to require EIAs for development projects "within" in the narrowly defined coastal zone. Limitations of the existing authority have proved troublesome in regulating or requiring EIA's on activities outside, but significantly affecting, the coastal zone. The three major concerns of CCD are coastal erosion, conservation of natural coastal habitats, and conservation of cultural and recreational areas.

b. Program

To support its permit and planning program within its narrow coastal zone CCD will receive \$448,000 from USAID from 1986 to 1990. It has received technical assistance from the Danes in preparing its Master Plan for Coast Erosion Management, Danish coastal construction assistance for work at Negombo, and support from the Federal Republic of Germany. Its annual budget has been approximately Rs. 200 million.

Regulatory programs: The Coast Conservation Act requires an EIA on projects in the coastal zone, including the provision for public comments, if determined necessary by the CCD Director. The Act requires that no permit shall be issued by CCD unless it is consistent with the Coastal Zone Management Plan and "will not otherwise have any adverse effect on the stability, productivity and environmental quality of the coastal zone."⁷⁵ The Act also requires that an EIA should analyze alternatives less harmful to the coastal zone environment and why these have been rejected.⁷⁶ Virtually all of CCD's permit actions -- about 500 annually -- are determined to be environmentally insignificant and have been handled by means of IEEs. EIAs have been required only twice, on the Trincomalee energy project and another on an aquaculture project that was dropped before EIA completion.

Two recent major development projects, discussed below, reveal the constraints, procedures and institutional context of the CCD as a coastal zone manager. One was the focus of strong public interest for which CCD required an EIA, and the other, just outside CCD's jurisdiction but affecting the coastal zone, has received strong political and agency interest.

Trincomalee power plant: In March 1987 the Ceylon Electricity Board (CEB) requested a CCD permit for a coal-fired power plant within the coastal zone at Trincomalee. CCD's Director required an EIA, the second one ever required by CCD, which CEB asked TAMS to prepare, and it was submitted to CCD in September 1987. A group of nine environmental NGOs, led by the Environment Foundation, heard about the EIA in November,⁷⁷ and on December 3 the CCD published its Gazette notification of the availability of the EIA for public inspection. Although objecting to the one month comment period during the holidays, the nine NGOs filed timely critical comments with CCD, challenged the EIA's adequacy, and cited significant adverse effects on air, water, and land resources. The comments were referred to the CCD's Advisory Committee, which heard the NGO and CEB positions. The Advisory Committee recommended against the permit and opposed CCD's proposal for creating a panel of experts, including NGO representatives, to review the EIA. The CCD itself held public hearings, and in mid March 1988 it rejected the permit after finding the EIA deficient. The CEB appealed to the Minister of Fisheries, as the Act provides, but the Minister affirmed the CCD rejection in June. The project may be dead, in terms of size and location, but CCD and other agencies will review a revised EIA filed by CEB.

Like the Forestry Master Plan, this Trincomalee proposal evoked strong public interest and press response -- an estimated 50 news clippings, articles, and cartoons published between December 1987 and March 1988.⁷⁸ Increased public support for CCD's program may have been one of the benefits.

On the other hand, it also exposed some CCD limitations. The EIA review required substantial technical expertise unavailable within CCD. CCD staff also recognized that the proposal highlighted the need for a comprehensive development and conservation plan for the harbor area that would analyze needs and possible locations for a power plant as well as oil tank farms, tourist facilities, and so forth. CCD has no authority to prepare such a plan, which is within the Urban Development Authority's jurisdiction.

Muthurajawela marsh development: A somewhat less visible current controversy involving CCD's staff and jurisdiction has arisen over a proposal to fill 600 acres of the 7,000 acre Muthurajawela marsh bordering and generally south of the Negombo Lagoon. The project is proposed as a pilot industrial and housing development consistent with other agricultural, fishery, and horticultural uses of the marsh region.

The entire 7,000 acre marsh lies with the jurisdiction of the Greater Colombo Economic Commission (GCEC), and the government has approved legislation, drafted by the Ministry of Lands and Land Development, to establish a Muthurajawela Development Authority to formulate a

comprehensive plan. Members of the Authority would include the Sri Lanka Ports Authority, the Industrial Development Board, the National Housing Development Authority, and the GCEC, but not CCD.

The proposed 600 acre fill, located in the south center of the marsh but draining into the Kelani River, has proceeded independently from the development of an overall marsh plan. The Sri Lanka Reclamation and Development Authority (SLRDA), a government corporation whose mandate is to fill and develop wetlands, would undertake the project under a contract to a Dutch firm. Money for the project would be drawn from a fund the Dutch government has made available to Sri Lanka.

Because the proposed fill lies just outside the present land-side coastal jurisdiction of CCD, and fill material would come from the sea just beyond the sea-side coastal zone boundary, CCD could not require an EIA on the project. Any such requirement had to come from the CEA, with its more limited EIA authority provided by cabinet order.

Uncertainty about whether an EIA would be prepared may have been resolved after a CEA letter to the SLRDA in September 1988, which recommended an EIA on the project. A monitoring committee consisting of the CCD, NARA, GCEC, and CEA has been appointed to ensure that an EIA is adequate.

Although the EIA question may have been resolved, as with the Trincomalee power plant proposal, project development decisions preceded overall area-wide coastal zone planning. CCD's capacity to manage coastal zone planning is therefore severely limited. In the case of the Muthurajawela, whose proposed development plan may be prepared after decisions on a key project component, CCD is not even a member of the planning authority.

Program Needs: CCD staff cite several immediate needs:

- o Greater authority. Amendments to the Coastal Conservation Act planned to be introduced in Parliament in the near future may give it authority to declare an area, such as an entire lagoon, part of the coastal zone. Additional amendments being considered would give CCD authority address a nagging coastal problem by allowing it to stop coral reef destruction by confiscating kilns used to convert coral into cement powder.
- o Training in environmental impact analysis. This is needed for CCD staff and other government agency and corporation personnel. Agencies like the Sri Lanka Reclamation and Development Authority, which may be required to prepare EIAs, need to know how to organize an EIA, obtain data, procure services, find local consultants, and establish an EIA team.
- o Professional training for CCD employees. This is increasingly important because CCD has difficulty in hiring personnel experienced in coastal management, planning, and regulation.

o Data on estuarine and coastal wetland functions and values. Such information, needed to classify estuaries, assess trends on coastal pollution and fishery habitat losses, would help CCD and, if devolution proceeds, Provincial Councils, carry out permit responsibilities.

c. Comments on CCD

This agency appears to be well-organized and effective as a regulatory agency. It should be a major participant in all coastal zone management decisions, such as the comprehensive development plan of the Muthurajawela Authority. It needs more trained staff to support the workload of its permit program and close working relationships with NARA. More than any other agency, CCD has experience in working with NGOs who have commented on EIAs. With additional staff support and revision of its public participation procedures to respond to problems arising from the power plant review process, CCD can set a strong example for other agencies to follow by facilitating constructive NGO participation in major permit decisions.

5. Industrial Pollution Control

Several government institutions have been involved in developing pollution control standards, and a few agencies, notably the Urban Development Authority and the Greater Colombo Economic Commission, have substantial experience in pollution control through permitting. The Occupational Hygiene Division of the Ministry of Labor has also analyzed industrial pollution hazards to workers. These capabilities will be invaluable now that the 1988 NEA amendments require CEA to establish pollution control standards and a pollution permit system.

a). Urban Development Authority (UDA) and the National Building Research Organization (NBRO)

UDA permit responsibilities: UDA is a component of the Ministry of Local Government, Housing, and Construction. Under the Urban Development Authority Act, UDA must evaluate development permits for industrial and infrastructure activities within the 51 urban areas comprising about 15 percent of the country. UDA has is now decentralizing its permit authority while maintaining oversight through a UDA planning officer in each area. When UDA found difficulty in meeting EIA requirements for its permit actions it sought help from the NBRO, its research wing concerned with the built environment. In particular it needed help evaluating the many industrial permit applications not big enough to require EIA's but still troublesome. It considered the CEA EIA handbook too general and unclear for guidance on Initial Environmental Examinations.

UNDP project support for NBRO: The NBRO has been, from its inception, a largely self-sustaining organization whose revenue from consulting and testing services has met most of operational requirements.⁷⁹ In 1986, however, NBRO began a major expansion following a grant from the UNDP for a three year, \$1.08 million institution-building program, supplemented by ministry contributions of Rs. 6.84 million for research.

The UNDP grants supported seven specific divisions: Geotechnical Engineering, Building Materials, Structural Engineering Research, Computer Center, Project Management Training, Human Settlements, and the Environmental Division. The grant included a total of \$420,000 for equipment, with \$55,000 for an environmental laboratory and \$70,000 for training, of which \$20,000 was for environmental training. The program is guided by a full-time UNDP technical advisor to NBRO's Director General.

NBRO's EIA and research program: The Environmental Division specifically responds to UDA's assessment needs. Within its staff of five, two have university degrees and three advanced degrees. Its early accomplishment was completion of an EIA manual for local officials to evaluate the environmental impacts of building proposals.⁶⁰ The division now trains local planning officials in one-day courses on use of the manual, focusing on case examples relevant to each region.

The division reviews about 10-12 development proposals each month. It meets with the developer, determines what issues a permit should address, and sends comments to the local authority, which usually incorporates the comments as permit conditions. The Environmental Division also responds to citizen complaints received by UDA concerning industrial pollution, such as a sulphuric acid plant that was eventually closed. Other staff projects:

- o developing a qualitative guide on ways to apply the concepts of cumulative effects and carrying capacity to concentrated industrial projects, such as the Lady Catherine Industrial Estate in Moratua, because IEEs on individual projects fail to address the cumulative effects of concentrated industries;

- o measuring the quality of Bolgoda Lake and gathering base line data that can be related to decisions on specific developments;

- o monitoring drinking water throughout Greater Colombo for chlorine and bacteria counts, (finding water quality generally in accord with WHO standards if unpolluted by individual sumps);

- o beginning a study of pollution of drinking water supplies by upstream industries.

- o participating in the development of air and water quality standards being led by the Sri Lanka Standards Institute (see below).

NBRO has given more attention to water than to air pollution. In conjunction with its concern about urban industrial development impacts, it has conducted studies of the Kelani River industrial effluents and effects on water quality. However it plans a funding proposal for donors to conduct studies of air quality in Greater Colombo, including the establishment of simple monitoring stations.

Comments on NBRO: NBRO's Environmental Division is well-organized, highly qualified, strongly motivated and up-to-date on EIA and pollution control issues. Its EIA manual and training program, while narrowly directed toward the UDA permit requirements, is a practical guide to questions that CEA's EIA Handbook only generally addresses. Although CEA has not used NBRO services, in part, at least, because they must be paid for, this sister unit within the Ministry of Housing could give CEA substantial help in developing or implementing a pollution control permit program.

NBRO's Environmental Division would be strengthened if it could meet several needs: data on EPA testing procedures for water and air pollution; regular, up-to-date reports on the status of air, water quality in the U.S. and other countries; information on post audits of EIAs; guidance used by the US Housing and Urban Development Department and other agencies on housing project assessments; basic material on hazardous materials and standards. Like staff within CEA and CCD, NBRO staff strongly urged that environmental "cells" in each major government agency and regular training programs in environmental assessment.

b). Greater Colombo Economic Commission (GCEC)

The GCEC exercises industrial development authority over 155 sq. miles of the Greater Colombo area. Any industrial and commercial development in this region must be approved by GCEC. It manages two industrial export zones (Kayunayake and Biyagama) and two pockets of industrial developments, at Ekala and Jaela. GCEC developed these zones after its own economic and environmental reviews. It has planning and permit authority for areas outside the export zones (over which it has exclusive authority), but implementing authority rests with locals.

Recently the GCEC environmental staff has reviewed 400 industrial projects in accordance with their own procedures for Initial Environmental Examinations, which CEA has subsequently adopted. According to the environmental staff manager, the US workshop on EIAs in 1984 encouraged GCEC to develop its assessment program. His staff of eight now includes four laboratory staff. A laboratory is being set up at Biyagama, primarily to analyze water quality, but eventually air quality. GCEC has authority over the Muthurajawela marsh, and its environmental staff will be closely involved in monitoring the EIA on the 600 acre fill proposal.

Comments on GCEC: Its environmental unit has a reputation for competence and careful integration of pollution control into its industrial planning. The combined waste treatment facility in the 500 acre industrial zone at Katunayake, which serve over 50 factories (with capacity for more), has been praised as a example of sound collective pollution control.⁹¹ The effect of the USAID EIS workshop is gratifying, but GCEC regrets the lack of followup. Training continues to be needed in a range of environmental pollution control techniques, post audits, and environmental assessment. GCEC staff, like staff of CCD, NBRO, and CEA, need exposure to successful multiple development planning projects for schools, homes, industries, infrastructure, and environmental protection -- the kind of thing being done in the Hackensack Meadowlands of New Jersey, for example.

c). Occupational Hygiene Division, Ministry of Labor

Three government institutions are concerned with occupational health: the Department of Labor's Divisions of Occupational Hygiene and Factories; the Ministry of Health Occupational Health Division; and the Faculty of Medicine, University of Colombo Department of Community Medicine.

The Divisions of Occupational Hygiene and Factories were established in 1975, when 12,500 factories employed 1.2 million workers. Now there are 35-40,000 factories and 2.5 million workers.

The Occupational Hygiene Division monitors and carries out scientific examination of work places for unhealthy air and water conditions. Among the most serious conditions:

-- the 20,000 workers in fishing, soldering, galvanizing, and cottage industry gold recovery from jewelry shop sweeping, who are exposed to lead poisoning;

-- the nearly 20,000 others exposed to various forms of heavy metal pollution, from tannery workers to dental assistants;

-- the urban residents exposed to carcinogenic benzene pollution from diesel fuel emissions.

The Division has carried out research on lead and heavy metal exposures, and possesses the expensive (Rs 1.3 million) heavy metal analysis instrument that NBRO, NARA and others covet. Among other tests, it collects, analyses, and evaluates biological fluids of workers under air and water sections. Industries call upon the Division when they perceive trouble, and because of staff limitations the Division must train public health and labor inspectors to carry out investigations through the use of questionnaires. The Hygiene division is supposed to have a research staff of seven but has two, in addition to four research assistants and one laboratory attendant. (The Ministry of Health has about 1000 part time public health inspectors, and the Division of Factories about 24 inspectors.)

The Division's National Research and Services Program is concerned with industrial effluents, air pollution, agricultural chemicals. It is also charged with establishing National Health and Hygiene (exposure) Standards, for which it generally relies on US OSHA and EPA and WHO standards.

In addition to salaries, the Division has an operating budget of about Rs. 450,000.

Comments on the Occupational Hygiene Division: This operation appears as a somewhat heroic operation in the face of daunting problems and obstacles. Its director, a toxicologist educated at the University of Arizona, has sought to focus on the most serious problems with severely limited staff and budget. He believes it a waste of time to work on health standards, given the work done in the US. Basic needs:

- a computer, having none;
- regular access to technical reports;
- technical assistance in the office by experts familiar with current data systems on toxicology and other occupational health work.

It appears that this office is one of the few, if not the only one, capable of linking environmental with occupational health issues, which US agencies perceive as part of the environmental spectrum of concern.

d). Institutions Developing Pollution Standards

As required by the CEA, the Sri Lanka Standards Institute is organizing the development of standards for pollution control with help from other institutions, including the organizations with laboratory testing facilities, such as the Ceylon Institute of Scientific and Industrial Research (CISIR, Ministry of Industries and Scientific Affairs), NBRO, and the Division of Occupational Hygiene (Department of Labor).⁸²

Water Quality Standards. The Standards Institute established a Committee on Water Quality of Standards Institute in 1983. Water standards have been based on the EPA standards adopted by WHO. Standards have been set for some waters and uses⁸³ and draft standards have been set for specific industries -- textiles, tanneries, rubber processing plants. No stream standards or classifications of streams have been established because of the lack of baseline data, training, and expertise. The approach has been to concentrate on the discharges deemed most important.

Air Quality Standards. No ambient air quality standards exist as yet. The Chairman of the Air Quality Standards Committee, established by the Standards Institute, is from CISIR. The committee is small, made up of technical representatives from all major government agencies, but it also includes, at the committee's desire, a representative from the Environment Foundation, representing the NGOs. The committee is concentrating on SO₂ and NO_x and particulates, based initially on individual industry experiences of the NBRO.

C. Advisory Institutions -- Natural Resources, Energy and Science Authority of Sri Lanka (NARESA)

In 1968 Sri Lanka founded the National Science Council to give the government advice and support on science and research. It became NARESA in 1981 and, like the Institute for Fundamental Studies, was put under the President, who refers its reports -- rarely made public -- to the relevant Ministry. Recent examples included comments on the Forestry Master Plan and an earlier study of a nuclear plant.

A staff of six at the top, 10-15 in the mid range, and 20 lower level staff serve 10 full committees and 10 technical committees served by over 400 scientists. NARESA operates a small grant program to award small supplementary support for long-term projects, monitors foreign funding grants for committee work, and operates a small information center and interlibrary retrieval systems for members.

Publications: Journal of Science, Social Sciences Journal, News Bulletins, and ad hoc publications, such as Medicinal Plants Used in Sri Lanka.

NARESA has a strong interest in land use, and its Man and Biosphere Committee helped establish boundaries for reserves managed by the Forest Department.

D. Environmental Non-Governmental Organizations (NGOs)

A group of nation-wide environmental NGOs in Sri Lanka provide the energy for education and policy intervention that have created strong public interest in environmental affairs. This brief profile and discussion of the five most active groups, based in Colombo, indicates the breadth of their work and their need for support.

1. March for Conservation (MC)

March for Conservation concentrates on the preparation of educational materials for schools as well as the general public. Its members are primarily scientists, and it has the capacity to carry out technical research and environmental analysis that can be applied to environmental assessments and other publications. Its staff of 3 school graduates is supported by a grant from the Asia Foundation of about Rs 3,000 per month. Other support comes from publications, donations, including a small U.S. foundation, and money returned by the organization's professional volunteers who have received fees for MC's consulting, preparation of publications, exhibits, and so forth.

Publications over the past three years have included Birds of Sri Lanka, in Sinhala, with color plates, Principles of Ecology, and about 15 to 20 research papers prepared by members. In addition, MC has produced posters, photographic exhibits (on tropical rain-forests, for NARESA, the coastal zone, for CCD), and produced a newsletter for members. With support from

World Wildlife Fund it is producing 2000 slide packet on 4 different conservation themes, which it will make available to schools.

Until recent school disruptions and other troubles, MC held large programs for school children on weekends on various environmental topics. At one such program about 700 school children attended. School essay contests, marches, and other events once held in Colombo area have been put in abeyance but indicate the potential and goals of MC. It has envisaged programs for small school children, such as games and color books on environmental topics, and direct participation in school programs with help from professional public service organizations.

MC has worked closely with NARESA, CCD, and CEA, and it cooperated with other NGOs in commenting on the Trincomalee Coal-fired power plant EIA and in other activities.

MC needs support for a full-time editor, research assistants, and publications. It has an interest in developing video materials on environmental issues. Environmental education and scientific evaluation materials prepared by MC can be used by the field-level environmental groups of Sri Lanka as well as by Colombo-based NGOs.

2. Nation Builders

Its 80 members pay dues and are largely located in Colombo and Kandy. The 2,000 associate members live throughout the country. Nation Builders did not begin, 25 years ago, as an environmental organization, but now environment is its focus. USAID supports its field projects in water management and reforestation, which employ nearly 20 people who lived in the villages in which they work and were trained by NB.

Nation Builders produces a newsletter for members and associates and distributes publications from the Environmental Congress to its members. Among the topics it might address in the future: village programs in pest management, soil conservation, agro-forestry, wildlife. (A pilot wildlife/parks program supported by the Mahaweli Environment Program was discontinued due to village turmoil.)

3. Environment Foundation, Ltd.

To pursue its primary goal of environmental litigation, the Foundation is registered under the Companies Act as a corporation, and its members buy shares. The usual amount is Rs 250. The Foundation is headed by a small board, and its Chairman and Director/Editor are private attorneys who devote most of their time to the organization. A board of directors meets regularly, and the Foundation prepares an annual report. Financial support has recently been obtained from the Asia Foundation of \$1,000, and another \$7,000 next year to support a full time staff member, part time assistant, a small library, and an environmental law education program for magistrates and others.

It has engaged in five law suits since its founding in 1981, including intervention against issuance of a permit to a commercial saltern in a natural wetland (Hettigoda); a challenge to the constitutionality of a provisions within the National Heritage Wilderness Areas Act; and two suits to compel enforcement measures against encroachments in protected areas. It led an NGO coalition group in presenting extensive comments on the proposed Trincomalee coal-fired power plant, and presented comments on two other EIA's and the Coastal Zone Management Plan. The Foundation's officers led efforts to revise proposed amendments to the National Environmental Act to require public comments on EIAs and authorize citizen suits to enforce pollution control provisions.

Beginning in January 1989 the Foundation will open an office and hire new staff under a one-year renewable grant from NORAD for a Rs 580,000 program on environmental law education for enforcement officials, NGOs, judges, and lawyers, and an environmental law clinic to help NGO's at all levels use the law effectively for environmental protection. A board of three lawyers and nine scientists will review complaints for possible litigation, based on their potential precedential value, environmental importance, and general public interest. As a result, the Foundation's reach and effectiveness will be vastly enhanced. Part of the grant will fund a full time attorney and a scientist.

4. Wildlife and Nature Protection Society (WNPS)

Sri Lanka's largest and oldest environmental NGO began 96 years ago. Its membership includes 400 from overseas. The paid staff of eight includes four in Colombo, two at Yala National Park and two at Wilpattu National Park. Funding comes from membership dues (Rs 50 for local residents and Rs 100 for those overseas), interest from a Rs 200,000 education and research trust fund, which supports publications, and sales of greeting cards, which net Rs 50,000 annually. WNPS holds annual meetings of the members and prepares an annual report.

Its primary publication, Loris, published twice a year in English, goes to all members. Two magazines in Sinhala (3,000 copies) are distributed by the Education Department to Sri Lankan schools twice a year. Special support must be sought for other publications, such as the Lions' Rs 5,000 for WNPS's publication of seminar papers on the Forestry Master Plan (200 copies), and outside support for publishing and distributing NGO comments on the Trincomalee Environmental Impact Assessment.

WNPS carefully guards its independence from government agencies to facilitate its criticism of actions likely to harm national parks, wildlife, or other valuable natural resources. In recent years it has actively campaigned against the proposed Forestry Master Plan, the Trincomalee coal-fired power plant, the Hambantota salt manufacturing facility, lime kilns for heating coral on the east coast, and development of the Maturajawela wetlands. Much of its criticism focuses on inadequate government use of EIAs. The WNPS President prepares articles and speeches, and the organization cooperates closely with other groups, notably the Environmental Foundation.

WNPS also supports research that its President believes provides essential information to protect parks and wildlife from encroachment. A recent example is its small mammal survey in the Uda Walawe National Park, supported by an Asia Foundation grant of Rs 106,000, in cooperation with the Department of Wildlife.

Constraints that impair WNPS effectiveness include limited funds for publications, and limited staff time to investigate major issues or follow up government responses to criticism (such as the Forestry Department and the World Bank reaction to comments on the Forestry Master Plan). Sources of new funding are limited; dues increases from Rs 25 to Rs 50 in 1983 resulted in a drop of 2,000 members from the high of 4,500. WNPS would like a much larger trust fund to support educational publications.

5. Sri Lanka Environment Congress

The Congress formed itself in 1986 following discussions stimulated by a CEA-sponsored conference of 38 environmental NGOs from around the country in 1984. Its purpose: to serve and help coordinate environmental information needs of all interested environmental groups, including government agencies. Full membership is reserved for NGOs whose primary concern is environmental. Affiliate and corresponding members include all organizations environmentally interested.

Primary support has come from PANOS, of the UK, which supports the Mihikatha Trust Fund, which, in turn, pays for one full-time administrative secretary. The two other trust directors spend about one-third time each working for the Congress. Because the Congress charges no membership fee it must seek support grants. Today it holds workshops (for media personnel in 1986, environmental lawyers in 1988), publishes its quarterly newspaper in Sinhala, sends information and abstracts to members, and services requests for help and information from members (about 10-15 monthly) on local environmental concerns, notably enforcement failings.

Congress facilities include a small computer and printer and a small office on Galle Road. It provides help to four district offices, of which the one in Kandy is now the most active, with one paid staff member (Rs 1,000 monthly). Due to recent troubles the Galle office, once doing well, barely functions. The Congress received some CEA secretarial help in getting organized but has received no direct government financial support. Funding proposals have been, or will be, sent to aid organizations of Finland, Canada, Sweden, Norway, and the Netherlands, along with PANOS and UNEP.

Non-Governmental Organization Profile

	March for Conservation	Nation Builders	Environment Foundation	Wild. Nat. Pro. Soc.	Env. Cong.
Members	350	80 2000 assoc.	100	3,800	member organizations: 132 cooresp. 26 private 36 full
Paid staff	0	35	1 Part time	8	1
Working volunteers	10	(board)	3	-	2
Annual budget (1000 Rs.)	100	50 (dues) 2,500 (USAID)	100	300	160
Publications (past few years)	12 Eng.	newsltr Sinhala	newsltr quarterly Eng/Sin.	magazines Eng/Sin.	newspaper quarterly Eng/Sin/Tam
Major topics/actions	Ed.	village environment	litigation, education	parks, wildlife areas	information clearing- house
Work with other NGOs	all	EC	all, esp. WNPS	all esp. EFL	all
Projects with agencies	NARESA, CEA, CCD	MEP CEA DWC	NARA DWC CISIR	DWC MEP	CEA

6. Comments on the NGOs

Each of these groups serves a different but complementary purpose. March for Conservation applies university expertise to meet education needs from small children to professionals, and it carries out scientific research and environmental assessments; Nation Builders actively engages in environmental rehabilitation at the village level; the Environment Foundation educates lawyers and litigates; the Wildlife and Nature Protection Society campaigns in and out of government for park and wildlife protection; and the Environment Congress supports the numerous small environmental NGOs at the district and village level. Each operates on a shoe-string with substantial volunteer support, but collectively they are largely responsible for environmental education in Sri Lanka.

Absent current political troubles the leaders of these groups believe that Sri Lanka's environmental activities would have soared, putting environment near the top of the political agenda. As matters stand, these NGOs have a critical role in carrying out broad-based environmental education that can help shape Sri Lanka's economic development.

III. LEGAL AND INSTITUTIONAL PROBLEMS IN ENVIRONMENTAL MANAGEMENT

A. Relevant conclusions of the Administrative Reforms Committee

Most institutional problems described in this report were also found to be experienced government-wide, according to Sri Lanka's Administrative Reforms Committee. Conclusions from its 1987-88 report support findings of this assessment and help put them in a larger context.

A basic problem has resulted from the relentless creation of ever-more ministries, agencies and authorities since independence: 43 cabinet level ministries under 28 Ministers, 5 Project Ministers (not cabinet rank), and 25 District Ministers. To these are linked 92 central and 48 regional departments, 127 statutory authorities and public enterprises, and 25 district administrative organizations. The Committee's overall conclusion:

[e]mpirical study and observation indicate that the administrative system of 1986 is ineffective in terms of task demands made on it, as a catalyst and facilitator of the development process, as the instrument of the greater participation of the citizenry in decision making, and as a promoter of national integration and non marginalization (sic) of societal segments."⁸⁴

In particular, administrative systems are typically over-centralized, fragmented among government entities, deficient in good management at high levels, over-staffed, under-compensated, poorly coordinated. Personnel and program decisions are disproportionately political, and agency training and management lag behind other countries in the region.

Structural deficiencies identified by the Committee: inter-organizational committees lack effectiveness and take inordinate time of senior officials; the accountability of public enterprises is vague.

Personnel system deficiencies: an absence of scientifically and objectively selected multi disciplinary groups of senior managers.

Training deficiencies: inadequate training funds; training programs and priorities dictated primarily by donor projects without overall rationalization; narrow, departmental orientations;

Procedural and systems deficiencies: related functions assigned to several individual organizations; groupings of unrelated functions; overlap, duplication, and conflict; absence of monitoring of project implementation or service delivery, lack of training in project planning and monitoring, inadequate on-the-job supervision, and poor physical lay out of office space; and a "mystification" of public sector work systems and procedures;

Public participation: absence of machinery through which the citizen can seek immediate redress against the bureaucracy and its failures, which is a "serious gap in the administrative system of the country."⁸⁵

Among the Committee's recommendations relevant to this report:

- o Create 12 groups of functions, the environmentally important ones being health, education and research; agriculture, fisheries, and land development; and industrial/mineral development;

- o Create small authorities for certain issues affecting many agencies, such as environmental protection (and also population control, rural development and several others), under the Office of the Prime Minister to guide and service National Councils chaired by the PM and including all concerned ministries, special interest groups, and Provincial Council representatives;⁶⁶

- o Establish strong public service training programs for all levels of management -- from senior management to field and village workers -- both in-country and, when necessary, abroad. Revamp programs to encourage trainee interaction and promote interaction among different programs and institutions.⁶⁷

B. Findings of this Assessment

1. Environmental policies and priorities need to be articulated and integrated into government-wide planning, budgeting, and legislative programs. CEA has exercised minimal policy direction to government agencies to affect program priorities and expenditures. It does not operate at a high level within the bureaucracy, and it has found it difficult to intervene and seek changes in controversial environmental proposals of other agencies, such as the Forestry Master Plan and the Trincomalee Power plant. As a result, the government's environmental policies are disjointed and conflicts between agencies are inefficiently resolved. Delays in completing the National Conservation Strategy, have contributed to a lack of government direction. A higher-level but still small CEA with full-time management might exercise the policy leadership envisaged by the Administrative Reform Committee.
2. Problems with environmental institutions in Sri Lanka are largely due to administrative and resource inadequacies, and law revision, while desirable in the future, is not an immediate priority. Parliament's 1988 enactment of NEA amendments fills a major gap in pollution control authority, but it requires careful integration with existing requirements. Land laws, frequently ignored or disobeyed, do have significant gaps in coverage, including the lack of planning for private lands and lands outside designated urban areas. Behind any new legislative remedy, however, lurks the danger of more layers of bureaucracy. Environmental problems demand simpler, more rational administration. Toward that end sometime in the future Sri Lanka would benefit from a comprehensive review of these laws and how they might be improved with administrative reconstruction, including elimination and consolidation of functions and agencies.
3. Program coordination needs high-level attention to apply existing resources, staff, and budgets to the most pressing problems of land use, coastal management, forestry and wildlife, and pollution control.

o Land use programs: Training and central government support of the district-level land use planning officers must be a sustained, high-priority effort if the Sri Lanka is to reap the benefits of its Land Use Policy and Planning Division program. So far its data and analytical capabilities are intended help support land alienation decisions of the Land Commission; they should also affect decisions of the Forest and Wildlife Departments. Training of planners to support District Planning Offices is a promising development and offers the best long-term means to adapt local problems to the plans and conclusions of the LUPP Division.

o Coastal programs: Strong coastal resource management depends on close cooperation between the CCD and NARA. Despite their location within the same Ministry of Fisheries this result has not occurred. The result is inadequate application of NARA's research capabilities to the heavy regulatory and planning demands of the CCD. Programs of NARA and the NBRO would also benefit from strong, informal exchanges of plans and results concerning their water quality evaluations of coastal lagoons and inland lakes.

o Forestry and wildlife programs: The Forest Department and Department of Wildlife Conservation manage their respective lands with minimal cooperation, to the detriment of the forest ecosystems. Both agencies would benefit from shared environmental planning data and management and enforcement capabilities.

o Pollution testing and analysis: Facilities for testing water quality are found within NARA, GCEC, NBRO, CEA, CISIR, and the Department of Labor, apparently without regard to an overall government plans or assessments of laboratory needs. Given the expense of equipment and expertise, programs for centralizing or sharing facilities appear inadequate and much needed. Similar measures appear necessary for other media testing.

4. Law enforcement needs to be built into basic natural resource and pollution control approaches and the government should consider ways to achieve cost-effective enforcement by citizen groups through administrative and judicial avenues. Even prior to recent turbulence, this basic problem has affected all environmental sectors. Government often lacks enforcement resources and in some cases agencies or government personnel may be part of the problem. Among the significant issues:

o Forests and wildlife refuges: Ineffective protection against organized wildlife and timber poaching has been recognized by the Forest and Wildlife Departments. The problem requires development of whole new approaches to land management to promote village watchdog capabilities, backed up by peaceful legal remedies, and village participation in the benefits of forest and wildlife protection.

o Soil conservation: The Soil Conservation Act underestimated the difficult social and management problems associated with soil erosion control, and it has been recognized as a "dead letter" for years.

Dispersal of soil conservation responsibilities makes an energized SCS unlikely, but erosion problems in wet, intermediate, and dry zones are among Sri Lanka's most serious. Effective enforcement will require technical assistance in the field, and government support programs that tie soil conservation practices to the enlightened self-interest of each land owner.

o Pesticide and toxic substances regulation: Inadequate staffing of the pesticide Registrar's Office and the Occupational Hygiene Division indicate that enforcement of pesticide and industrial health requirements has low priority. Industrial health hazards, particularly from inhalation, appear to be high and deserve particular attention.

o Future pollution control: New pollution control regulations and permits to be developed under the 1988 NEA amendments should be based on easy monitoring and enforcement procedures. They should include programs to educate industrial managers, workers, and neighbors to the benefits of controls and the hazards of pollution.

5. Environmental impact assessment is one of Sri Lanka's major planning and administrative tools, but it requires strong CEA capabilities and effective "environmental cells" within the major operating agencies. Only a few agencies have strong environmental "cells" to implement the basic impact assessment requirements of the NEA. Integration of assessments into feasibility and pre-feasibility studies is not yet routine. EIA requirements for major planning decisions need spelling out, particularly for the Forest Department and agencies concerned with water resource development, wetland development, or other large-scale activities. New guides, requirements, and training programs would help keep planning and assessments coincidental. CEA must guide, monitor, and use the EIA process.

6. Environmental training has lagged in recent years and must be stepped up to buttress the dangerously thin, vulnerable cadre of trained professionals. In almost every agency assessed a few managers appeared up-to-date in their field, well-versed in environmental and natural resource assessment concepts, knowledgeable about the environmental policy problems of Sri Lanka, and comfortable with the environmental policy concerns of environmental NGOs. But lack of depth means weak, poorly functioning environmental "cells" in many agencies responsible for natural resource or environmental planning and EIA compliance. The need for broad environmental training fits within the findings of the Administrative Reform Committee, which recommended the Sri Lanka Institute for Development Administration (SLIDA) as the anchor for new training programs, although it lacks staff to manage broad-based environmental training.

7. Environmental data are particularly weak for air and water pollution, and functions and values of coastal estuaries, wetlands, and natural forests. Data are scant on fishery stocks, pesticide impacts on ground water and soils, and health impacts of industrial practices. Management decisions on coastal, forest, wildlife, and pollution control programs consequently suffer from these gaps. But the NBRO and GCEC show what can be done to gather, assess, and employ pollution data on industrial facilities in permits.

8. Public participation in environmental planning, management, and enforcement has often been discouraged by government agencies, but opportunities for remedial actions are promising. The NEA amendments of 1988 require new pollution controls that will stimulate new demands for public information and opportunities to comment on regulatory actions. NGO participation in the task force establishing air quality standards is an encouraging sign and shows what can be done. The new NEA amendments of 1988 require opportunity for public comments on EIAs and, perhaps more importantly, IEEs, making agencies open to routine public scrutiny on permit decisions. The government has not accepted the concept of citizen suits to enforce environmental laws, and studies on potential benefits and costs of such actions in Sri Lanka would be helpful.

9. Environmental education is spotty and inadequate and suffers from lack of government support and poorly funded NGOs. This has not been a high priority of the government. Although many government reports have contributed to enhanced public interests, their value has been diminished by limited availability. Public interest is strong, however, and environmental NGOs could ably carry out expanded education programs; they simply lack funds, books, government information, and office facilities.

10. Environmental programs of donors have, with a few exceptions, sustained Sri Lanka's environmental programs and need more regular, informal, coordination. Although the Forestry Master plan has had some counterproductive results, donor programs have focused on critical issues and regions, as the chart below illustrates.

Donor	Program	Government agency
<u>Multilateral</u>		
UNDP	Institution bldg	UDA/NBRO
UNDP/FAO	Land use planning	Min. Lands LUPP
FAO	Fisheries	Min. Fisheries
	NARA, Inst. bldg.	NARA
	Forest Inventory	Forest Dept.
WHO	Occupational Hygiene	Min. Lab.
World Bank	Forestry Master Plan	Forest Dept.
Asian Dev. Bk	Land use planning	Min. Lands, LUPP Survey, Irr. Depts.
<u>Governments</u>		
Canada	Mahaweli catchment	Mahaweli Authority
Fed. Rep. Ger	" "	" "
United Kingdom	" "	" "
Finland	Forest Master Plan	Forest Dept.
Netherlands	Env'l policy, mgmt	Central Env. Auth.
Norway	Env'l policy, mgmt	Central Env. Auth.
United States	Regional env'l mgmt	Mahaweli Env. Prog.
	Reforestation	Forest Dept.

Given this environmental emphasis, the need for donor coordination increases, along with efforts to ensure effective interagency application of the results and broad public dissemination of reports and information.

IV. RECOMMENDATIONS FOR USAID/COLOMBO

Sustainable environmental development programs in Sri Lanka will require institutional reform and training for all concerned agencies, from policy making to pollution control to wildlife management. The US has vast experience and technical talent in each area that is relevant to Sri Lanka's needs -- at the federal, state, and local level. The chart below gives some examples.

<u>Activity</u>	<u>Sri Lankan entity</u>	<u>US counterpart</u>
Environmental policy	CEA, LUPP Division	CEQ/EPA/state agencies
Environmental Assessment	CEA, CCD, others	CEQ, EPA, Interior, etc.
Pollution regulation	CEA, UDA, GCEC	EPA, state, local agencies
Pollution standards	CEA (various labs)	EPA supported labs
Pollution in work-place	Office of Hygiene	EPA, Dept. Labor,
Land use planning	Min. Lands	Interior Dept.
		States (Fla., Cal., Or.)
Land mapping	Min. Lands (Survey, Irrigation Depts.)	US Geological Survey
Forest mgmt/planning	Forest Dept.	Forest Ser/Bur Land Mngmt
Wildlife/parks mgmt	DWC	Fish & Wild/Nat'l Park Ser
Soil conservation	Dept. Ag.	Dept. Ag (SCS) & States
Coastal conservation	CCD, NARA	NOAA (Coastal Program)
		State, local programs
Wetland conservation	CCD, NARA	EPA (Office of Wetlands)
		Fish&Wild, Corps of Engineers
Coastal erosion	CCD	Corps of Engineers
Hazardous waste mgmt	CEA, GCEC,	EPA, states
Solid waste mgmt	CEA, UDA	EPA, states, localities
Housing and Urban Dev.	UDA, others	HUD, Dept. of Trans.
Environmental education	CEA, NGOs	EPA, Interior, etc.
		US NGOs

Other nations have significant environmental experience and expertise in several areas, but overall the US has a comparative advantage in terms of breadth, variety, duration, and recognized quality. Moreover, the environmental NGOs in the US have unexcelled records of accomplishment in educating the public to environmental problems and in achieving public participation in environmental management.

Matching Sri Lanka's institutional needs against these capabilities one finds several promising opportunities, although some are in areas in which other donors are providing significant assistance. Recommendations for USAID to consider for a long-term environmental program:

A. Integration of environmental assessment with agency plans and programs

The newly amended National Environmental Act requires project approving agencies to use environmental assessments in their evaluations, and CEA must oversee their compliance. CEA can, for example ensure that all construction or planning actions affecting forests, water resources, wildlife, coastal resources, soils, and other natural resources thoroughly assess environmental impacts and alternatives from the earliest planning through implementation. At present, however, CEA needs staff, resources, and technical capacity to implement this essential, potentially powerful responsibility.

USAID should provide CEA with financial, training, and technical assistance to establish its strong natural resource policy oversight capability. Among the most immediate needs:

- o CEA cadres of specialists in planning and environmental assessment in the fields of forestry, water resource, agricultural development, and other natural resource areas who will have oversight and liaison responsibilities with counterpart agencies in each area;
- o staff training in the review of agency programs, management plans, budgets, and environmental assessments, and technical assistance to help CEA conduct a thorough review of each major agency's environmental assessment and natural resource planning practices and capabilities;
- o CEA training programs to help other agencies develop environmental "cells," and guidance documents and training on how to integrate assessments with natural resource planning.

USAID's technical assistance could draw on the planning and assessment experience of US land and water management agencies, including their techniques for involving the public in planning and assessment programs.

B. Pollution control policies, programs, and information systems

CEA faces immense challenges in developing a pollution control licensing system for all media. It needs standards, permit, monitoring, and enforcement systems that are coordinated with existing permit requirements. It needs a data base on pollution levels of its waterways and control techniques. Water pollution is the most important media to address, but air pollution, particularly in the work place, follows close behind.

USAID should provide technical and financial assistance in developing Sri Lanka's pollution control program. Some options and combinations are listed in rough order of priority:

- o technical assistance by long-term advisors in developing pollution standards;
- o series of workshops in Sri Lanka for private and public sector personnel on pollution control, based on case studies,

- o training for government agency administrators and staff on needs and methods for controlling pollution from public busses, power facilities, and municipal sewer and refuse disposal systems;
- o training programs in country on pollution standards, permitting, monitoring, and enforcement, and introduction to the concept of cross-media pollution control (integrated air, water, land pollution control),
- o provision of data bases and technical information services,
- o support for laboratory development and equipment,
- o tours to EPA laboratories for Sri Lankan pollution control staff.

The design of such a program would need to be made in close cooperation with CEA and the Dutch, who will give CEA substantial technical and financial assistance in pollution control in 1989 and perhaps beyond. Although immediate opportunities for additional institution-building assistance to CEA in the pollution field may be limited by CEA's full plate, opportunities for USAID help in the "out years" may be significant. In 1989, the Dutch will help CEA develop surveys to gather information for a pollution permit system -- surveys of stationary pollution sources, existing permitting systems, types of development projects, and pollution standards and control techniques. Local consultants will do the work with foreign technical help.

A related activity that USAID should help is the industrial health program of the Office of Hygiene. Provision of a resident technical advisor, with computer, data systems on toxic substances, information and technical assistance on environmental audits, and so forth, would be immensely helpful. The advisor would be responsible for training public health officials and (the few) staff of the Division, in environmental audits, and testing and monitoring. Coordination of this work with CEA, NBRO, and the GCEC would be essential.

C. Environmental resource management plans and training programs

USAID should support the development of management planning and training for environmental programs.

Management Planning: Many Sri Lankan government agencies would benefit from environmental management plans that established goals and schedules for programs, plans, staff requirements, training, and program review. CEA, for example, would benefit from such a plan in particular because of its vastly increased responsibilities under the new NEA amendments. USAID's environmental program could usefully begin with technical assistance to help key agencies develop management plans. Such plans could help establish sound bases for expanded USAID environmental program assistance in future years.

Management plans could help grapple with one of the most vexing problems confronting government agencies -- how to attract people with

necessary skills to low-paying positions. Where certain environmental professionals are essential but unavailable two to three year temporary contract schemes may be necessary, for example. These problems and potential needs for USAID support should be identified early in any long-term environmental program.

Training institute: Sri Lanka needs, and USAID should help establish, an environmental training institute able to give various short- (1 day to 2 weeks) to long-term (6 weeks to 3 month) courses, in-country, on all aspects of environmental and natural resources management. The students would be from all the relevant agencies, top to bottom. Curricula would include courses on land use planning, forest management, wildlife and parks management, pollution control, coastal zone management, and other environmental topics. Other courses would emphasize environmental enforcement, monitoring, planning, environmental impact assessment, and other management techniques. The goal: to help students understand how to think about environmental problems as well as knowing the nuts and bolts of administrative and legal procedures.

Development of such an institute would allow training of large numbers of people in-country that would enhance the thin and vulnerable ranks of qualified environmental staff. (Like an ecosystem, institutions that lack redundancy can crash.) A training institute might possibly be part of SLIDA, or some other institution, but its scope and size might be overwhelming.

Second best would be support for more limited training courses in an existing institution. Immediate needs:

- o training (1/2 day to 3 days) for senior managers and agency heads on concepts underlying environmental management, using videos of real problems and solutions,
- o training in the concepts and application of environmental impact assessment for plans and projects divided into topics on industrial development, natural area management, agricultural land management, and so forth.
- o training in land use, forest, wildlife habitat planning,
- o pollution control techniques (see previous discussion).

Participants would actively engage in the training through the usual mix of US-inspired participation techniques: a few straight lectures, lots of video, role playing, case studies. A mix of agencies should usually be represented. Supplementing this training program would be field visits to nearby countries (India, Thailand) with problems similar to Sri Lanka's.

D. Public education programs by NGOs

USAID should provide financial and technical assistance to the major environmental NGOs in Sri Lanka that, more than any single governmental

entity, conduct public environmental education. The several environmental NGOs discussed in this report have nation-wide programs intended to reach different audiences -- primary school (age 5-10), junior secondary (10-13), collegiate levels (13-18), university level (18-22), district and village organizations, lawyers, scientists, and the interested public generally. Each group lacks adequate funds, basic libraries, and necessary office equipment.

First, at the simplest level, USAID's program could seek to upgrade their educational programs by providing:

- o financial assistance for the purchase of copying machines, computers, printers, telephones, video machines, and so forth;

- o technical assistance and financial support for facilities and maintenance of basic environmental reference material, including subscriptions to foreign environmental magazines,

- o technical assistance and financial support for developing a publications program, including help in production systems, and layout.

- o support for a mobile environmental education program to carry the message to villages, including exhibits, publications, and videos;

Second, USAID could support a regular series of environmental education workshops, seminars, and conferences on topics of interest to Sri Lankans, for different professional groups (lawyers, business people, scientists, engineers, architects), and general audiences. Funds should be included for paying for guest speakers from abroad, including spokesmen from the US EPA, other agencies, and US NGOs, and for commissioning analytical and investigative background papers and reports from Sri Lankan experts. Sessions should be video taped for use in the field.

Third, assuming administrative means can be found, USAID could provide several years of core support for the environmental organizations to hire educational program staff and technical aid during that time to help the organizations develop more secure long-term funding from memberships, publications, and other programs. Small support grants for field-level environmental NGOs should also be supported, perhaps through the auspices of one or more national-level NGOs.

Fourth, USAID, perhaps in concert with other donors, could fund a single facility to house the major environmental groups in Colombo -- adequate for a group of 25 to 30 -- that could allow sharing of a well-stocked and staffed environmental library, a conference room, copying and computer facilities, telephones, and storage. More than any single act, that would put these groups on a secure professional footing.

E. Data and policy studies on environmental systems and trends

Technical and financial assistance from USAID should be provided to improve environmental data gathering in Sri Lanka, and to support the application of data to policy problems. Three activities are recommended:

Environmental profile: USAID should immediately support the preparation and wide distribution of a report summarizing the most important data on environmental conditions in Sri Lanka contained in the forthcoming National Conservation Strategy and other existing documents. Such a profile, with strong use of graphics, would provide the basis for broad public education on environmental issues and further development of environmental data.

Environmental systems: USAID should help government agencies substantially improve their understanding of the economic, social, and ecological values of natural systems such as estuaries, wetlands, and forests. At the basic level, support is needed for scientific research on the functions and values of these systems that can support management plans and regulatory actions. This program might be possible by supporting for existing institutions, such as NARESA. The alternative is to support creation of a new institution, perhaps connected to a new environmental training institute.

USAID would need to provide core support for staff to carry out studies and, in the case of NARESA, to guide and support committee work. Technical assistance would be needed to help select and develop research plans and policy studies. Support should be included for foreign travel, visits to the US and elsewhere, and technical assistance in Sri Lanka.

Equally important is support for policy studies that would analyze, for example, how the protection of natural resource systems can be justified in economic terms and the practical alternatives available for conserving and using the resources. It would be most desirable for USAID to support independent policy studies by a Sri Lankan multi-disciplinary environmental policy institute. In the alternative, USAID should consider providing financial support for contract studies and publications by several different agencies, such as the Coast Conservation Department, Department of Wildlife Conservation, National Building Research Organization, and the CEA. Policy studies by NGOs should also be considered for support.

Environmental quality indicators: Government agencies and the public need reliable indicators of environmental trends in soil conservation, forestry and reforestation, water and air quality, wildlife populations and habitat, and urban development. Such data on a national or regional basis would help Sri Lankans assess the successes, or failures, of environmental and development programs. The data base for environmental indicators in Sri Lanka is diffused and full of gaps. Topics such as existing forest cover and deforestation trends are embroiled in confusion and argument over terms. Steps required: identify the data needed for indicators of the most pressing environmental problems; establish common definitions; gather existing information and establish programs to fill gaps; analyze and explain data with extensive use of graphics and use of a simple environmental quality index; and publish widely.

Who should carry out this program? CEA might be appropriate, but it needs staff, technical facilities, and know-how to direct and coordinate the work, and its day-to-day responsibilities may make this task impractical.

NARESA is an alternative, considering its access to scientific talent, but its committee structure may be slow to respond, and scientists can feel uncomfortable with the policy judgments required.

With adequate funding, a combined effort of the national-level environmental NGOs might be the best course, applying their energy, policy concerns, and ties to university talent to their environmental education purpose. Whatever the agency, the task is difficult and time-consuming. The US could provide technical assistance, based on extensive experience with environmental trend data within US government agencies and many of its environmental NGOs.

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TOPICS REQUIRING MORE ATTENTION:

- Environmental management, assessment procedures, and research capabilities of key agencies, including several within the Ministry of Industries and Scientific Affairs, the Ministry of Local Government, Housing and Construction, the Ministry of Power and Energy, and agencies concerned with water resource development and road construction;
- Work, organization, and staff capabilities of the Institute for Fundamental Studies, at Kandy, and non-governmental organizations capable of conducting environmental policy studies;
- The training experience and facilities of the Sri Lankan Institute for Development Administration and the Agrarian Research and Training Institute;
- Analytical capabilities and redundancy of the staff and equipment in the environmental pollution laboratories, particularly the Ceylon Institute of Scientific and Industrial Research;
- Opportunities for promoting or supporting environmental programs within various professional associations in Sri Lanka, including engineering, architecture, and business and banking;
- Environmental education programs of the Ministry of Education and other agencies;
- Institutional opportunities for CEA or another agency to develop, integrate, and monitor environments' goals and programs into the national plans and priorities of the Ministry of Finance and Planning.

FOOTNOTES

1. "Now, here, you see, it takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!" Red Queen's advice to Alice. Lewis Carroll, Alice in Wonderland, Grosset & Dunlap, Kingsport, Tenn., (1946) p. 173.
2. Personal communication, A.A. Wijetunga, Land Commissioner.
3. Fernando and Samarasinghe, p. 1.
4. Natural forests are defined as land under natural mixed vegetation cover of 60 to 70 percent. Personal communication, Dr. B.A. Abeywickrama.
5. Fernando and Samarasinghe, p. 1.
6. Rajpal Abeynayake, "Small Forests and the Sinharaja Syndrome," The Island, 15 September, 1988, p. 9.
7. Ibid.
8. CEA Report of the Inter-Ministerial Study Group on Soil Conservation, p. 11.
9. Ibid., citing TAMS Mahaweli study (1980), p. 11.
10. Land Use Planning Experience in Sri Lanka, Silva p. 1, and see Environmental Study of Nuwara Eliya, CEA, February 1987.
11. Personal communication, Abeywickrama.
12. Jansen and Loken, p. 23.
13. Environmental Sector Report, p. 13.
14. Kathy Moran, Traditional Elephant Management in Sri Lanka: The Use of Applied Anthropology in Conservation, (unpublished paper submitted for MA degree) Washington, D.C. (December 1986).
15. The Island, 18 October, 1988, citing Lyn de Alwis, Chairman, Asian Elephants Specialist Group, p. 13.
16. Abstracts of Papers, Workshop on Research Needs for Aquatic Ecosystems of Sri Lanka, National Aquatic Resources Agency, 1985.
17. Jansen, p. 189.
18. CEA staff memorandum, 1988, by Ranjit Wijewansa, quoting from Food Commodities Bulletin, June 17-23, 1988.

19. Wickramasinghe, p. 22.
20. Seminar of the Sri Lanka Section of the Royal Society of Chemistry, Colombo, October 1988.
21. Personal communication, Dr. Duleep Jayamanna, Division of Occupational Health and Hygiene.
22. UNDP Terminal Report, "Strengthening of National Food Control Infrastructure," (1988).
23. Environmental Sector Report, p. 15.
24. Land Use Planning Experience in Sri Lanka, Silva, citing the Colombo Urban Area Development Plan, p. 6.
25. Ibid. p. 16.
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APPENDIX A

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APPENDIX B

List of Persons and Institutions Contacted

September 15, 1988

- o Ranjan A. Wijewansa, Director (Environmental Management), Central Environmental Authority (CEA).
- o Steve Smith, US Information Service.

September 20

- o Jan A. Suurland, Policy Adviser, CEA (Netherlands, Ministry of Foreign Affairs);
- o K.G.D. Bandaratilaka, Assistant Director, Environmental Protection, CEA.

September 21

- o K.G.D. Bandaratilaka, CEA;
- o Jan A. Suurland, CEA;
- o Environmental Impact Assessment Panel Discussion, Sri Lanka Association for the Advancement of Science.

September 23

- o Lt. Col. K.B. Varnasooriya, Nation Builders Association, and Director, Special Projects, Mahaweli Authority;
- o Russell Kuruppa, Director, Implementation, Mahaweli Environment Project, Ministry of State;
- o Leslie Wijesinghe, Deputy Director General, Natural Resources, Energy, and Science Authority (NERESA).

September 26

- o B.A. Abeywicrama, Professor, University of Colombo (former member, CEA).

September 27

- o N.C. Seneviratna, Deputy Surveyor General (Cadastral Surveys), Survey Department.

September 28

- o Sunil Dimantha, Director, Land Use Irrigation Department, Ministry of Lands and Land Development.

September 29

- o Major-General M. Madawela, Director, Department of Wildlife Conservation;
- o Suma Amarasinge, Director, Coast Conservation Department, Mr. Willie Perera, in-country project manager, Coastal Resources Management Project, and Ms. Dayaneetha Sadacharin, Deputy Manager, Planning.

September 30

- o Meeting with USAID/Colombo staff.

October 1

- o Mathew Kahane, Deputy Resident Representative UNDP.

October 3

- o Rohan H. Wickramasinghe, Working Member, CEA;
- o Environmental Foundation, Wildlife Society workshop on CEA amendments.

October 4

- o Willie Perrera, URI, and Dayaneetha Sadacharin, CCD.

October 5

- o Percy Silva, Land Use Policy and Planning Division, Ministry of Lands and Land Development.

October 6

- o George West, World Bank;
- o S. Sahajanandan, Deputy Conservator of Forests, Working Plan and Inventory, Forestry Department, Ministry of Lands and Land Development.

October 11

- o Duleep Jayamanna, Deputy Commissioner of Labor, Occupational Health and Hygiene;
- o Charles Strickland, USAID.

October 13

- o Lalinath De Silva, Chairman, Environment Foundation;
- o Mathew Kahane, Deputy Resident Representative, UNDP.

October 17

- o Meeting with USAID/Colombo Director and staff;

October 18

- o K. Vivakanendan, Chief, Research Officer, Forest Department;
- o Hiran w. Jayewardene, Chairman, Dr. G.C.N. Jayasuriya, Director General, National Aquatic Resources Agency;
- o Kalyan Ray, chief, UNDP/UNCHS Technical Assistance, and P. Illangovan, Senior Scientist, Environmental Division, National Building Research Organization (Urban Development Authority, Ministry of Local Government, Housing and Construction).

October 20

- o Briefing on environmental institution assessment project with US Embassy/AID staff.

October 21

- o L.R. Sally, and P. Illangovan, NBRO, and Dr. Chaudhri (consultant to NBRO on environmental standards).
- o K.H.J. Wijeyadasa, Chairman, CEA;
- o Maj. Gen. M. Madewela, Department of Wildlife Conservation, Ministry of State.

October 26

- o G.C.N. Jayasuriya, Director General, National Aquatic Resources Agency, Michele Berenger, Extension Officer, NARA.

November 1

- o Jan Suurland, CEA;
- o Ranjit Wijawansa, CEA.

November 2

- o Mr. Tikiribanda, Nation Builders.

November 3

- o Saman P. Amarakone, Senior Manager, Environment, and Mr. G.K. Amaratunga, Senior Manager, Area Administration, Greater Colombo Economic Commission.

November 7

- o Rohana Subasinghe and Dr. Ryhana Raheem, March for Conservation.

November 8

- o Jans Suurland, CEA;

November 9

- o Ranjan Fernando, President, Wildlife and Nature Protection Society;

November 21

- o Percy Silva, Land Use Policy Planning Division;
- o S.W. Kotagama, Director, Mihikatha Trust Fund/ Sri Lanka Environment Congress.

November 28

- o Ingunn Fjoertoft, Senior Programme Officer, NORAD, Norwegian Embassy.

December 1

- o A.A. Wijetunga, Land Commissioner, Land Commissioner's Department, Ministry of Lands and Land Development.

November 1

- o Jan Suurland, CEA;
- o Ranjit Wijawansa, CEA.

November 2

- o Mr. Tikiribanda, Nation Builders.

November 3

- o Saman P. Amarakone, Senior Manager, Environment, and Mr. G.K. Amaratunga, Senior Manager, Area Administration, Greater Colombo Economic Commission.

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November 28

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December 1

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