

T4212–CAM: ESTABLISHMENT OF THE TONLE SAP BASIN MANAGEMENT ORGANIZATION

I. INTRODUCTION

1. In 2003, the Government of Cambodia requested the Asian Development Bank (ADB) to provide technical assistance (TA) to investigate how infrastructure development and natural resource management in the Tonle Sap basin could be better driven, coordinated, and streamlined.¹ From 15–23 September 2003, a fact-finding mission of ADB visited Cambodia and formulated the TA in line with the poverty reduction partnership agreement between the Government and ADB and ADB's Tonle Sap Basin Strategy². The Government recognizes that present institutional arrangements for basin management are inadequate and concurred with the goal, purpose, scope, implementation arrangements, cost estimates, financing plan, and terms of reference identified by the Mission. The TA framework is in Appendix 1.

II. ISSUES

2. The Tonle Sap lake forms a natural floodplain reservoir in northwestern Cambodia. It is fed by two main perennial and numerous erratic tributaries, and is drained by the Tonle Sap river into the Mekong river near Phnom Penh. However, when the level of the Mekong river is high the flow of the Tonle Sap river is reversed and nutrient-rich water is pushed into the lake, raising its level by up to 10 meters (m) and increasing its area from about 2,700 square kilometers (sq km) in the dry season to 9,000–16,000 sq km in the rainy season. This unique hydrological cycle and the vast area of seasonally flooded low forest and shrubs that it creates, in a tropical climate, results in a very high biodiversity of fish, reptile, bird, mammal, and plant species. In particular, the lake supports a huge human population through its enormous fisheries productivity³ and provides the last refuge for some of Asia's most globally significant biodiversity. Additionally, the flooded areas offer seasonal breeding and nursery grounds and forage areas for fish that migrate to the Mekong river, providing thereby a regionally vital resource.⁴ The Tonle Sap lake also helps to control salinity intrusion and conserve mangrove forests in the Mekong delta by acting as a natural reservoir from which water drains during the dry season.⁵ The catchments provide water for irrigation and human consumption and are themselves home to rare, sometimes endangered, species.

3. However, population⁶ and development pressures are rising and, despite its inherent richness, most indicators of poverty around the Tonle Sap lake are even more negative than those that characterize the national population as a whole, or indeed other rural areas of Cambodia. Half of the villages have between 40–60% of households below the official poverty line,⁷ with a peak of 80% in some areas. Adult literacy is only two thirds of the national average. Many households have no land holdings and are entirely dependent on fishing and foraging, with access to fishing areas often under dispute. There is a disproportionately high level of

¹ The TA first appeared in ADB Business Opportunities (Internet edition) in August 2003.

² ADB. 2003. Tonle Sap Basin Strategy. Manila. The strategy is based on three underpinning principles (i) sustainable livelihoods, (ii) social justice, and (iii) a basin-wide approach.

³ The lake's fisheries provide 40–70% of the protein intake of Cambodia's population, nearly 50% of whom depend on the lake's resources directly or indirectly, while about one million people live in fish-dependent communities.

⁴ Many fish species, including the all-important *trey riel*, migrate between the Mekong river and the Tonle Sap lake, utilizing the river for spawning and the flooded forest for growth and maturation.

⁵ The Tonle Sap basin contributes 6.4% of the average annual flow of the Mekong river.

⁶ A growth rate of 2–2.5% per year will more than double Cambodia's population by 2025.

⁷ The poverty line is the per capita expenditure needed to secure an intake of 2,100 calories per day.

female-headed households that are less resilient to shocks—particularly health problems—because of the multiple functions of women in the communities.

4. Each threat to the environment and biodiversity of the Tonle Sap basin has multiple root causes, the severity of which conditions the speed and manner in which they can be addressed. Immediate threats include over-exploitation of forest resources, dry season encroachment and land clearance of the flooded forest, the increasing resource needs of an expanding population, over-exploitation of the fish and wildlife resources of the Tonle Sap lake, and changes in water quality and siltation rates. In response, in October 1997, the Government nominated the lake as a biosphere reserve under the Man and the Biosphere Program of the United Nations Educational, Scientific, and Cultural Organization and established the Tonle Sap Biosphere Reserve Secretariat in September 2001 as a focal point of environmental management. In November 2002, ADB approved a loan and supporting TA for the Tonle Sap Environmental Management Project.⁸ In recognition of the complexity of the agents of change, ADB has also concluded that infrastructure development and natural resource management should be considered from the perspective of the basin as a whole, which includes all or part of 8 of the 20 provinces and 4 municipalities of Cambodia.⁹ ADB's initiative is consistent with its water policy and a worldwide trend towards managing land, water, and biotic resources within a framework of basin units, as demonstrated by the establishment of the International Network of Basin Organizations, which has more than 100 members. ADB's Country Strategy and Program Update, 2004–2006 for Cambodia reflects this basin-wide approach, which ADB expects to pursue over a 10-year horizon.

5. Addressing threats to the Tonle Sap lake requires an integrated, cross-sectoral, cross-boundary, and multi-disciplinary institutional framework that operates at the basin level. Currently, the Cambodia National Mekong Committee (CNMC),¹⁰ with a membership of 10 ministries and a linkage with the Mekong River Commission (MRC),¹¹ is responsible for promoting basin planning that recognizes the interconnectedness of social, economic, and environmental factors. In particular, in response to the growing need for better coordination of line agencies, a Tonle Sap Biosphere Reserve Secretariat was established in CNMC in September 2001.¹² Notwithstanding, CNMC has experienced difficulty with institutional arrangements. Typically, line agencies define goals in terms of quantitative outputs, not outcomes, for the subsectors over which they hold sway. Furthermore, the Government has since 1996 been implementing a program of decentralization and deconcentration that culminated in February 2002 with the first-ever commune elections. Increasingly, local governments and communities are involved in local natural resources planning and management. The benefits are clear. But, devolution of authority over resources does increase the risk of actions in one province impacting others. Ensuring appropriate participation demands the establishment of a structure that involves all stakeholders. Therefore, in 2003, CNMC began

⁸ ADB. 2002. Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Cambodia for the Tonle Sap Environmental Management Project. Manila.

⁹ The Tonle Sap basin covers 67,600 sq km in northwestern Cambodia (38% of Cambodia's total area).

¹⁰ CNMC's mandate is specified in the Subdecree on the Organizational Structure and Function of CNMC of February 1999. It is to assist and advise the Government in all matters related to the formulation of water policy, strategy, management, preservation, investigation, planning, restoration, and the development of the water and other natural resources of the Mekong river basin within Cambodia.

¹¹ MRC's mandate is specified in the Agreement on Cooperation for the Sustainable Development of the Mekong River Basin of April 1995.

¹² The Secretariat's mandate is to (i) serve as an information clearinghouse open to all, (ii) conduct a nationwide awareness and mobilization campaign for the protection and sustainable use of the Tonle Sap lake and its catchments, and (iii) effect cross-sectoral policy and strategy coordination.

to canvass local governments and communities to move toward some form of basin management organization congruent with MRC's Basin Development Plan.¹³

6. Basin management is not about command-and-control. It is about harmonizing the activities of a multiplicity of natural resource planners, managers, and users so that their actions consider impacts on resource flows and the needs of others. Achieving this requires the creation of institutional processes through which these flows, needs, and impacts can be identified and shared by the full range of stakeholders. Critical to this is the establishment of a structure that provides for planning and management at the basin level to be undertaken holistically in the context of effective dialogues between planners, managers, and users of natural resources, between different levels of government, and across administrative boundaries. River parliaments in India and polder water boards in the Netherlands are two examples of how societies integrate management of land, water, and biotic resources. Where and how such organizations can be established depends on the socio-political context, legal and institutional arrangements, the economic situation and, not least, the resource characteristics of particular basins. Therefore, the form and span of authority of such organizations differ. But effective basin management organizations are characterized by their ability to coordinate planning, contribute to its implementation, and provide a neutral body to monitor achievement and report to stakeholders. Models for basin management organizations are in Appendix 2.

7. The Tonle Sap basin is a complex and fragile ecosystem that is (i) crucial to the livelihoods of more than a million people living on and around the Tonle Sap lake, (ii) the primary source of protein for much of the population, (iii) a breeding, nursery, and forage area for fish of the Mekong river basin, and (iv) a biodiversity reservoir of global significance. Its management requires that the right balance be struck between social, economic, and environmental factors.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Outputs

8. The goal of the TA is sound management of natural resources and the environment in the Tonle Sap basin. Its purpose is to design, and plan the development of, the institutional framework for integrated basin planning and management. Its primary output will be a basin management organization design. Another output will be the outline of a long-term TA roadmap for establishment and effective operation of the basin management organization. A third output will be the specification of a first TA to support its establishment.

B. Methodology and Key Activities

9. **Basin Management Organization Design.** Activities will comprise (i) a preliminary review of existing responsibilities, institutional arrangements, and planning and management systems in the Tonle Sap basin and, (ii) a selective international review of basin management organizations. Subsequent activities will determine the most appropriate model of management organization for the Tonle Sap basin and elaborate its institutional framework. Trade-offs between design principles will be made explicit. The institutional framework elaborated will specify (i) a constitutional mandate, (ii) the areas of responsibility of the organization, (iii) the

¹³ MRC. 2002. Inception Report of the Basin Development Plan. Together with the Water Utilization Program and the Environment Program, the Basin Development Plan is one of MRC's core programs. It aims to establish a planning framework of rules, policies, and processes to balance efficient use of resources with protection of the environment and promotion of social justice and equity.

structure of the organization,¹⁴ (iv) capacity building requirements,¹⁵ and (v) the technical and financial support needed.

10. **Long-Term Technical Assistance Roadmap.** The TA would set the stage for ADB assistance to the establishment and effective operation of a Tonle Sap basin management organization over a 10-year horizon. Activities will specify the particulars of the roadmap, namely (i) outcomes, (ii) outputs, (iii) issues and constraints, and (iv) actions, milestones, and achievements. The components of the roadmap might build capacity for (i) finance and administration, (ii) information systems management, (iii) human resource development, (iv) research, (v) strategic planning and programming, (vi) intersectoral planning in basins, (vii) participatory approaches, (viii) environmental education and awareness creation, (ix) policy dialogue, (x) external relations, and (xi) monitoring and evaluation.

11. **Technical Assistance for Establishment of a Tonle Sap Basin Management Organization.** Activities will detail the first advisory assistance to support the establishment of a Tonle Sap basin management organization, including its goal, purpose, scope, implementation arrangements, cost estimates, financing plan, and terms of reference. Outputs from the first advisory assistance might cover (i) a policy statement on the proposed institutional framework, (ii) legislation to establish a Tonle Sap basin management organization, (iii) an implementation plan, (iv) the strategic plan for a Tonle Sap basin management organization, and (v) a proposed framework for Tonle Sap basin blueprints.¹⁶

12. The active involvement of a wide range of stakeholders will be sought throughout the TA, notably through workshops. A national workshop will be conducted 3 weeks from commencement of the TA to assess the respective merits of different models for basin management organizations. Participants will represent government, donor, scientific, private, fisherfolk, farmer, nongovernment organization, and other civil society interests. Within 3 weeks of the conclusion of the national workshop the consultants will produce a prototypical basin management organization. An international workshop will be conducted 9 weeks from commencement of the TA to table the revised prototypical basin management organization for review. The two workshops will coincide with tripartite meetings between the Government, the consultants, and ADB.

C. Cost and Financing

13. The total cost of the TA is estimated at \$160,000 equivalent, comprising \$115,000 in foreign exchange, and \$45,000 equivalent in local currency. The TA will be financed on a grant basis by ADB's funding program. ADB will finance \$135,000 equivalent to cover the entire foreign exchange cost of \$115,000 and \$20,000 equivalent of the local currency cost on a grant basis. The Government will contribute the balance of the local currency cost of \$25,000 equivalent, mainly in kind. Details of the cost estimates and financing plan are in Appendix 3.

¹⁴ This will include appropriate structures for local government and community representation and the means by which the organization would interact with such representative bodies and other stakeholders.

¹⁵ The basin management organization would need technical and non-technical capacity to (i) coordinate information, (ii) undertake investigations and studies, and (iii) ensure effective development and utilization of models and decision support systems.

¹⁶ Tonle Sap basin blueprints would integrate individual natural resource management plans. Typically, these include water management plans, regional vegetation management plans, and fisheries management plans. The blueprints would set priorities for the basin as a whole, consistent with national and provincial policy. They would be the way in which communities and the Government can reconcile competing demands on natural resources and balance long-term environmental outcomes and social and economic aspirations.

D. Implementation Arrangements

14. The TA will be implemented by a team of international consultants with expertise in (i) water resource management (2 person-months), (ii) institutions, with experience in community participation (2 person-months), and (iii) environmental management (1 person-month). About 3 person-months of short-term domestic consultants with knowledge of specific basin issues will also be engaged as needed. The terms of reference for short-term domestic consultants will be prepared by the international consultants in consultation with CNMC and ADB. The consultants will be engaged by ADB individually in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB. The water resource management specialist will act as team leader. A staffing schedule is shown in Appendix 4. The consultants will produce (i) an inception report within 2 weeks of the commencement of the TA; (ii) a draft final report within 6 weeks; and (iii) a final report detailing TA outcomes and recommending actions within 11 weeks. CNMC will submit to ADB a TA completion report within 3 months of the end of the TA. It will also fill out a TA completion questionnaire to evaluate the TA's outputs, identify lessons learned, and suggest follow-up actions. The terms of reference for international consulting services are in Appendix 5.

15. CNMC is mandated to promote basin planning and will be the executing agency for the TA. It will assign counterpart staff to facilitate day-to-day administration of the TA and liaison with CNMC's constituent members. Given the importance of interagency coordination to the success of the TA, it will also establish a focus group comprising senior officials of CNMC's constituent members and provincial government. The focus group will (i) promote the TA in CNMC's membership, (ii) communicate sectoral mandates, (iii) provide guidance, (iv) resolve institutional problems, if any, and (v) provide the basis for long-term institutional support to a Tonle Sap basin management organization. CNMC will explore the possibility of involving in focus group meetings observers representative of civil society interests.

16. The TA will be implemented in January-March 2004. It will be allied to ongoing programs of CNMC's constituent members, particularly those of the Ministry of Water Resources and Meteorology, and MRC. Its deliverables will be disseminated through their information networks. ADB also publishes a 6-monthly Tonle Sap Initiative brochure and maintains a website for the Tonle Sap Environmental Management Project giving links to related sites.¹⁷

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¹⁷ The website is at http://www.adb.org/Projects/tonle_sap/default.asp.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Goal			
Sound management of natural resources and the environment in the Tonle Sap basin	<ul style="list-style-type: none"> • Adopt policies based on integrated basin planning and management. • Increase participation of stakeholders in decision making. • Improve integrated management and delivery of water. • Manage the demand for water. • Protect water quality and preserve aquatic ecosystems. • Invest in the water sector. 	<ul style="list-style-type: none"> • Technical assistance (TA) framework • TA completion report prepared by the Cambodia National Mekong Committee (CNMC) • Central Government and provincial government statistics • Research program publications 	<ul style="list-style-type: none"> • Political commitment and leadership are catalyzed. • CNMC and other line agencies have a clear vision about the sector goal to which the TA will contribute, and how this goal is to be achieved. • TA findings and recommendations are disseminated, and lend themselves to follow-up analysis and action. • Institutional framework for integrated planning and management in the Tonle Sap basin is clearly understood by CNMC and other line agencies. • CNMC and other line agencies act on findings and recommendations from the TA with support from multilateral institutions, bilateral assistance agencies, and nongovernment organizations, including the Mekong River Commission. • Stable funding mechanism for water sector investments is established.
Purpose			
To design, and plan the development of, the institutional framework for integrated basin planning and management	<ul style="list-style-type: none"> • Design a basin management organization and lay plans for its establishment and effective operation 	<ul style="list-style-type: none"> • TA framework • TA completion report • TA reports and review missions • Tripartite meetings • Workshop findings and recommendations • Focus group meetings • ADB Water Committee 	<ul style="list-style-type: none"> • CNMC and other line agencies have a clear vision about the objective of the TA, and how this objective is to be achieved. • TA findings and recommendations are well grounded, practical, and acceptable.
Outputs			
1. An institutional framework for a Tonle Sap basin management organization is designed.	<ul style="list-style-type: none"> • Review existing responsibilities, institutional arrangements, and planning and management systems in the Tonle Sap basin 	<ul style="list-style-type: none"> • TA framework • TA completion report • TA reports and review missions • Tripartite meetings • Workshop findings and recommendations • Focus group meetings 	<ul style="list-style-type: none"> • A sense of ownership of the TA is achieved at CNMC and other line agencies. • Key CNMC personnel are actively involved. • Demand for TA outputs is catalyzed. • TA outputs are well

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>2. A long-term roadmap for establishment and effective operation of a Tonle Sap basin management organization is outlined.</p> <p>3. A first advisory assistance to support the establishment of a Tonle Sap basin management organization is specified.</p>	<ul style="list-style-type: none"> • Review selected basin management organizations worldwide • Determine the most appropriate model of basin management organization for the Tonle Sap basin and elaborate its institutional framework • Specify the institutional framework elaborated • Specify the particulars of the roadmap, namely (i) outcomes, (ii) outputs, (iii) issues and constraints, and (iv) actions, milestones, and achievements • Detail the first advisory assistance to support the establishment of a Tonle Sap basin management organization, including its goal, purpose, scope, implementation arrangements, cost estimates, financing plan, and terms of reference 	<ul style="list-style-type: none"> • ADB Water Committee 	<p>coordinated.</p> <ul style="list-style-type: none"> • Analysis of constraints and opportunities is carried out in a collaborative manner. • Development of the institutional framework is collaborative, consultative, and transparent. • Consultants establish processes for reviewing the work and for redirecting the effort as necessary to reach the objective of the TA. • Consultants develop awareness and sensitivity to organizational and cultural characteristics and factors that may influence their performance. • National and provincial officials are willing and able to cooperate. • Workshop findings and recommendations are integrated. • CNMC and the consultants develop a close working relationship and partnership and resolve any organizational representation issues that may arise during TA implementation. • The focus group meets regularly, and develops a close working relationship and partnership.
Activities Inputs			
<p>1. An institutional framework for a Tonle Sap basin management organization is designed.</p> <ul style="list-style-type: none"> - For details of activities, see terms of reference for consulting services <p>2. A long-term roadmap for establishment and effective operation of a Tonle Sap basin management organization is outlined.</p> <ul style="list-style-type: none"> - For details of 	<ul style="list-style-type: none"> • 5 person-months of international consulting services in: <ul style="list-style-type: none"> - Water resource management (2 person-months) - Institutions (2 person-months) - Environmental Management (1 person-month) • 3 person-months of short-term domestic consulting services • Counterpart staff 	<ul style="list-style-type: none"> • TA framework • TA reports and review missions • Tripartite meetings • Workshop findings and recommendations • Focus group meetings • ADB Water Committee 	<ul style="list-style-type: none"> • Contact person is appointed at CNMC and other line agencies to insure that their views are represented and to link the consultants to relevant personnel. • Required Government services, facilities, and funds are available on a timely basis. • There is no delay in recruitment of consultants. • There is no delay in appointment of counterpart staff. • Experienced counterpart staff are assigned on a full-time basis. • Consultants are fielded

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>activities, see terms of reference for consulting services</p> <p>3. A first advisory assistance to support the establishment of a Tonle Sap basin management organization is specified.</p> <ul style="list-style-type: none"> - For details of activities, see terms of reference for consulting services 			<p>according to realistic schedules.</p> <ul style="list-style-type: none"> • Linked activities are scheduled appropriately. • All logistical and administrative arrangements are understood and in place. • The team leader of the consultants effectively manages team members and coordinates activities. • The team leader of the consultants has client management skills. • The consultants maintain clear roles, responsibilities, and deadlines.
Inputs			
<p>Asian Development Bank</p> <ol style="list-style-type: none"> 1. International Consultants 91,500 2. Short-term Domestic Consultants 3,000 3. International and Local Travel 18,100 4. Reports and Communications 900 5. Transport and Vehicles 1,500 6. Workshops 11,000 7. Miscellaneous 1,000 8. Contingencies 8,000 <p>Cambodia National Mekong Committee</p> <ol style="list-style-type: none"> 1. Office Space and Transport 5,000 2. Remuneration and Per Diem of Counterpart Staff 10,000 3. Others 10,000 <p>Total 160,000</p>	<p>Cost Estimates (\$)</p>	<ul style="list-style-type: none"> • TA framework • TA reports and review missions • Tripartite meetings • Workshop findings and recommendations • Focus group meetings • ADB Water Committee 	<ul style="list-style-type: none"> • All logistical and administrative arrangements are in place.

MODELS FOR BASIN MANAGEMENT ORGANIZATIONS¹

A. Introduction

1. Some characteristics of a successful basin management organization are universal:
 - (i) Its area of responsibility is clearly defined.
 - (ii) The technical and financial inputs that are necessary to its operations are provided for.
 - (iii) The stakeholders and their form of participation are defined.
 - (iv) It is a public institution.

2. Typically, the responsibilities of such organizations cover the entire inland phase of the water cycle and are directed towards integrated basin planning and management. To act on these responsibilities, a basin management organization must include:
 - (i) A widely representative body in which public administrations (at all levels), user associations, and non-governmental organizations are represented. Its responsibilities will be the formulation of strategies, planning, and follow-up.
 - (ii) An executive, with the relevant financial resources, in charge of the direct implementation of actions or of making them possible by funding.
 - (iii) A multidisciplinary technical team having the necessary technical means for achieving efficient management of land, water, and biotic resources and their monitoring.
 - (v) An organization in charge of natural resource use policing and monitoring.²

B. Basin Management Models

3. There are three main models for achieving a stable and strong institutional framework for integrated basin planning and management, with numerous variations possible for each of these. For the purpose of explanation they are described as (i) a basin authority, (ii) a basin commission, and (iii) a basin coordinating committee or council.

1. Basin Authority

4. A basin authority is the most comprehensive in powers and functions. A basin authority:
 - (i) Usually absorbs most or all of the functions of line agencies.
 - (ii) Is normally a large multi-disciplinary organization.
 - (iii) Executes regulatory and management functions.
 - (iv) Is appropriate when there is a large development task to be undertaken or when line agencies are weak or ineffective.

2. Basin Commission

5. This model sits between an authority and a coordinating committee or council in terms of complexity or strength of the organization, and its "direct influence" in the basin. A basin commission:

¹ Appendix 2 draws from ADB. 1997. Technical Assistance to the Socialist Republic of Viet Nam for Red River Basin Water Resources Management.

² Some of these organizations may be grouped together in a multi-purpose body or merely have their actions coordinated at the basin level.

- (i) Normally comprises a Board of Management representing all the key stakeholders, with an expert technical office supporting it.
- (ii) Can be successfully used when development options are still an issue, basin-wide information and policies are non-existent or confused, and system models still need considerable work. A basin commission deals mostly with policy and planning, as well as developing procedures and quality control matters. It may regulate cross-provincial boundary water issues. It endorses and polices operating criteria and ensures that data, information, and models are suitable for basin-wide management issues.

6. More specifically, such an organization concentrates on:

- (i) Developing good data systems and predictive hydrologic models.
- (ii) Establishing base-line information on land, water, and biotic resources in the basin.
- (iii) Developing policies and strategies to guide planning and development, and environmental (aquatic-ecosystem) rehabilitation and management.
- (iv) Developing and maintaining a systematic process of monitoring and reporting on the behavior and health of the basin and uses within it.
- (v) Providing a forum for line agencies to consider and agree on common rules of operation.

7. Some operating functions may exist for large infrastructure development but most operation and day-to-day management issues remain with individual states or provinces within the basin. Basin commissions may run strategic monitoring stations and operate and manage key hydraulic works. But, most often, basin commissions would have oversight and regulatory authority over large infrastructure by way of an operating agreement or contract with some other organization.

3. Basin Coordinating Committee or Council

8. This is the least intrusive model in terms of impact on existing arrangements. A basin coordinating committee or council:

- (i) Would coordinate high-level policy and strategy matters and have no role in daily operation or management. It would have limited input to long-term planning and no direct influence over regulatory issues.
- (ii) Normally comprises the heads of all relevant line agencies, with a small secretariat supporting it.
- (iii) Is appropriate when competition for natural resources is mostly resolved, systems such as water trading are in place, and the natural resource sectors are stable or mature.

C. Models for Basin Management Organizations

9. Table A2 identifies various basin management organizations and notes their main characteristics.

Table A2: Models of Basin Management Organizations

	Central Government Role	Task: Policy and Coordination	Task: Planning	Task: Financing	Task: Infrastructure Operation	Stakeholder Participation	Awareness Raising
AUTHORITY							
<i>Mexico</i> Comision Nacional de Agua	Yes	Yes	Yes	Yes	Canals, reservoirs, pumps	State Government Representatives	Strong
The Netherlands: Water Boards	No	Yes	Yes	Yes	Dykes, canals, pumps, wastewater	Basin Parliament Elected Council	Very Strong
<i>Germany</i> - Emsch Cooperative - Wahnbach Association - Ruhr Association	No	Yes	Yes	Yes	Reservoir, flood control, pumps, wastewater	Local Government in charge	Very Strong
<i>United States</i> Tennessee Valley Authority	Yes	Yes	Yes	Yes	Power generation, reservoirs, dykes	None	Very Strong
<i>United Kingdom</i> Water Authorities (1973–1988)	Yes	Yes	Yes	No	Water supply, wastewater, reservoirs, dykes	Local Government Representatives	Strong
COMMISSION							
<i>People's Republic of China</i> Tarim Basin	Minor	Yes	Yes	Support	Some	Regional and Prefecture Government Leaders	Strong
<i>Vietnam</i> Red River Basin	Yes	Yes	Yes	Support	No	Central Ministries and Provincial officials	Very Strong
<i>France</i> Agences de l'Eau	Minor	Yes	Yes	Yes	No	Basin Parliament Local Government Representatives	Very Strong
<i>International</i> Rhine Commission	No	Yes	Minor	No	No	Representatives from National Governments	Strong
<i>Australia</i> Murray-Darling Commission	Minor	Yes	Yes	Yes	Minor	State Government Representatives Key Community Groups	Very Strong

	Central Government Role	Task: Policy and Coordination	Task: Planning	Task: Financing	Task: Infrastructure Operation	Stakeholder Participation	Awareness Raising
<i>United States</i> Delaware River Commission	Minor	Yes	Yes	No	No	Local Government Representatives	Strong
OTHER MODELS							
<i>Mexico</i> Lerma Chapala River Basin Council	Yes	Advisory	Yes	No	No	Central Government State Government Water Users	Very Strong
<i>England and Wales</i> - National River Authority (after 1988) - Environmental Agency (after 1995)	Yes. All basin planning in one national organization.	Yes	Yes	Yes	Minor. Most operations are with privatized water companies.	None	Very Strong
<i>Germany</i> Various	Yes. Cooperation between state Departments of Environment.	Yes	Yes	Yes	Minor. Delegated to local Government.	Local Government Representatives	Strong

COST ESTIMATES AND FINANCING PLAN
(\$)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	75,000	0	75,000
ii. Short-Term Domestic Consultants	0	3,000	3,000
iii. Per Diem	16,500	0	16,500
b. International and Local Travel	17,500	600	18,100
c. Reports and Communications	0	900	900
2. Transport and Vehicles	0	1,500	1,500
3. Workshops			
a. Facilitator	0	1,000	1,000
b. Workshops	0	10,000	10,000
4. Miscellaneous Administration and Support Costs	0	1,000	1,000
5. Contingencies	6,000	2,000	8,000
Subtotal (A)	115,000	20,000	135,000
B. Cambodian Government Financing			
1. Office Accommodation and Transport	0	5,000	5,000
2. Remuneration and Per Diem of Counterpart Staff	0	10,000	10,000
3. Others	0	10,000	10,000
Subtotal (B)	0	25,000	25,000
Total	115,000	45,000	160,000

Source: Asian Development Bank estimates.

STAFFING SCHEDULE

Position	Project Month			Person-Months
	1	2	3	
1 Water Resources Management Specialist/Team Leader				2
2 Institutions Specialist				2
3 Environmental Management Specialist				1
Total	▲	▲	▲	5
Reports	Inception Report Draft Final Report Final Report			
Tripartite Meetings	■		■	
Workshops	■		■	

TERMS OF REFERENCE FOR INTERNATIONAL CONSULTING SERVICES

A. Introduction

1. The executing agency for the technical assistance (TA) will be the Cambodia National Mekong Committee (CNMC). CNMC will assign 2 person-months of counterpart staff services to implement the TA. These counterpart staff will be assisted by 5 person-months of international consulting services. Short-term domestic consultants with knowledge of specific basin issues will also be engaged as needed.¹ The TA will be implemented in January-March 2004.

B. Terms of Reference for International Consultants

2. The Tonle Sap basin defines the planning area. It covers 67,600 square kilometers in northwestern Cambodia (38% of Cambodia's total area). It comprises three main physiographic regions (i) the Tonle Sap lake, extending to a maximum area of 1.6 million hectares in the wet season, now declared a biosphere reserve, and effectively bounded by Highways No. 5 and 6, (ii) the low lying watershed, mainly at an altitude of less than 200 meters above mean sea level, originally covered with dry open woodlands interspersed with oases of wetter grasslands and evergreen forest but much of which has been depleted by logging and conversion to upland agriculture, and (iii) the rainforest of the Cardamom Mountains, rising to a height of up to 1,500 meters above mean sea level, large areas of which are still relatively undisturbed.

3. **Water Resource Management Specialist/Team Leader (2 person-months).** The Water Resource Management Specialist/Team Leader will conduct a selective international review of basin management organizations to identify and refine, based on the constraints, opportunities, and issues related to infrastructure development and natural resource management in the Tonle Sap basin, a prototypical basin management organization and a long-term roadmap for ADB assistance to establish and make it operational. He/she will also lead the team and take responsibility for coordinating TA activities and accomplishing TA outputs with the support and inputs of the other team members. Specifically, he/she will:

- (i) Represent the team at focus group meetings organized to facilitate interagency coordination.
- (ii) In conjunction with the Environmental Management Specialist, prepare a delineation and characterization of the Tonle Sap basin.
- (iii) Assess the constraints, opportunities, and issues related to infrastructure development and natural resource management in the Tonle Sap basin with particular reference to potential cross-provincial boundary conflicts and the hydrological regime of the Tonle Sap lake. Together with the other team members, prioritize basin and sub-basin issues, and demonstrate how they may be more effectively addressed through a basin management organization. These should include environmental, social, and economic issues.
- (iv) Lead a selective international review of basin management organizations. This activity will benefit from reference to the International Network of Basin Organizations,² the Network of Asian River Basin Organizations promoted by the Asian Development Bank (ADB)³, and the Water Framework Directive of the

¹ The terms of reference for short-term domestic consultants will be prepared by the international consultants in consultation with CNMC and the Asian Development Bank (ADB).

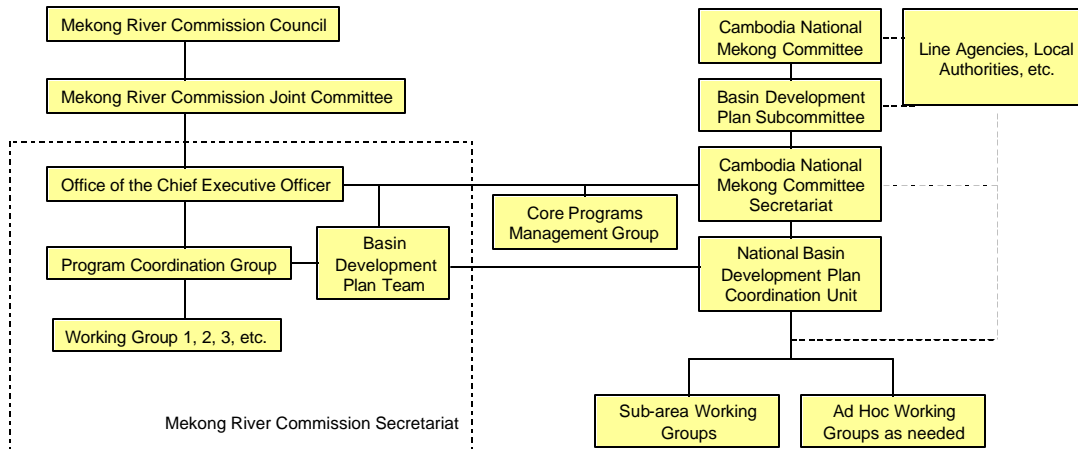
² The website is at <http://www.riob.org/riobang.htm>.

³ Details are at <http://www.adb.org/Water/network.asp>.

- European Union.⁴ Subsequently, prepare a comprehensive analysis of the different roles, responsibilities, and structures of alternative models of basin management organizations.
- (v) With the Institutions Specialist, set current basin management systems operating within the Tonle Sap basin in the context of alternative models of basin management organization.
 - (vi) Lead the preparation of the most appropriate model of basin management organization, and the elaboration of an implementable basin management organizational framework. The framework for the organization would indicate its areas of responsibility, the technical and financial support required, and the means by which the organization would interact with stakeholders. The framework will be informed by the Tonle Sap lake's status as a biosphere reserve.⁵ It will recognize that the importance of the Tonle Sap lake extends far beyond the boundaries of Cambodia. It will also be guided by the organizational framework promoted by the Mekong River Commission (MRC)'s Basin Development Plan (Figure A5).
 - (vii) Prepare, together with the other team members, a discussion paper describing a prototypical basin management organization to be tabled for review by key stakeholders, including the international Water Resources Management Advisor to CNMC.
 - (viii) Coordinate the consultative process to assess the respective merits of different models for basin management organizations and review the prototypical basin management organization. Consultations will encompass a broad range of stakeholders, including government, donor, scientific, private, fisherfolk, farmer, nongovernment organization, and other civil society interests.
 - (ix) Following the conclusion of the international workshop, produce in conjunction with the Institutions Specialist a revised prototypical basin management organization and a long-term roadmap for ADB assistance to effect its establishment and effective operation. To this intent, the roadmap will specify (a) outcomes, (b) outputs, (c) issues and constraints, and (d) actions, milestones, and achievements. It will also suggest partners that might wish to associate themselves with the basin management organization.
 - (x) Formulate, together with the other team members and key stakeholder representatives, a first advisory assistance to support the establishment of the prototypical basin management organization. The first advisory assistance should include development of the rationale, objectives, scope, sequence of activities, cost estimates and financing plan, implementation arrangements, benchmark indicators, monitoring and evaluation mechanisms, and the commitments of the Government, for consideration by ADB.
 - (xi) Be responsible for the timely production of reports detailing the TA activities undertaken and the outputs delivered and their submission to CNMC and ADB for review and endorsement.

⁴ World Wildlife Fund. 2001. Elements of Good Practice in Integrated River Basin Management: A Practical Resource for Implementing the EU Water Framework Directive.

⁵ The Tonle Sap Biosphere Reserve (TSBR) aims to fulfill three complementary functions. They are (i) conservation of landscapes, ecosystems, and species diversity, (ii) culturally, socially, and ecologically sustainable development, and (iii) research, monitoring, and education. Management of the TSBR should be based on zoning into core areas, a buffer zone, and a transition area. In the TSBR, the core areas are located in Prek Toal (21,342 hectares) (ha), Battambang; Boeng Tonle Chhmar (Moat Kla) (14,560 ha), Kompong Thom; and Stung Sen (6,355 ha). The buffer zone—an area of about 540,000 ha—surrounds the core areas up to the outer limit of the flooded forest. The transition area of about 900,000 ha lies between the outer boundary of the buffer zone and Highways No. 5 and No. 6.

Figure A5: The Basin Development Plan of the Mekong River Commission

4. **Institutions Specialist (2 person-months).** The Institutions Specialist will analyze existing constitutional and institutional arrangements for infrastructure development and natural resource management in the Tonle Sap basin, including the role of community-based organizations, and, in conjunction with other team members, propose the structure and function of a basin management organization that ensures effective participation of all stakeholders. He/she will report to the Team Leader. Specifically, he/she will:

- (i) Identify all central government organizations with responsibilities in infrastructure development and/or natural resource management in the Tonle Sap basin; review the mandates by which they are accorded these responsibilities and the structures through which they implement them.
- (ii) Assess existing means by which inter-agency coordination is effected, including the role of CNMC and MRC; determine any existing constitutional arrangements for overall basin coordination and management; and make proposals for a legal framework for the establishment of a basin management organization if no such legislation exists.
- (iii) Determine the roles of devolved government at provincial and commune levels in infrastructure development and natural resource management in the Tonle Sap basin, and describe the means by which devolved government interacts with line agencies in carrying out these responsibilities and the existing systems for inter-provincial coordination in respect of activities which have cross-provincial boundary implications.
- (iv) Assess, together with the Environmental Management Specialist, the institutional implications of the existence of protected areas within the Tonle Sap basin, including the TSBR.
- (v) Prepare an inventory of all stakeholders clearly identifying their respective interests, roles, and responsibilities.
- (vi) Undertake a review of all existing community based natural resource management structures and any other systems of community representation which are relevant to the integrated management of the Tonle Sap basin.
- (vii) Determine the role played by nongovernment organizations in infrastructure development and natural resource management in the Tonle Sap basin.

- (viii) Assist the Water Resource Management Specialist/Team Leader in a review of the main models for basin management and a selective international review of basin management organizations, setting these in the context of existing management systems within the Tonle Sap basin.
- (ix) Lead the formulation of proposals for community representation in basin management, including, where relevant, the participation of sub-basin committees; propose procedures for membership (composition and election) of any representative bodies and specify how these will participate in the overall structure of the basin management organization.
- (x) In conjunction with the Water Resource Management Specialist/Team Leader formulate a framework for the organization that would indicate (a) a proposed constitutional mandate, (b) the organization's areas of responsibility, (c) the structure of the organization, (d) capacity building requirements, and (e) the technical and financial support required.
- (xi) Contribute to the preparation of a discussion paper describing a prototypical basin management organization for national and international review, and participate in a workshop for the subsequent review of this.
- (xii) Assist the Water Resource Management Specialist/Team Leader in producing the revised prototypical basin management organization, the long-term roadmap for ADB assistance, and the first advisory assistance to establish a Tonle Sap basin management organization.
- (xiii) Locate the basin management organization in the context of related regional initiatives, including the Greater Mekong Subregional Economic Cooperation Program of ADB; the Southeast Asian Technical Advisory Committee of the Global Water Partnership;⁶ the Mekong Basin Development Cooperation Scheme of the Association of Southeast Asian Nations; and the 10-Years-of-the-Mekong Program of the Economic and Social Commission for Asia and the Pacific of the United Nations.
- (xiv) Recommend roles for partners that might wish to associate themselves with the basin management organization and advise CNMC on how it might create and run partnerships.

5. **Environmental Management Specialist (1 person-month).** The Environmental Management Specialist will be responsible for ensuring that the role, structure, and function of the proposed basin management organization takes full account of the requirements for managing the protected areas of the Tonle Sap basin, particularly the biosphere reserve, and of the need to maximize the social benefits of the basin without detriment to the conservation of its diverse flora and fauna. He/she will report to the Team Leader. Specifically, he/she will:

- (i) Recognize the functions, uses, and attributes of the Tonle Sap basin.
- (ii) Input to the delineation and characterization of the Tonle Sap basin all factors related to the protection status of sub-areas of the basin, including the zones of the TSBR and upland conservation areas.
- (iii) Additionally identify any further biodiversity conservation issues and incorporate these into the characterization of the basin.
- (iv) Work with the Institutions Specialist to elucidate the legislation relating to biodiversity conservation and the mandates of all line agencies with responsibilities in this. Clearly identify where the mandates of different

⁶ The Committee serves as a regional focal point for global exchange of knowledge about integrated water resource management.

organizations may overlap or conflict in relation to environmental management issues.

- (v) Review the current contribution that nongovernment organizations make to conservation of the basin's biodiversity.
- (vi) Clearly identify those stakeholders, including fisherfolk and farmers whose interests may clash with the preservation of biodiversity in the Tonle Sap basin, and, in conjunction with the Institutions Specialist, formulate proposals for how such stakeholders can be effectively represented in overall basin management.
- (vii) Within the context of the basin management organization, draw up guidelines for conflict resolution to optimize both the conservation and sustainable use of resources.
- (viii) Work with other members of the team on the formulation of the most appropriate model of basin management organization for the Tonle Sap, and the elaboration of an implementable basin management organizational framework that fully recognizes the imperative to preserve the basin's biodiversity and the Government's national and regional responsibilities in this respect. Other management systems relating to Ramsar sites are relevant.
- (ix) Assist the Water Resource Management Specialist/Team Leader in producing the long-term roadmap for ADB assistance, and the first advisory assistance to establish a Tonle Sap basin management organization.
- (x) Locate the basin management organization in the context of related regional initiatives, including the regional program on wetland conservation and protected areas of the International Union for Conservation of Nature; the Living Mekong Initiative of the World Wildlife Fund; and the Strategic Environmental Framework for the Greater Mekong Region of ADB and its proposed sequel.⁷

C. Workshops and Reporting Requirements

6. **Workshops.** Two workshops will be organized.⁸ A national workshop will be conducted 3 weeks from commencement of the TA to assess the respective merits of different models for basin management organizations. Within 3 weeks of the conclusion of the national workshop the consultants will produce a prototypical basin management organization. An international workshop will be conducted 9 weeks from commencement of the TA to table the prototypical basin management organization for review. The two workshops will coincide with tripartite meetings between the Government, the consultants, and ADB. At each workshop, the consultants will provide material for discussion.

7. **Reporting Requirements.** The consultants will produce (i) an inception report within 2 weeks of the commencement of the TA; (ii) a draft final report within 6 weeks; and (iii) a final report detailing TA outcomes and recommending actions within 11 weeks. CNMC will submit to ADB a TA completion report within 3 months of the end of the TA. It will also fill out a TA completion questionnaire to evaluate the TA's outputs, identify lessons learned, and suggest follow-up actions.

⁷ ADB. 1998. Strategic Environmental Framework for the Greater Mekong Region. Manila.

⁸ The workshops should draw together the major stakeholders in land, water, and biotic resource decisions. These include key officials from line agencies involved in the strategy formulation process at the central and provincial levels, professional associations, private sector agencies, nongovernment organizations, and external support agencies. All should be given an equal opportunity to voice their views and define their interests.