The Environment and the Mahaweli

(A comparative analysis of environmental assessment recommendations versus implemented or planned actions)

by

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The government decided in 1978, to accelerate a major portion of the overall Mahaweli Development Programme. This Accelerated Mahaweli Development Programme (AMP) consists of the construction of four major reservoirs (Victoria, Kotmale, Maduru Oya and Randenigala) and about half a dozen smaller ones. The installation of 470 megawatts of hydropower and the irrigation and agricultural development of over 100,000 hectares of land in the eastern and north eastern dry zone were also part of the AMP. The four major reservoirs have been inaugurated and over 50,000 hectares of land are now under the plough. Correspondingly, about 50,000 families have been settled on newly irrigated lands.

Environmental Planning

In order to address the environmental concerns of the AMP the government arranged the USAID to contract Messrs. Tippetts-Abbett-McCarthy-Stratton (TAMS) to perform a comprehensive Environmental Assessment (EA) of the AMP. Completed in 1980, the EA presented a detailed analysis of the effects of the AMP on the terrestrial, aquatic and human environments. The EA also presented numerous recommendations for minimizing detrimental impacts, enhancing beneficial aspects of the project, and for effective management of the natural resources pertinent to the AMP. Subsequently, the government incorporated these recommendations into an Environmental Plan of Action for the AMP. The Action Plan identified projects and programmes to be implemented in eight environmental sectors.

Environmental Update

This paper provides a summary of the major environmental actions which have been taken or are planned in response to the EA recommendations. It has now been six years since completion of the original AMP Assessment and Action Plan during which time substantial progress has been achieved in implementing the AMP.

Coordination of Natural Resources

Since conservation related activities in Sri Lanka were conducted by a number of different departments attached to separate Ministries, where co-ordination among them were lacking or absent, the EA recommended: that these scattered units be consolidated at the national level to form a Co-ordinating Agency for Natural Resources and that an Environmental Protection Authority be established under this agency to promulgate environmental safeguards and standards and have the power to ensure compliance with regulatory statutes.

There has been some discussion related to the establishment of a National Agency for Natural Resources Conservation. In the meanwhile, a Central Environmental Authority has been created under the Ministry of Local Government and Housing which is responsible for promulgating environmental safeguards and guidelines and formulating policy. The necessary amendments to the National Environment Law are under active consideration to provide the Environmental Authority the legal means to ensure compliance.

Wild-Life Conservation

In view of the fact that the AMP would result in the loss of a large extent of natural forest and wildlife habitat, the EA recommended that all reasonable means to conserve animal and plant species affected by the AMP be incorporated into the development scenarios. The most feasible means to achieve this was by: the establishment of large contiguous wildlife reserves around the AMP, along with the planning and infrastructure development of these areas; conducting surveys and animal/human conflict analyses; expanding and strengthening the Department of Wildlife Conservation (DWLC) to managing the new areas; and developing a national wildlife management master plan.

Under the USAID Mahaweli Environment Project (MEP), over 230,000 hectares of protected wildlife areas associated with the AMP have been, or are about to be declared:

Maduru Oya National Park
Wasgamuwa National Park
Somawathiya National Park

Flood Plains National Park
Tirikonamadu Nature Reserve
Giritale-Minneriya Nature Reserve
Victoria-Randenigala-Rantambe Sanctuary

In designing the MEP, priority has been given to selection of protection areas in 'high quality' wildlife habitats; in reservoir catchments and important river banks and floodplains. The MEP reserves cover over 4 percent of the land area of the country, and perhaps is the last remaining extensive areas of wildlife habitat left in the country. In addition a 200 meter riverine reservation has been demarcated along all major river banks in the AMP with the intent of protecting the banks from erosion and preserving important riverine forest habitats.

In addition, the MEP includes the completion of boundary surveys and provision of infrastructure such as buffer zones, roads, buildings and sign boards for the new parks. A draft Park System Plan, one that will place the protected areas firmly in context of regional development, and three of the four Management Plans for the parks are complete. Flora and Fauna research surveys and some elephant conflict studies have been conducted by DWLC, MEP, MASL, FAO, Universities and WWF/IUCN. The MEP has further commissioned the Universities to conduct Fauna and Flora inventories in the new parks.

Furthermore, under MEP support, the DWLC staff has been expanded appreciably. A Wildlife Training Centre is about to be constructed and awareness programmes have been initiated. However, the envisaged National Wildlife Master Plan has still to be prepared.

Although, the on-going progress in the implementation of wildlife protection measures is satisfactory, there are problems that have arisen. One problem involves the severe encroachment of the Flood Plains National Park and action is necessary to limit development there. Another apparent problem involves elephant conflicts in newly settled areas. The need for the firm establishment of an Elephant Management Unit in the DWLC with necessary technical support, equipment and vehicles has to be emphasized. This Unit should pursue an active elephant management programme, one that would investigate all possible options to reduce conflicts. A precursor of this unit has been set up but considerable strengthening and a definite

programme are required.

Watershed Management

A large number of governmental and international agencies are involved in watershed management related projects in the Upper Mahaweli Catchment. Further, there is more than a dozen laws related to the catchment. Different government agencies have varying degrees of responsibility for managing development in the Upper Mahaweli Catchment and co-ordination between them is lacking or absent. Therefore, the EA recommended: the establishment of a strong co-ordinating/management agency and new laws for the Mahaweli Watershed; the preparation of a Catchment Master Plan; and the implementation of reforestation, crop diversification and engineering works to control soil erosion.

Since adequate co-ordination and direction for the many Upper Mahaweli Catchment Area (UMCA) projects have been lacking, MASL has just established an Upper Mahaweli Peripheral Development Office (UMPDO) in Kandy to assume these functions. Development and strengthening of this institution is to be assisted by support from West Germany. Although concepts have been discussed no new catchment redevelopment law has been formulated. However, the West German project will prepare rules/regulations for resource conservation.

With funding from ODA, recent aerial photography for the entire UMCA has been completed. In addition, there are more than twenty studies or projects conducted or in progress in specific areas within the UMCA. Although the establishment of conservation measures to minimize soil losses, protect forest and agricultural productivity has been initiated its effectiveness remains questionable. Roughly 1000-1500 hectares of the UMCA have been rehabilitated under various projects in each of the last 5-6 years. The Master Plan for catchment development has not been prepared as yet, but the national land use planning project (UNDP/FAO and in 1988 ADB) plus recent aerial photography survey by ODA can provide basis for such a plan. CIDA is proposing a Mahaweli Environment Rehabilitation Project which will focus on forestry, agricultural development, watershed protection and human resource development in the Kotmale sub-catchment.

In general, at present although a large number of studies have been undertaken in the UMCA and there is an apparent movement towards managing catchment resources, there is a lack of clear direction to the movement. It is expected however that the UMPDO will fill the central co-ordinating role and give the necessary impetus to the movement.

Forestry Planning and Movement

The AMP would result in the loss of a large extent of natural forests and forest resources and the main energy resource of the future settlers. Therefore, in order to ensure the unnecessary elimination of these resources and as a means to provide for the increased timber and energy needs of the settlers the EA recommended: a controlled and monitored clearing plan; the planting of fuelwood and timber plantations; the preparation of a national forestry master plan; and the strengthening of the Forest Department.

The control of forest clearing recommended by the EA is now firmly in place. Clearing is restricted to proposed paddy lands only and has been totally prohibited in Systems A and D until final development plans for the systems are conceived and the programmes finalized.

Fuelwood plantations are gradually being implemented. To date, 350 hectares have been planted in System C and 550 hectares in System B. The World Bank is about to finance planting of a further 1,200 hectares in System C with settler participation and 1,680 hectares are planned for System B. Yet the fuelwood plantations are not proceeding as rapidly as they should. Therefore, these programmes will have to be reviewed to determine shortfalls and alternatives identified to meet them.

Conservation planting are being undertaken by USAID's Lower Mahaweli Reforestation Programme, MASL, STC and PVO co-financed projects. A National Master Plan has been completed for forest resources by World Bank support although there is still much controversy on its recommendations. USAID's project also includes institutional strengthening for the Forest Department and a new Training Centre.

Water Resources Research and Monitoring

The bringing of new lands under irrigation in the AMP would result in the increase use of agro-chemicals creating potential for deterioration of water quality in aquatic systems. The EA recommended the establishment of water quality programmes to locate improper use of sources and accumulation sites; conducting salinity intrusion studies at river mouths; villu conservation strategies; and aquatic weed control.

Water quality sampling and monitoring programmes are underway by MASL and the Universities, with more proposed for the future to collect baseline and post-project water quality data. Parameters being analysed include temperature, PH, dissolved oxygen, major cations and anions, conductivity, nutrient salts, pesticides and coliform bacteria. However, equipment failures have limited pesticides analyses. It is further proposed to commence a Limnological Survey of the upstream reservoirs with technical support from the University of Vienna, Austria and a 5 year monitoring programme of System B with World Bank assistance.

Salinity intrusion studies suggested in the EA have not been conducted, although one is proposed for the Maduru Oya estuary. An initial water balance study of a major villus was completed and villu protection is now legally declared by the Flood Plains National Park, but these valuable wetlands are being damaged by encroachments.

As predicted in the EA, salvinia is spreading and may become a significant problem. An initial pilot project is underway with Australian support to use biological control (Weevil) to prevent the continuing spread of the aquatic weed.

Fisheries Development

The AMP would provide new potential for the development of inland fisheries. However, in order to capitalize upon this, several planning measures are necessary. The EA recommended the development of new reservoir fisheries; provision of assistance and subsidies to fishermen; construction of hatcheries; fish farming demonstrations; and seasonal tank fisheries.

New reservoir fisheries are being exploited at Maduru Oya and Ulhitiya Oya. A 90 percent subsidy has been provided for purchasing boats and gear. Stocking programmes are continuing for all major water bodies. Settlements are planned near the reservoirs for the fishermen. The Ministry of Fisheries is responsible for these programmes.

A new hatchery at Dambulla Oya is completed with UNICEF funding. Additional hatcheries are planned for Victoria reservoir (ODA) and at Maduru Oya (UDA). Extension and training services are also to be provided. Fish pond culture programmes were implemented at System H and G and the Ministry of Fisheries proposes to continue its development further with 100-300 ponds in each major irrigation system. Cage culture pilot programmes are planned for Victoria (ODA) and System C. The seasonal tank programme, however, does not offer much potential as many small tanks have become perennial after being connected to the Mahaweli irrigation network.

Overall fisheries development programmes are proceeding satisfactorily although somewhat behind schedule.

Health Care and Sanitation Planning

Although, in a broad sense the 'state of well being' of the settlers in the AMP can be expected to improve, in a narrow sense some preconditions for disease may increase with the implementation of the programme. Therefore, a number of measures are necessary to combat this threat. The EA recommended the provision of health care facilities to all newly settled areas; extension of the Anti-Malaria Campaign to the AMP; vector/vector habitat research; and provision of wells and latrines to settlers.

Early settlement stage health care assistance is being provided by MASL with a mobile unit headed by a Medical Officer. A three-tiered system of health facilities is being implemented and includes Divisional Health Centres (population of 60,000), sub-Divisional Health Centres (20,000) and Gramodaya Health Centres (3,000). To date, System H facilities are virtually completed. System C,B and G facilities are well advanced and many are operational. The Anti-Malaria Campaign has been extended

to the AMP. Spraying programmes have improved coverage in newly settled areas. Research and Survey Programmes are being carried out by the Universities, Anti-Malaria Campaign and Ministry of Health. MASL is providing wells to each family and potable water supplies are available. MASL is also providing floor plates for pit latrine construction, but some are unused. Therefore, measures to increase the construction and use of pit latrines are needed.

Water and Soil Management

The EA recommended the implementation of appropriate water management and soil conservation practices to control and regulate the application of irrigation water and control soil erosion.

A Water Management Secretariat plans and controls the issue of irrigation water, while agricultural research farms and extension centres are completed (or nearly so) in all major irrigation systems. These centres provide guidelines through extension and implement proper water management and soil conservation practices.

Land Use Planning

The EA recommended the integration of environmental concerns in system land use plans.

In the formulation of final physical plans for development in each system, direct inputs regarding environmental concerns are provided. Present planning provides for inclusion and incorporation of fuelwood and conservation forestry, riverine and reservoir reservations, grazing areas and wildlife reserves in the final development plans.

Conclusion

The issues discussed in the preceeding sections of this paper indicate that a number of environmental related studies and projects are being implemented in conjunction with the overall development of the AMP. As in any planning progress, new environmental issues will undoubtedly arise with future development of the overall Mahaweli Programme and supplemental environmental assessments will be needed.