

Development Framework for Environmental Action

The baseline studies of Cambodia, Lao PDR, Thailand, and Viet Nam provide a framework for priority environmental program and policy initiatives. The strategic directions are built around core themes. The strategic framework identifies a smaller number of mutually reinforcing themes upon which rest specific projects and programs. The main themes are weighted towards what really matters environmentally in the individual countries and is based on field visits, review of recent documentation, discussions with government staff and civil society.

The recommendations for priority environmental program and policy initiatives are summarized under thematic matrices as Strategic Implementation Plans (SIPs) and are presented in the appendix for each individual country. Each of these action plans constitutes the development framework for the major environmental subsectors.

Most of the strategies described below were conceived primarily with ADB in mind. Nevertheless, the concerns stated and actions suggested are by no means exclusive to ADB, and are presented here for the use and benefit of the governments concerned and all interested stakeholders.

Cambodia

Strategy for the forestry sector

Forestry is taken mainly as a component of broad-based rural development. Active dialogue needs to be maintained with the DF&W of MAFF, especially the National Secretariat for Forestry Policy Reform (FPR). More active participation is required in implementing the FPR, which is based on a World Bank-funded review and technical assessment of the Cambodian forestry situation.

Support should go to activities that dovetail into the FPR framework, extend its principal themes, and favor implementation of its main recommendations. Efforts should be made to further develop the framework and the support structure for community forestry in Cambodia. Favored interventions include: the integration of suitable forestry and tree-growing components into future rural development initiatives; and identification and development of mechanisms that would allow rural communities to share more equitably in the benefits of forest utilization in their own or nearby localities. Some aspects may be undertaken as components of broader programs. Thus, inundated forest management may be made a component of broader-based rural development support in the Tonle Sap area, and special forms of forest management (e.g., as buffer zones) may be supported as part of a wider support to protected area management.

Strategy for biodiversity management

Biodiversity conservation in Cambodia is strongly correlated with the sustainable management of the country's forests, fisheries, and coastal habitats. Supporting the latter, therefore, also means supporting the protection of the country's biological heritage.

Conservation and development can be integrated in several locations in Cambodia. Integration could start during resource planning in an area, and it could be enhanced by the targeted provision of infrastructure that link conservation areas with the adjoining locations.

The ability to plan conservation and development activities jointly requires good regional (or cluster-based) planning capacity. This may require training in rapid environmental appraisal and participatory rural appraisal. Donors could provide assistance in this aspect.

On the regulatory side, guidelines must be provided regarding protected area planning procedures, the management of the area and the buffer zones, and possible adjustments of the boundaries of protected areas. Protected area boundary delineation, especially the “socialization” of the boundaries, is a long and complex process that requires long-term commitment and sustained funding.

Strategy for supporting sound management of the Tonle Sap area

The strategy for the management of the Tonle Sap area and surrounding floodplains rests on four building blocks:

1. A policy of gradually improving the system of fisheries management on the lake, for which much more reliable data on fish production and revenue generation is needed. The fisheries sector has just not been closely scrutinized,³¹ but the revenue losses from Tonle Sap fishing are substantial in magnitude. The challenge is how to optimize (rather than simply maximize) income from this renewable resource.
2. Consideration of the interdependence of activities in the inundated zone and those further afield. The absence of income-earning opportunities in the hinterlands causes the people there to migrate towards the lake, threatening its ecological balance and productivity. Broad-based rural development and improved market access in these areas could then deliver a double dividend, i.e., improved economic status and quality of life in the hinterlands, and reduced pressure on the Tonle Sap ecosystem.
3. Recognition of the multiplication of projects assisted by funding agencies around the Tonle Sap area, and the extent to which synergy can be generated among the various initiatives around the lake.
4. Greater institutional coherence in the management of the Tonle Sap area. The environmental integrity of the Tonle Sap area requires coordinated management of its entire watershed (comprising no less than six provinces). Efforts to create a single multidisciplinary management authority for the Tonle Sap area must therefore be considered seriously while building on planning efforts already undertaken (such as the Food and Agriculture Organization’s Participatory Natural Resource Management Plan, the Mekong River Commission’s Development Plan for Tonle Sap, and the Chaktomuk and the National Wetlands Action Plan).

Strategy for agricultural chemicals in Cambodia

The indiscriminate use of agricultural chemicals is a serious threat to the future of Cambodian agriculture and

the health of the Cambodians. Training components can be incorporated in rural development projects to generate an understanding of the effects, limitations and risks of pesticide, and agricultural chemicals use among the target populations.

Among the more specific priority is in information dissemination to the farmers and general public on the inherent dangers presented by toxic pesticides, etc.

Strategy for water resource management

The strategy for the water resource sector could be based on five main considerations, namely: (i) absence of a comprehensive water resource policy in Cambodia; (ii) need to rapidly strengthen all institutions dealing with water resource development, particularly the newly created Ministry of Water Resources and Meteorology (MOWREM); (iii) growing urgency to address the financial and management aspects of water resource use; (iv) the potential gains of better coordination among funding agencies and NGOs involved in the sector; and (v) continuing need for improved water supply and sanitation measures in Cambodia.

Comprehensive water resource policy. Despite major contributions by MRC, United Nations agencies, World Bank, and NGOs towards addressing various aspects of water resource use in Cambodia, a comprehensive policy for integrated water resource management (IWRM) for the country is yet to be formulated. The urgency of this task reflects a gradual and desirable shift of focus from rehabilitation measures and from an engineering bias towards concerns with financial viability and sustainability of water sector developments, both existing and proposed. ADB’s proposed TA on Institutional Support for Water Resource Management could be a vehicle for formulating such a policy. For this policy to have the needed authority, its formulation will have to be undertaken jointly by ADB, other funding agencies and NGOs, and be closely coordinated with the basin-wide Water Utilisation Program being implemented by MRC.

Institutional strengthening. The immediate priority will be to strengthen MOWREM to place it in a position where it can truly manage Cambodia’s water resources. Among other things, MOWREM must be able to adequately plan water resource projects, facilitate and oversee their implementation, and monitor and evaluate project and program performance. There is a need to assess the human resource develop-

³¹ The 1987 Law on Fisheries Management and Administration (Fisheries Law) requires a review and possible redrafting.

ment demands and other requirements for MOWREM and other relevant agencies of the Government to perform their tasks. The institutional arrangements in the water sector, in particular the respective roles of MOWREM, MAFF and the Ministry of Environment (MOE), require further clarification and operating guidelines. Support will be needed for measures aimed at improving the governance of the sector, such as amending the Water Law, and drafting relevant subdecrees and operating guidelines for MOWREM and municipal authorities.

Financial and management aspects. After a period of physical rehabilitation, and in the face of reduced assistance from funding agencies, Cambodia is beginning to grapple with the task of sustaining the operations of its irrigation and water supply systems. Assistance will be needed in introducing and developing measures for more sustainable operation of irrigation and water-related municipal facilities, for improving the functioning of existing facilities, and generating the needed know-how for raising the operational efficiency and financial sustainability of existing projects. New projects could include suitable expertise-creating components or replicable improvements in the facilities' financial management. Some water agencies may also have to be restructured as utilities, and procedures developed for cost sharing in multipurpose water resource schemes.

Coordination among funding agencies and NGOs. The need for coordination is particularly strong in the case of MRC, given its long association with the region and its expertise in the basin-wide planning and monitoring of water use. With the basin-wide mandate of MRC and its partners' hydrological and monitoring expertise, aspects of water resource use that are driven by national considerations (e.g., institutional readiness of line agencies, financial and management arrangements for the operation of facilities, etc.) can be given more emphasis.

Support for improved water supply and sanitation projects. Support for water supply and sanitation in Cambodia should be more closely aligned with the overall emphasis on rural development and poverty reduction. The experience and implementation network of existing official programs (such as the Cambodian Resettlement and Reintegration Program and the UNICEF) and NGOs (CARE and others) will be very useful in the implementation of these projects.

Strategy for coastal area management

Support for coastal management needs to be extended in geographical scope to cover the whole of the coastal region of Cambodia. There are three good reasons for doing this:

- A sound strategy for coastal zone development, including prefeasibility studies of specific interventions, has already been produced by earlier projects assisted by ADB. Thus, a good technical basis already exists to build upon.³²
- Coastal zones, being a subset of rural areas, also suffer from social problems like those faced by inland communities (e.g., seasonal shortage of certain foods, lack of water during the dry season, poor or non-existent social infrastructure, etc.).
- Coastal zone management offers good prospects for creating development and environmental synergies so often missing in foreign assistance. For instance, good opportunities exist for combining the creation of a sound management framework with private sector investment in ecotourism, which is also a good way of attracting private investors. Infrastructure development to create more attractive conditions for private investment can also strengthen environmental management.

The support strategy for coastal areas will also involve: safeguarding the productivity of Cambodian coastal waters by bringing about the speedy resolution of jurisdictional problems surrounding access to Cambodia's coastal fishing grounds; institutional strengthening of MOE, especially its provincial and district levels; improving the regulation of coastal aquaculture and salt-mining; creating new mechanisms to reinvest some of the profits of coastal commercial activities into environmental management and conservation; and evaluating the applicability of additional environmental safeguards such as performance guarantee bonds.

Strategy for sustainable energy development

While recent initiatives that bring energy conservation closer to the forefront of the sector's development would be supported, assistance needs to shift towards rural energy use, in support of the broad emphasis on rural development.

Wood-based energy plays an important role in Cambodia, and may be included as a component of broader rural development projects. This will be so in those cases where superior economic efficiency of such components over improvements of stove efficiency can be demonstrated or where fuelwood plantations promise to have important secondary positive environmental impacts (such as soil stabilization). The overall emphasis

³²The output of ADB's RETAs will be the Cambodia Coastal and Marine Protected Area Plan rather than a master plan (or master plans) for coastal zone development that would need to go beyond protected areas.

will be on wood energy efficiency rather than on expansion of fuelwood supply.

Hydroelectricity development will be approached with a view to both the environmental opportunities as well as drawbacks of hydroelectricity schemes.³³ Hydroelectric projects in Cambodia are considered insufficiently profitable economically, with a possible exception of schemes (such as Kirirom) that have a potential to become a focus of watershed-wide conservation. Mini-hydroelectric projects are considered suitable for mountainous rural areas where such projects could either form a core of broader rural development projects, or become the basis of a sector project.

Strategy for urban environmental interventions

Urban development is not regarded as a source of environmental problems but a major opportunity to diversify the country's economy and to develop human resources. Environmental concerns should not stop urban development; they must make it better informed. Well-selected urban activities are expected to balance the rural-oriented thrust of the overall strategy of environmental assistance for Cambodia. The overall objective must be to ensure that public reforms keep pace with private urban activities to avoid unnecessary escalation of the cost of future urban improvement.

Following are the main highlights of the recommended strategy for urban development in Cambodia:

- Urban reforms need to be undertaken, starting with a clear delineation of responsibility for urban environmental tasks among MIME, MPWT, MOE, the Phnom Penh and Sihanoukville municipalities, the provincial governments, and the private sector. In each of the public organizations mentioned, institutional introspection must be done, and a mission statement formulated and linked with the strategy formulation and job description of the different units of the organization. Other reforms include: (i) strengthened functioning of urban land markets (land registration, dispute resolution, identification of conditions where public intervention in the land markets may be appropriate, etc.); and (ii) enactment of land use and tenure regulations that embody appropriate public health and environmental safeguards.
- Phnom Penh will continue to dominate urban investments and claim the greatest share of policy attention. However, in the medium term, the strategy should favor urban centers outside Phnom Penh,³⁴ especially where this complements other proposed activities. Examples of such complementarity might

be an improvement of Sihanoukville urban services linked to the creation of a mixed management environmental zone in the city's vicinity, a private sector ecotourism investment along the coastal areas, and establishment of urban centers coinciding with road improvement projects.

- The model of low-cost urban environmental improvement pioneered in Phnom Penh by CARE and the Australian Agency for International Development (AusAID) may be adopted and possibly extended to provincial towns in line with decentralization. The unmet human resource development needs at the provincial town level is well recognized. The training of provincial staff in urban environmental management will be a suitable component of future infrastructure investments in provincial towns.
- In drainage improvement, phyto-remediation needs to be given more serious consideration.
- The concept of multiple use management areas may be appropriate to apply to the mangrove and beach areas around Sihanoukville or to those among Phnom Penh's outlying areas that are vital for water supply or drainage functions.
- Cost recovery in urban environmental services is central to lasting improvement of the quality of life in Cambodia's towns. The initiatives giving greater degree of autonomy to Phnom Penh and Sihanoukville water supply companies, as well as reforms in water tariffs and sewerage charges, should be continued and extended to other suitable urban areas and urban services. Such initiatives will preferably be linked to continuing efforts at the reform of the system of municipal finance and fiscal decentralization in general.

Strategy for institutional support

The key to improving institutional coordination in general, and in the environment sector in particular, is not necessarily to eliminate overlaps but to improve the quality of decisions emerging from overlapping situations. This is achieved by enhancing the functioning of coordinating bodies or mechanisms where

³³The reader is referred to the 1998 evaluation of ADB-supported hydroelectric installation by the Operations Evaluation Office.

³⁴Although disaggregated human development index (HDI) scores are unavailable for towns other than Phnom Penh and Sihanoukville (PP-SV), the evidence points to major differences in HDI scores between the provinces and PP-SV (RGC 1997a). It is a safe presumption that provincial urban centers lag significantly behind PP-SV. The disparity is, of course, greater still for rural areas and it is this—plus the fact that some 80 percent of Cambodians live in rural areas—that provides a solid justification for the overall emphasis in ADB's operational strategy on rural development. Nevertheless, a dynamic case can be made for improving provincial towns as a means of developing market outlets for rural areas.

they exist or by creating new ones where they do not,³⁵ and where poor coordination is identified as a major problem. In the area of urban environmental improvement, this may necessitate establishing urban development and environmental improvement coordination committees. Better local coordination demands better coordination also among funding and development agencies. Without it, scarce administrative talent is diverted to selected technical areas or selected programs of agencies temporarily benefiting from them at the cost of greater generalized inefficiency.

Institutional strengthening, particularly in the monitoring and assessment of the health impacts of environmental change, is one of the priorities for Cambodia. So is human resource development (HRD). Local skills in regional (or cluster-based) planning, as in combining conservation and development skills, must be developed. ADB's Strategic Environmental Framework for the Greater Mekong Sub-region can provide foundations on which further training in regional planning can build.

There is also a need to take a fresh look at the process of generating original and up-to-date environmental data. There are continuing weaknesses in this area, and novel ways of generating such information must be considered.

Environmental management in Cambodia needs to be better informed and guided by a knowledge of economics, economics data and economics instruments, as indicated by an initial assessment of scope for market-based instruments and training.

Lao PDR

Strategy for improved forest resources

Expansion of reforestation efforts. An Industrial Tree Plantations Loan Project could be considered to ensure that some government resources are allocated for reforestation. The extension should include an emphasis on: (i) planting native fast-growing tree species and fast-growing tree species with nitrogen-fixing properties (e.g., *Acacia spp.*); (ii) training of villagers to establish nurseries for native tree species; (iii) and support for other tree propagation and agroforestry activities to generate income from nonwood-based forestry activities.

Carbon sequestering. There is a need to support the examination of innovative approaches to forest conservation in the Lao PDR context, which would be linked to multilateral environmental agreements and international conventions and protocols. Developing carbon sinks could be linked to conserving the remaining natural forests and establishing (afforestation) or reforesting degraded forests by intensifying ongoing efforts. Joint implementation for a carbon sequestration

project could provide a vehicle for a forest conservation project.

Regulatory framework. The policy of the Government on village forestry management, with individual farmers as key economic units, is conducive to developing an enhanced role for community-based forestry management plans. The plans developed in a participatory manner through the World Bank/Finnida-assisted Forest Management and Conservation Project have not been totally successful, mainly because of the desire of provincial authorities to meet quotas allocated to them by the MAF. Although the Government has recently enacted a forestry law that is generally satisfactory, the law's implementing regulations are not yet in effect. There is need to initiate and support efforts to facilitate and expedite the drafting of these regulations. The phased implementation of sustainable forest management regulations would contribute to improved forest resource management. Funds should also be made available for the implementation of the "Forestry Vision 2020" strategies and measures for sustainable forest management that the Department of Forestry (DOF) has prepared.

Strategy for improved biodiversity management

Biodiversity and ecotourism. An option for local and national income generation. In view of the outstanding natural beauty and cultural diversity of the Lao PDR, ecotourism development should be considered a high priority income-generating option. Ecotourism can potentially demonstrate direct economic benefits from the national protected areas system—biodiversity and landscape conservation.

Tourist arrivals have increased exponentially over the past decade, reaching 465,000 in 1997, of which about 115,000 were tourists with an average stay time of five days. Since 1998, the Government has been implementing a major "Visit Lao Year" campaign. A recent survey found that for 70 percent of a sample of visitors, "natural attractions" were a key motive for visiting the country. Visitors could visit, especially, the Lao PDR's National Biodiversity Conservation Areas (NBCAs) to see the forests, the wildlife and other landscape features (such as the limestone formations, caves and underground rivers of Khammouane). However, at present, opportunities to witness the wildlife and engage in nature activities are extremely limited.

Consideration should therefore be given to assisting the Government and the private sector in developing appropriate forms of tourism within or adjacent the

³⁵ As well as abolishing those that have proven ineffective.

NBCAs. Three levels of NBCA-focused ecotourism can be identified: (i) village-based initiatives (e.g., elephant treks, overnight stays and interpretation of lifestyles, non-timber forest products collection methods, etc.); (ii) small-scale local enterprises (e.g., small tourist lodges); and (iii) the Lao PDR's corporate sector (e.g., BPKP's tourism arm, which needs guidance in developing and promoting nature tourism products). The next few years are critical to tourism development in the Lao PDR, and steps must be taken now to make sure that tourism will be beneficial to all from the local to the national level.

Ecotourism promotion program. DOF and LTA need to be assisted in designing and initiating a nature-based tourism program in villages located near conservation forests. The program will be characterized by the following:

- *Objective:* To promote income generation from alternative, nonforest-based sources to contribute to poverty reduction in rural communities.
- *Strategy:* Developing appropriate, low-impact yet commercially viable forms of tourism that support the conservation and management of protected areas in the Lao PDR. The International Union for the Conservation of Nature (IUCN) has developed a project concept for an ecotourism strategy to assist the Government, the private sector and rural communities in this regard. The central level strategy will be developing policy and cooperative linkages between MAF, the NTA and the private sector to increase professionalism and develop an understanding of how tourism can either support or undermine conservation objectives, and have positive or negative impacts on rural communities. The field-level strategy will be providing advice and possibly a modest line of credit to a small number of selected pilot projects. These would be carefully selected at the village, microentrepreneur, and corporate levels. A key criterion in every case would be the potential to contribute to protected area management and build community support. Phou Khao Khouay would be one NBCA to target because it is the most visited and accessible at present, but several other candidate sites could be suggested. A project focused on NBCAs like the proposed Dong Khanthung, in Champassak, could help protect Eld's Deer and contribute to possible World Heritage status for the area.
- *Key output:* Successful field projects at the end of a five-year program would be the key output. In the process, significant progress at policy level should

have been made towards a sustainable and environmentally benign tourism industry in the Lao PDR.

Youth wildlife awareness program. Students and young people should be mobilized through a combination of education and enforcement of wildlife regulations. One of the objectives would be to stem international trade that contributes to the ongoing decline of wildlife in the Lao PDR.

Economic biodiversity development program. This program will support the propagation of indigenous trees, medicinal plants, herbs, spices, wildlife, and fish among villagers living near conservation forests. The objectives would include: providing an opportunity for alternative income generation; producing and supplying natural products to local and regional (PRC, Thailand, Viet Nam) markets; and ensuring the continued propagation of genetically pure (natural) products, which, at present, are sourced only from natural forests.

Strategy for improved land use planning

The strategy proposed for improving land use planning and land management will contribute to stabilizing the economy and sustaining economic growth. It promotes agricultural productivity, food security, and more appropriate forest management techniques for environmental sustainability. In principle, the strategy continues activities initiated by the World Bank/GEF and the Swedish International Development Agency, and is endorsed by key international NGOs working in the sector.

Sustainable natural resource management program. This program will address shifting cultivation through the development and promotion of viable alternatives for agricultural income generation, linked to increased agriculture productivity. Carefully planned resource management regimes will be set in place to ensure that activities are sustainable and that critical conservation values are not compromised over the long term.

Sustainable land stewardship. This program should be designed with two objectives: to foster environmental awareness among Lao farmers and land occupants by emphasizing their responsibilities as stewards of land and caretakers or temporary custodians for future generations; and to support village food security through agroforestry development. An environmental awareness campaign would be complemented by farmer training and outreach programs. Village-level demonstration plots at schools or temples would be established to promote agroforestry systems, mixed farming (including fish, livestock, crops, and fruit trees), and growing of indigenous and nitrogen-fixing species of fast-growing trees

(*Anthocephalus indicus*, *Alstonia scholaris*, *Leucaena spp.*, and *Acacia spp.*) to meet village fuel and timber needs.

Strategy for improved urban environmental management

Visitor services tax. Innovative methods need to be developed to generate income from tourism for the purpose of allocating funds to provincial and/or municipal level administrative bodies. Income would be earmarked to offset the costs of operating urban environmental management facilities and maintaining public services.

Urban master plans. A program could be developed to prepare urban master plans for Vientiane and secondary towns

Vientiane urban transport modernization

The following project ideas could be considered: (i) the potential for upgrading urban transport systems—first for Vientiane and later for other secondary towns; and (ii) the potential of leveraging grant funds (Global Environment Facility or GEF) for introducing a sustainable public transport system utilizing hydropower-generated electric power, which offers national, local, and global environmental benefits, and for harnessing renewable energy to reduce rural poverty by providing opportunities for alternative livelihood schemes that ease pressure on biodiversity.

Institutional capacity strengthening program. Support will be needed to upgrade the facilities and strengthen the research and environmental monitoring and training capacities of the Environmental Management Unit of the National University of Lao PDR (NUOL). The Unit could be assisted in: (i) establishing an institutional focus for environmental studies within the university; (ii) improving, in the long term, the capacity and ability of NUOL to undertake applied research and produce candidates for the environment and natural resource management sectors in the Lao PDR; (iii) developing the ability to provide short-term courses that would lead to the certification of individuals as environmental specialists, particularly in the aspects of preparing of EIAs, monitoring air and water quality, abating noise pollution, managing toxic and hazardous substances, and solid waste management. The initial target group of the program would be Lao individuals who work with private sector firms that provide consulting and technical services to international projects and programs. The objective is to upgrade the expertise of domestic private sector personnel, so that eventually, the Government can engage private firms to undertake environmental monitoring and technical analyses (e.g., chemical and biological).

The program would also allow public officials to be certified as specialists in one or more environmental management and protection areas.

Natural resource management unit (NRMU). Support also needs to be provided to upgrade the facilities and strengthen the research and natural resource management capacities of the Forestry School at NUOL. The school will provide an institutional focus for natural resource and environmental studies within the university, and eventually contribute to Lao PDR's research and specialized manpower capabilities on the subject. District, provincial, and central government staff responsible for protected area management would be the initial targets. The Forestry School would work closely with the Center for Protected Areas and Watershed Management at DOF to establish a national agriculture-forestry-conservation extension program that would include a Participatory Resource Management Program.

Decentralized environmental management program. This program would help enhance the role of provincial environment offices in environmental planning and policy implementation. This would enable local authorities to implement policies and regulations in support of recently promulgated natural resource and environmental management laws (Forest Law, October 1996; Water Resources Law, March 1997; Environmental Protection Law, April 1999). Linkages would be established from these provincial offices to the STEA central office to allow for more comprehensive evaluation of sustainable development options and promote coordination between the national, provincial, and district levels of government.

Ecosystem management pilot projects. Pilot projects could be designed and implemented at the provincial level using an ecosystem management approach. Green areas adjacent to urban areas (Vientiane, Savannakhet, Pakse, Luang Prabang) could be used as pilot sites. Agencies and stakeholders concerned could undertake the integrated planning operation and management of the biosphere for nature-based tourism, recreation, and forestry and wildlife research. The NRMU of NUOL could conduct integrated training to develop contacts and professional relationships among government staff from a cross-section of participating agencies.

Thailand

The proposed Environmental Sector Strategy for Thailand uses a relatively broad but selective definition of environment, encompassing both natural resources and

environmental quality issues. The definition includes energy resources and energy conservation, but not power generation and transmission. It also includes industrial safety and natural disasters, but not issues such as ozone-depleting substances and global climate change.

In Thailand, development has been largely resource-based, and problems accompanying economic growth have extensively affected environmental quality. In the future, higher costs of resource extraction or substitution, the cost of environmental rehabilitation, and the cost of losses in health and well-being due to environmental hazards will add to the national budget for development.

The environment strategy for Thailand will be guided by the following objectives: (i) reducing poverty and improving the quality of life; (ii) structural adjustment; and (iii) strengthening competitiveness to promote efficient, regionally balanced and sustainable growth. The poverty reduction objective will focus on the northeast, northern, and southern regions of the country.

The strategic implementation plan proposes three strategic approaches corresponding to the following organizing themes:

- River basins: resource management and rehabilitation for sustainable agriculture
- Regional and municipal environmental management capacity
- Industrial efficiency and cleaner production for strengthening business management and competitiveness

Each of these approaches are discussed below.

Environmental financing mechanisms

The Global Environment Facility (GEF) is a potential source of support for protected area management, if Thailand ratifies the Biodiversity Convention. Joint implementation could also be viewed as a mechanism for addressing natural resource issues through carbon sequestration programs. Current funding of protected areas is woefully inadequate. Staff and facilities at parks and sanctuaries are insufficient to cope with new and pressing matters like agricultural encroachment, let alone poaching. Revenues from park visits currently flow to the government's central revenues. ADB and other agencies should coordinate with donors and with the Ministry of Agriculture and Cooperatives (MOAC) concerning financing mechanisms for protected area management.

Concerning environmental monitoring and reporting, ADB and other involved agencies should consider supporting a benchmark environmental reference work, both for its own value and for institutional strengthening. Despite considerable efforts by various MOSTE agencies, there is no comprehensive compendium of the envi-

ronmental situation and programs for Thailand. The Thailand Environmental Profile prepared by Thailand Development Resource Institute once satisfied that need, but is now nearly 15 years old. Funds should be made available for an appropriate Thai institution to undertake a thorough update of this profile. Doing so would benefit everyone interested in Thailand's environmental situation and the evolution of environmental management efforts. It would also be a useful exercise in capacity building. The effort could be done on a continuing basis for improved environmental data gathering and reporting on the part of government agencies.

River basins: Sustainable resource management and rehabilitation

A river basin approach is the most promising way to organize agriculture-based rural development in Thailand. It unifies water resource management, soil erosion, land use, forestry, protected area management, and community-based activities.

Although donor-assisted watershed projects have been underway in Thailand for nearly three decades, the associated problems have worsened in every river basin. Nevertheless, a comprehensive approach to land tenure, agricultural systems, agro-forestry and community forestry for livelihood development and poverty reduction, and effective protection of parks and reserved forests—all integrated through planning and management of water and soil resources on a watershed basis—is the best hope for sustaining Thailand's agricultural development. While these are still formidable problems, the new Constitution's emphasis on decentralization and participation, gradual progress on land tenure issues, and gradual strengthening of MOAC agencies, other departments, and community organizations and NGOs give reason for some degree of optimism. Besides, non-implementation of the programs can lead only to continuing deforestation, soil degradation and sedimentation, and further disruptions and declines in the hydrological cycle.

Near term: 2000–2002. A planned project preparatory technical assistance (PPTA) in 2000 will build upon the Agriculture Sector Program Loan of 1999 to support comprehensive development planning for selected river basins in the north, north-west, and southern regions, leading to a program loan in 2002. The Government and ADB have agreed to include the Ping, Mun, and Klong Thatapao River basins in this feasibility study.

In addition, opportunities for physical infrastructure and economic development in the north and

northeast regions will be identified. These can provide the basis for action plans for joint investments with the Government.

Medium term: 2003–2005. The planned 2002 River Basin Development program loan should be used to lay the basis for collaborating with the Government and other funding agencies for a concerted effort on land restoration and water resource conservation in the northeast. Unless there are clear synergies or outstanding benefits to be derived from continued work in the south and north, it may be necessary to concentrate available resources for a serious campaign to reclaim the northeast region alone.

Intensified and expanded activities for restoration of degraded land and soils should be given high priority consideration in the medium term—particularly in Northeast Thailand, which has large areas that are becoming desert. This is a regional problem for all the central Mekong region. A concentrated effort on land restoration in the northeast will be a logical outgrowth of near- and medium- term river basin activities.

Degradation and depletion of coastal resources are the other major challenges of natural resource use, with profound implications for livelihoods, foreign exchange earnings from shrimp and fish, and tourism. Again, if Thailand ratifies the Biodiversity Convention, donors could assist in tapping GEF resources to strengthen protection of Thailand's marine parks. For now, ADB's limited resources are properly being concentrated on river basin management. Of the three basins targeted for this work, only Klong Thatapao flows into the sea. But it does so at a point on the Upper South's coast that encompasses a full range of coastal resource management and fishery issues. So it will be possible to use this entry to explore the topic, possibly laying the foundation for an expanded and more intensive loan effort in the medium or longer term.

Regional and municipal environmental management capacity

ADB and many other donors have long been supporting water supply and sanitation projects in Thailand. In Samut Prakarn, ADB has a very substantial investment underway to establish a modern sewerage and treatment system for the single most difficult and highest priority district outside Bangkok. This and other sources of assistance are providing the policy basis for effective cost recovery for wastewater treatment projects. Policy reform on cost recovery, linked to planned efforts to strengthen the ability of municipalities to mobilize financial and managerial resources for local environmental management, will be a further major contribution in this area.

The Pollution Control Department (PCD) has been preparing regional and national strategies for improved management of solid and hazardous wastes over the past several years, with assistance from ADB. This is part of the effort to build the Government's managerial and technical capacity to address solid waste management problems.

Near term: 2000–2002. Two complementary projects are planned for 2000: one is to build capacity in all areas of urban governance, the second focuses on capacity building for regional environmental management. This second project will have two main components: (i) promoting community awareness and participation in selecting environmentally sensitive developments and implementing cost recovery mechanisms; and (ii) building capacity in provincial and regional environmental offices. Building on these two initiatives, a PPTA is planned in 2001 for the Provincial Urban Environmental Management project. This would provide an opportunity for working with the Government on long-term policy reform, including decentralization and participation.

Medium term: 2003–2005. As the Government is assisted in creating environmental planning and operational capacity at local levels, possibilities arise for strengthening either or both the Ministry of Interior's Institute for Government Administration and Local Development and MOSTE's Environmental Research and Training Center. It may be appropriate to privatize or convert these training institutes into state enterprises. Doing so might ensure higher quality programs and lower long-term costs for these valuable institutions.

Industrial efficiency and cleaner production for strengthening business management and competitiveness

Considerable donor interest has evolved around concepts of cleaner production and waste minimization since the early 1990s. It is an area that allows for interaction directly with the private business sector, and showcases good business opportunities for bilateral donors. ADB has begun initiatives in this area, through the Samut Prakarn Wastewater Management project, which is expected to be underway by the end of 1999. If successful in Samut Prakarn, a similar-sized effort can be all that is needed to gear the program up to the national level.

Viet Nam

All elements of ADB's program in Viet Nam need to contribute to the sustainable use of resources and the maintenance of environmental quality. Yet, there are a

number of fields that offer special opportunities to explore and test the application of sustainable development principles. Since the present ADB strategy rests on the development and upgrading of agricultural and resource extracting/processing sectors as the engine of growth, future socioeconomic conditions in the rural economy of the Central Region will be strongly influenced by:

- the levels of production and consumption of natural resources,
- the economic activities that promote or destabilize these conditions, and
- the mechanisms adopted to ensure the sustainable management of these resources.

Criteria

A number of criteria help in targeting special ADB support to test and demonstrate sustainable development approaches. The first three criteria are of fundamental importance, while the others relate more to the suitability or nature of ADB's role in tackling them.

In order of priority, ADB's investment needs to be channeled to those environment fields where:

- there is a clear threat of serious deterioration in natural resource stocks;
- natural resource or environmental concerns have received high priority for action by government (such as sustainable forest management);
- there are gaps or a lack of emphasis in existing donor support;
- there is an opportunity for linking different components of ADB's support program to optimize development impact;
- there are opportunities for partnership with other development organizations, with NGOs and with the private sector (such as in integrated water resource management);
- ADB has a comparative advantage (such as in regional and transboundary concerns); and
- ADB pipeline investments can act as an appropriate vehicle for demonstration.

Three priority environmental themes in ADB's environment program

Applying these criteria to the current situation in Viet Nam leads to the definition of four broad fields of equal priority for ADB support to special sustainable development initiatives:

- Sustainable forest management, focussing on natural forests, protected areas and buffer zone management,

- Sustainable water resource management, focussing on integrated basin wide planning, water quality, and energy conservation and sustainable development,
- Biodiversity resource conservation and sustainable use, focussing on the highest priority biodiversity regions,

Central economic region

Developing systems for sustainable management of natural resources requires a long-term commitment to the affected communities and local governments. To generate the necessary level of commitment, there is need to: (i) set clear priorities for action; (ii) concentrate and link loans within the donor's portfolio; and (iii) target geographic areas. These will have multiplier effects and greater development impact. The terrestrial biodiversity regions of highest priority for conservation action fall within the central region of the country. One of the highest priority marine biodiversity regions falls offshore from the central region. This is also the geographic region suffering the highest levels of natural forest loss. Wise management of water resources is a critical factor for economic and social development in the region, but its quality, availability, and retention are diminishing. For these reasons, the central region is the main target for the sustainable development (SD) demonstration initiatives proposed in this paper.

Demonstration initiatives linked with pipeline loans

In this section, eight sustainable development demonstration initiatives linked with ADB's existing 2000-2002 TA and loan portfolio are introduced according to the relevant economic sector.

- Economic goal: Water resource development in the central region
- SD Initiative: Sustainable forest management and biodiversity conservation associated with hydropower development

This SD initiative will be directly linked to the Se San III Hydropower Development Project (2000) with the objectives of (i) safeguarding the watershed associated with the reservoir and (ii) developing sustainable livelihoods for affected minorities based on forest and biodiversity resources.

The hydropower project loan will include complementary measures for mitigating the immediate environmental impacts of the development and some assistance to the affected minority groups. It is not envisaged as a full basin management intervention. Yet, the hydropower loan will contribute to wider SD objectives in the watershed by implementing mitigation measures necessary to ensure long-term viability of the hydropower project.

The SD initiative would be a stand-alone project with the bulk of funding coming from bilateral sources in the form of parallel or joint financing, with a small part of the loan also being labeled for the purpose.

Two other loans will feed in complementary components in 2002—those relating to sustainable forest management and water resource development in the central provinces.

The Se San River basin has important remaining natural forest and biodiversity resources under immediate threat. The sustainable forestry management loan should include a component that focuses on sustainable forest management pilot areas covering critical systems in the basin. Also, the potential for linked sustainable forest management pilot areas on the Cambodian side of the Se San River basin should be explored.

The loan for central provinces water resources development needs to be carefully linked with this SD initiative by tackling the broader institutional and capacity building issues relating to integrated natural resource management of the Se San River basin and its regional implications as a tributary joining the Mekong River in Cambodia. The integrated management of Se San River basin is treated as the fourth SD initiative.

- Economic goal: Rural development and poverty reduction in the Central Region
- SD initiative: Sustainable buffer zone and protected areas management associated with rural development in poor regions

The goal of this initiative is to develop selected buffer zones into important protected areas in the Central Region and to work with poor communities in the sustainable use and wise management of those areas. This initiative would be associated with two loans—those for sustainable forestry management and Central Region poverty reduction.

The project would reinforce measures for the conservation of Viet Nam's highest priority biodiversity and natural forest resources. It would do so by raising the standard of living of communities using those resources and increasing their interest and potential role in their sustainable management. Poverty reduction requires a long-term commitment on the part of the target communities. ADB will seek to establish a partnership with an appropriate international NGO in this project.

Funding will come principally from the forestry soft loan scheduled to come on line in 2002. Key components supporting the generation of sustainable livelihoods, including credit schemes and training, would be built into the Central Region poverty reduction loan. Bilateral cofinancing would be arranged to cover the NGO

inputs. A range of community development and basic needs infrastructure within the buffer zones would be covered through the poverty reduction loan.

Provinces with protected areas and buffer zones of particular interest are Dac Lac, Kon Tum, Quang Nam, and Quang Binh—all with major parks bordering the Lao PDR or Cambodia.

- Economic goal: Coastal resource development and poverty reduction in the Central Region.
- SD initiative: Mangrove conservation associated with aquaculture development in poor coastal communities

The objective of this SD initiative is the sustainable use and rehabilitation of mangrove systems, alongside aquaculture development, as key strategies for sustainable livelihoods in poor coastal communities. This initiative would fall within the poverty reduction loan for the Central Region if suitable areas for mangrove rehabilitation can be identified as part of an integrated approach to community development. Also, complementary components would be built into the forest loan. PPTAs are scheduled for both loans in the year 2000.

More than 7,000 hectares of mangrove forests have been replanted from Ha Tinh Province to the northern border of the Central Region by Vietnamese institutions and communities, with help from international NGOs like Japanese Red Cross, OXFAM UK, and Save the Children Fund. Ha Tinh Province suffers from significant outmigration of the poor and would be an appropriate target for this project.

Most mangrove forests have been cleared from Thua Thien Hue down to Binh Thuan Province for shrimp farming or destroyed by typhoons. Land suitable for replanting is limited because embankment work to prevent saline intrusion has altered tidal dynamics. This is especially true for the Lang Co and Tam Giang-Cau Hai areas of Thua Thien Hue Province. Yet, there is potential for mangrove rehabilitation and sustainable use initiatives in Binh Dinh and Phu Yen provinces and in northern Khanh Hoa Province. Mangroves in these areas are not distributed along the coastline but concentrated in river estuaries.

This project would seek to implement ADB's policy on strategic partnering by forming a long-term relationship with an international NGO with special experience and expertise of relevance to the local area. Bilateral cofinancing would be sought to cover the NGO technical input.

- Economic goal: Water resource development in the Central Region
- SD initiative: Sustainable natural resource management and biodiversity conservation associated with the development of water services

ADB support in the water sector has been focused on water service delivery in urban water supply, irrigation and drainage, and flood protection. With the introduction of the Water Law in 1998, ADB is shifting its attention to include assistance in integrated basin-wide planning and management of natural resources.

This SD initiative is concerned with integrated basin-wide management and is associated with the Central Province's water resources development loan. It would take the form of a demonstration project for establishing a river basin organization for the Se San River basin, then the preparation and implementation of an integrated basin-wide management plan. The plan would emphasize the conservation and sustainable use of natural resources in the basin and demonstrate the role of protected areas in the sustainable management of watersheds, including critical biodiversity resources.

The initiative would build capacity in the Se San River Basin Organization and key related agencies such as the DPIs, DOSTEs, and DFPs in Kon Tum and Gia Lai provinces. Particularly important will be the establishment of working linkages between the two provinces in basin-wide management activities, between sectors within each province, and between relevant district governments.

The project provides the broader policy and institutional context for the more focused SD initiative, which gives concentrated attention to the Se San III watershed, the joint natural resource management regimes with the local minority communities, and the detailed technical aspects of rehabilitation and livelihood development based on sustainable use of local resources.

- Economic goal: Transport development in the Central Region
- SD initiative: Environmental assessment and integrated resource planning associated with the development of transport networks in rural areas

The objective of this initiative is to strengthen the capacity of the DOSTEs, DPIs and local transport authorities of four provinces in joint environmental planning and assessment relating to the development of linking transport corridors and networks. The target area would be the neighboring provinces of Quang Tri, Tha Thien-Hue, Quang Nam, and Kon Tum. Participating agencies would be supported in preparing a joint transport strategy that emphasizes the sustainable use of resources and social and environmental effects.

Fifty DOSTEs and most DPIs throughout Viet Nam have received little or no consistent official development assistance (10 currently receive support from the Swedish Environmental Management Assistance Project

and the Viet Nam-Canadian Environment Cooperation Project). Most sectoral ministries and provinces, particularly in the Central Region, have little progress in building effective environment units, and are not clear yet about their responsibilities in this field. Working links between the DOSTEs, DPIs, and sectoral agencies in integrated resource planning and environmental assessment need to be developed. The Ministry of Transport is one of the few sectors that have progressed in establishing an environment unit and environmental planning and assessment procedures.

The project would use the transport sector to demonstrate and encourage interprovincial cooperation between local planning and environment agencies, by way of sharing of expertise and information and developing procedures for undertaking joint environmental planning and assessment in cases where development initiatives cross provincial boundaries. Grouping agencies that fall within a target area covering more than one province is a good approach to integrated resource management when capacity and resources are limited. Also, it reinforces the Government's strategy of creating regional nodes for environmental monitoring and assessment.

Funding for the project would come from a component of the provincial roads improvement loan, a two-year technical assistance grant from ADB, and staff consultancies.

- Economic goal: Industrial and urban development
- SD initiative: Energy conservation associated with industrial zones

The objective here is to demonstrate the economic benefits of implementing an energy conservation strategy for a prominent industrial zone in Ho Chi Minh City or Hanoi. The Thuong Dinh industrial zone in Hanoi, for example, has some 40 large factories and 800 small and medium enterprises, and faces major environmental and energy management challenges. Alternatively, a zone in the central economic development region could be targeted. GEF funding would be sought for the project with a cofinancing component coming from a TA grant.

An important strategy for improving the economic efficiency in industry is energy conservation. By 2000, industry is expected to consume 47 percent of energy produced in the country. The Master Plan for Energy Conservation and Efficiency (1998) estimates that straightforward short-term, low-cost improvements in industry would lead to 15 percent savings in energy with a payback within the first year of implementation. Long-term measures in most branches of the larger SOEs would lead to 25-50 percent savings. The average efficiency of

old boilers, for example, could be improved from 50 up to 90 percent. Similar levels of savings are possible for small- and medium-scale enterprises. There are opportunities for further improving economic efficiencies through collective energy conservation measures within industrial zones. Other savings could be gained in power production, transmission, and distribution.

The energy sector strategy, currently under development with ADB support, will focus on supporting electricity sector reforms to ensure long-term economic and financial sustainability. The strategy gives top priority to sector restructuring and technical improvement. Energy conservation has not been included as a key aspect of the strategy. For these reasons, this SD initiative has been identified as an industry/environment sector project.

ADB would seek an NGO partnership in this initiative. Two partners would be appropriate: the Australian International Institute for Energy Conservation, which is the technical advisor on the GEF Promotion of Electricity Energy Efficiency Project in Thailand, and the Dutch Association for Energy Development and Planning, which is the technical advisor to MOSTE in its energy conservation and efficiency program.

- Economic goal: Industrial and urban development and water resource management
- SD initiative: Hazardous waste management associated with industrial and urban development

In 1998, ADB worked with MOI and MOSTE in undertaking a national survey of hazardous wastes and the findings reinforced the urgency for action in this field. The survey found that the toxic intensity of industrial wastes in Viet Nam is increasing and a systematic program of hazardous waste treatment is urgently needed.

In the same year, some 300,000 tons of hazardous wastes were generated, which received little or no treatment. Hazardous solid wastes are usually dumped on land, along with other solid wastes; hazardous liquid wastes are discharged directly into streams and rivers that are downstream sources of drinking water and irrigation. The survey estimated that the quantity of hazardous wastes is likely to increase to 1 million tons per year over the next decade, with significant implications for the economy if they remain untreated. The health costs alone could rise to more than 1 percent of GDP. Minimization measures at little or no cost could reduce waste generation by up to 40 percent.

The survey led to the preparation of a National Strategy for Hazardous Waste Management. The objective of this SD initiative is to support the Government in implementing this strategy in a major waste-generating sector(s)—for example, the chemicals industry. The

project would emphasize: (i) demonstration in waste minimization and recycling, technology and training; and (ii) the preparation of detailed design and performance specifications for proposed waste management systems.

The project could be developed through an ADB PPTA grant to be followed by a loan.

- Socioeconomic goal: Education and training for sustainable development
- SD initiative: Sustainable development principles and practice as a theme in the training of upper secondary school teachers and in the secondary school curriculum

ADB support in the education subsector aims at the secondary level and will include teacher training. In addition, ADB will assist in reforming the vocational and technical education system.

The Government of Viet Nam has adopted “sustainable development with equity” as the overarching policy of its development program. Yet, there is little consensus on what this means in practice.

No systematic approach has been taken to integrate the SD principles and approaches in lower or upper secondary school curricula. Some innovation to textbooks and other teaching materials has occurred to increase coverage of environmental issues, but this has not been evaluated.

The objective of this initiative is, therefore, to develop comprehensive curricula and materials for teaching SD principles and approaches in the Upper Secondary School Development project. To achieve this, the pipeline loans for upper secondary school education (2002) and for vocational and technical training (2003) must have strong components that address the principles and practice of SD.

The PPTA for upper secondary education is planned for the year 2000, with a loan following in 2002. Adopting the SD theme in this TA is supportive of the 1998 Party Instruction to the Ministry of Education and Training (MOET) and MOSTE to prepare a detailed program for “incorporating environmental issues into all levels of the national educational system.” The PPTA would need to include: (i) a thorough review of existing upper secondary school curricula and materials for coverage of SD themes; (ii) the definition of a framework for the development of SD curricula and materials; (iii) an assessment of the training needs for teachers in applying the curricula; and (iv) the determination of a program of piloting, evaluating and revising the curricula and materials, prior to national application.

Similarly, the Vocational and Technical Education PPTA planned for 2001 needs to adopt the SD theme so

that a succeeding loan component builds capacity and skills in priority SD fields, for example, in extension services.

New initiatives

Over the past decade, the National Plan for Environment and Sustainable Development 1991-2000 has provided an official policy framework for reform. The Environment Plan for the decade (2001-2010) is under preparation. Also, in a parallel exercise, the Biodiversity Action Plan is currently being revised to address the next decade. ADB is committed to supporting the implementation of these two key policy and planning frameworks. The precise nature of the SD initiatives beyond 2002 will need to be drawn from the agenda for action set out in these plans.

For the first two years of the new decade, the four main themes of ADB's SD initiative build on the program of TAs and loans in the pipeline. In the years from 2003 to 2005, there will be continued efforts to seek opportunities for enriching the assistance program through special SD initiatives.

The focus on the conservation and sustainable use of water and forests will be maintained. These two resources provide the crucial linking ingredients to the other themes, and overall, to a sustainable economy through the maintenance of its natural resource base. Support will be strengthened for the protection, rehabilitation, and sustainable use of upland forests for their biodiversity, watershed protection and other economic values. In keeping with the agreed focus on the Central Region, provinces that warrant close attention as priority areas for biodiversity and watershed conservation include Nghe An, Ha Tinh, Thua-Thien Hue, Kon Tum, Dac Lac and Lam Dong. The key objectives would be to assist in implementing action plans for selected regions, including an emphasis on the development of buffer zones surrounding protected areas.

A critical new area for investment will be marine protected areas and associated integrated coastal zone management.

- Mekong River Commission (MRC). 1998. Mekong River Commission, *“Review and Assessment of Water Resources for Hydropower.”* 1991.
- Ministry of Agriculture and Forestry, Department of Forestry (MAFF/DOF) . 1999. *Center for Protected Areas and Watershed Management & ADB, Nam Ngum Watershed Management Draft Final Report.* BCEOM in association with SEATEC and SEMED.
- Ministry of Water Resources. 1994. “Strategy and Action Plan for Mitigating Water Disasters in Viet Nam.” Viet Nam. National Statistical Center. 1998. State Planning Committee, Basic Statistics, Vientiane.
- National Statistics Office. 1998. Office of the Prime Minister; *Environmental Statistics of Thailand.*
- Nelson, V. 1999.. *“The Coastal Zone of Cambodia: Current Status and Threats,”* Consultant’s report for the Ministry of Environment and DANIDA. Cambodia.
- Pollution Control Department (PCD). 1998/ Final Report, Solid Waste Management Sector Plan.
- Royal Government of Cambodia. 1996b. “Report on the Tonle Sap Forum on Provincial Level Planning, Technical Coordination Unit for the Tonle Sap.” Ministry of Environment and UNESCO. Cambodia
- SPC/UNDP, *1990 Report on the economy of Vietnam.* Hanoi State Planning Committee, 1998. *National Statistical Center, Basic Statistics about the Socio-Economic Development in the Lao PDR,* Vietnamese.
- _____. 1999. “ Forest Crime Monitoring and Reporting.” A joint MAFF and MOE proposal for effective coordination of activities in the forestry sector. Phnom Penh.
- _____. 1998b. “Management of Fisheries, Coastal Resources and the Coastal Environment in Cambodia: Institutional, Legal and Policy Perspectives.” Synthesis report by Cambodia Working Group in cooperation with Wetlands International. Phnom Penh.
- _____. 1998c. “Management of Fisheries, Coastal Resources and the Coastal Environment in Cambodia: Institutional, Legal and Policy Perspectives.” Synthesis report by Cambodia Working Group in cooperation with Wetlands International. Phnom Penh.
- _____. “National Environmental Action Plan 1998-2002.” Ministry of Environment. Phnom Penh.
- Royal Thai Government. 1997a. Ministry of Science, Technology and Environment (MOSTE), Office of Environmental Policy and Planning (OEPP), *Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality, 1997-2016,* Bangkok, Bangkok.
- _____. 1992. MOSTE, OEPP. Final Report, Environment Quality
- _____. *1997a. MOSTE. Thailand Country Study on Biodiversity. Bangkok.*
- _____, 1997b. MOSTE, OEPP, *Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality. 1997-2016.* Bangkok.
- _____. Royal Forest Department. 1988. Thai Sector Forest Master Plan, vol. 5, p. 28, and Thammasat University survey for the National Rural Development. Thailand.
- TDRI (1995) Natural Resources Management in Mainland Southeast Asia, Bangkok, Thailand
- San, Nguyen Van and Don Gilmour. 1999. “Forest Rehabilitation Policy and Practice in Viet Nam,” IUCN.
- Savath, K. and Sanrithy, C. 1999. “Environmental Challenges of Tonle Sap, ” Paper presented at the Fifth Meeting of the GMS Working Group on the Environment. Kunming.
- SEATEC International Ltd. 1998. *Institutional Strengthening and Expanding EIA Capacity in Cambodia,* Consultant’s draft final report under ADB TA No. 2723-CAM.
- Statement of Director-General, Royal Forestry Dept. 1999. Before the Forest Correspondent Club.
- Stibig. 1997.
- Thailand Development Research Institute (TDRI). *1995. Natural Resources Management in Mainland Southeast Asia.* Bangkok, Thailand.
- The Forestry Law. 1996. No. 01-96, Article 25: “The Harvesting of Timber and Forest Produce,” October 1996.
- UNDP. 1996. Project Document (Draft): Solid Waste Management in Urban Centers of Lao PDR.
- UNDP. 1996. Project Document (draft): Solid Waste Management in Urban Canters of Lao PDR.
- UNDP/MPI. 1999. “A Study on Aid to the Environment in Viet Nam.” Hanoi.
- U.S. Agency for International Development, Office of Housing and Urban Programs. 1990. *Ranking Environmental Health Risks in Bangkok, Thailand.* Washington, DC.
- U.S.-Asia Environmental Partnership, 1998. “Country Assessment: Thailand,” in *US-AEP Country Assessments.* Washington, DC..
- UNDP/USAID/IDRC/CRDI. 1997. Wood Energy Flow Study of Phnom Penh.
- UNDP. 1999. *Development Cooperation – Vietnam.* Hanoi.
- UNDP/World Bank. 1985. *Energy Sector Assessment Program, Thailand: Issues and Options in the Energy Sector,* Report No. 5793-TH. Washington, DC.
- UNICEF. 1997. Country Programme Recommendation, Addendum.
- World Bank, ADB, “Viet Nam: Environmental Program and Policy Priorities for a Socialist Economy in Transition,” Report No. 13200-VN. 1996
- World Bank. 1995. “Viet Nam: Environmental Program and Policy Priorities for a Socialist Economy in Transition.” Report No. 13200-VN.
- _____. 1998. Advancing Rural Development in Viet Nam—A Vision and Strategy for Action.
- _____. 1999a. *Thailand Social Monitor.*
- _____. FAO/UNDP. 1996. *Cambodia: Forest Policy Assessment.*
- _____. 1994. WB, Thailand: Mitigating Pollution and

Congestion Impacts in a High-Growth Economy.

Whittington, T.P. 1995. "Cambodia: Profiles of Environmental Activities and Programs," Draft consultant's report. SEATEC International, Bangkok.

Van Zalinge, N.P. 1997. *Fishery Needs in the Lower Mekong Basin from a Cambodian Perspective*, Contribution to the National Fisheries Workshop, Vientiane, Lao PDR, 19-21 March 1997.