



5

DEVELOPMENT IN THE  
MEKONG RIVER BASIN



## 5.1 EMERGING TRENDS AND DRIVERS

### *Developments on a national and basin level*

Fluctuating oil and natural gas prices can make hydropower development financially more attractive to private investors. Global food shortages and rising prices can make irrigation more profitable in the LMB while irrigation development may attract investments from foreign entities that seek more diversified food types. As well, global climate change might change future water availability (see section 3.5).

All of these global emerging issues provide additional incentives for the development of significant water infrastructure in the Mekong Basin, including storage projects. The challenge is to develop these projects within an integrated water resource management (IWRM) context, and with an emphasis on developing multi-purpose projects within a basin perspective.

#### **BASIN-LEVEL AND NATIONAL-LEVEL DEVELOPMENTS**

The region's predicted population growth brings with it increased demand for electricity and food resources, and thus increased pressures on the basin's water resources in the dry season. Also, higher living standards bring changes in attitudes to flooding and food shortages, which require innovative approaches and policies to both flood protection and irrigation expansion on the delta floodplains in Cambodia and Viet Nam.

All governments of the LMB wish to develop water resources for irrigation, hydropower and other uses, and to produce benefits for the many millions who live in poverty in rural areas. These needs must be balanced by consideration of the

existing needs of subsistence farmers who supplement what they grow by fishing and gathering food and other materials from forests and wetlands.

The cascade of hydropower dams in China on the Upper Mekong Basin will considerably re-regulate flows, to the extent that higher flows will occur downstream in the dry season. This makes mainstream hydropower schemes in the LMB financially more attractive and opens up more irrigation potential. But it also raises the question of the degree of impacts that can be tolerated from barriers to fish migration, changes in sediment transport, and changes in ecosystems when the hydrological regime including the flood pulse is altered.

These expected increasing pressures on the basin's resources call for IWRM approaches to increase synergies between the policies and practices of the four governments.

#### **NEW INVESTMENTS AND DEVELOPMENT ASSISTANCE**

As the four LMB countries reform, develop government investment policies and clarify the rules for resource utilisation, opportunities will be increased for the private sector (and foreign 'state-owned' companies) in the development of water and related resources, such as hydropower, navigation, large-scale irrigation, and industry (including mining and tourism). In most of these areas, investment from the private sector now outweighs public sector investments (see section 4.1).

In comparison with public sector financed developments (perhaps supported by foreign aid), the emerging private sector

#### **PRECEDING PAGE**

The Mekong Basin is rich in natural resources, especially in the potential for using Mekong water to enhance economic growth and development, Thin Beun dam Lao PDR.

#### **FACING PAGE**

Opportunities are increasing for development of water and related resources in the Mekong Basin.

developments are driven by private sector goals about investment returns and adopt assessment processes according to government regulation and requirements. This raises the need for strong government

regulatory systems and enforcement capacity, including improved skills and capacities for the central regulating and resource management agencies and stronger supporting laws and regulations.

## Development of water and related resources

Average annual withdrawals for agricultural, industrial and other consumptive uses in the LMB are estimated at about 60,000 million m<sup>3</sup>, or 12 per cent of the Mekong's average annual discharge. The most downstream end of the Mekong Basin, the Viet Nam delta, is by far the largest water user in the basin. Diversions from the river upstream of the delta are so far negligible. Lao PDR and Cambodia hardly use one per cent of their annual renewable water resources. Consumptive uses of water resources in the upper basin countries (People's Republic of China and Union of Myanmar) are also insignificant. Existing storage of water resources behind dams corresponds to less than five per cent of the average annual flow, and does not significantly redistribute water between seasons.

Agriculture is the most dominant water-related sector, particularly in Thailand and Viet Nam (see section 4.3). The water flows that reach the Viet Nam delta in the dry season are fully used for economic, environmental and social purposes, including combating seawater intrusion. The hydropower potential of the LMB is estimated at more than 30,000 MW and about 10 per cent of this potential has been developed to date (see section 4.4).

According to the socio-economic and sector plans of the LMB countries, all four countries are planning to develop water resources for irrigation, hydropower, flood management, domestic water supply and sanitation, and other uses to boost economic growth, reduce poverty and meet the UN Millennium Development Goals. In particular, the countries' hydropower and irrigation development plans will significantly affect

how the basin's resources are used and consumed.

Ten large (>10 MW) hydropower projects are under construction on tributaries and many more are planned in the LMB, including 11 projects on the mainstream. Many of the hydropower projects on tributaries include significant reservoirs, which will increase dry season flows through the re-regulation of water resources from the wet season to the dry season. An additional 50 dams are planned for the next 20 years, mostly in Lao PDR.

Most of the LMB countries have ambitious plans for irrigation development. Water transfers from the Mekong mainstream have long been considered by Thailand to complement national approaches to alleviate droughts.

Development plans of this size and scope bring with them both synergies, or complementary effects between projects, and trade-offs, where benefits for one area or activity create disadvantages for others. For example, synergies can occur between hydropower, irrigation and upland watershed management – with some benefits occurring for all, while 'trade-offs' may take place, e.g. between hydropower development, fisheries and ecosystem productivity and biodiversity.

Trade-offs, in particular, require much analytical work and negotiation between countries, or between sectors. This can be supported by strong IWRM understanding and capabilities across the basin, and across institutions.

While developments on the tributaries have had some localised impacts, no impacts have been detected at the basin

scale (see sections 1.3 and 3.1). However, this may change in future due to the large scale of planned development. If fully implemented, these developments would change the river's hydrological regime, create barriers to fish

migration and reduce sediment and nutrient transport. These changes in turn would create follow-on effects for wetlands, ecosystems and people's livelihoods.

## Trans-boundary issues

The trans-boundary issues that need to be addressed to assess the sustainability of the outlined scale and scope of basin development are numerous. Some of the key issues are outlined below.

### WATER AVAILABILITY FOR USE

Dry season flows maintain a wide range of economic, social and environmental values in the LMB. The difficult questions relate to what level of environmental and social decline increased water use might cause, and what could be the acceptable limits, if any, of such a decline.

### FISHERIES PRODUCTION

High annual fish yields are under pressure from several human-induced activities, including over-fishing, fragmentation and reduction of floodplains, and the blockage of migratory fish by dams. Preliminary results of recent modelling studies indicate that the migratory fish production potentially at risk from mainstream dams may amount to 40 per cent of current annual catch (about one million tons per year), depending on the number and location of the dams and other factors. Such a large potential decline in fish production would have very significant basinwide economic and social impacts. A part of the loss might be recovered by increasing reservoir and rice field fisheries.

### FLOODPLAIN MANAGEMENT

If the current plans of most of the LMB countries are implemented, significant parts of the floodplains would be protected from flooding and developed for irrigated agriculture and other land uses. Such development is associated with potential significant

trans-boundary impacts such as loss of biodiversity, reduction of fish production, and increased flood heights and velocities due to the diversionary effect of flood banks and roads.

### NAVIGATION

The impact of mainstream barriers and dams on the integrated development and implementation of ports, river works, locks and regional waterways may affect trade and tourism as well as local river transport. The navigation sector offers great opportunities in trans-boundary cooperation in terms of regional harmonisation of navigation processes and schemes and environmental management, including bank protection and dredging (see section 4.6).

### WETLAND MANAGEMENT

The annual floods which cover large areas of the LMB wetlands support diverse ecosystems and the large fishery production. Changes in the hydrological regime will change the wetlands and their functions. In particular, changes to the Mekong flood pulse are expected to have trans-boundary impacts e.g. for the flood plains in Cambodia, including the Tonle Sap Great Lake and the Mekong Delta.

### OTHER ISSUES

The construction of dams may also affect river bank erosion and sediment movement downstream; sediment entrapment and flushing downstream and related impacts on riverine ecology (e.g. filling of deep holes); trans-boundary water inundation issues from the storage backwaters, and the passage of flood flows.



Preliminary results of the hydrological assessment of basin development scenarios suggest that one of the trans-boundary issues mentioned above – future water availability for use – is not a major problem. The water quantity demands of the scenarios considered

for the foreseeable future (next 20 years) can be met in the dry season through the re-regulation of water from the wet to the dry season from storage dams that are being constructed and planned in the Upper Mekong Basin and Lao PDR.

### Emerging IWRM challenges

The acceleration in water resources development brings both opportunities and threats. At the basin scale, integrated water resources planning is becoming a reality with the development of the IWRM-based Basin Development Strategy. At the national level, there are still fragmented water related responsibilities between national agencies and development still tends to be sector driven. Basin planning has identified the following overarching short-term IWRM challenges.

At the basin level demand is growing for a scenario-based and participatory planning approach to inform joint decision making by the LMB countries on an acceptable balance between resource development and resource protection. In particular, project proposals need to be reviewed to ensure that their potential impacts, including cumulative impacts, are acceptable from a sustainability

viewpoint and that they have been prepared following best practice guidelines.

At the national level there is considerable scope for institutional development and capacity building for IWRM (see section 5.2). This is especially timely for the recently established national water and environmental management agencies and their divisions and river basin organisations at the sub-basin levels. There is a need to further strengthen their coordination, steering and monitoring role for IWRM, engaging the line agencies responsible for sector planning.

At the project, level the main IWRM issue is the central and sector-oriented planning and development of large projects, especially hydropower. The single-purpose projects may often be less economically beneficial and efficient than multi-purpose projects, and they often increase the adverse effects downstream and upstream of the project.



## 5.2 IWRM GOVERNANCE AND STAKEHOLDER PARTICIPATION

### IWRM at a basin scale

Water resources management in the LMB is a mix of a ‘cooperative and coordinating model’ at the basin scale (facilitated through the MRC) and four national models, where individual sovereignty, customs and administrative systems dominate. MRC, through its legal agreement, acts as a focal point for the cooperation, and to assist the Member Countries in achieving their basin-scale aims through provision of shared information, technical guidance and mediation. The agreement establishes a forward-looking framework and mechanisms for pursuing the concept of IWRM at the basin scale. It provides a platform for suitable stakeholder participation processes that cover all aspects of basinwide water management.

At the basin scale, the four countries, in 2005, endorsed an ‘IWRM Strategic Directions’ document and agreed to follow its

general IWRM principles and guidelines in water resources development and protection, and in the development of IWRM governance systems.

The four countries have recognised the need, and value, of improving the links between basin-level and national-level water resource planning, and making them much more explicit. This is occurring through the second phase of the basin development plan programme, which is focusing on developing a common understanding of IWRM trans-boundary issues and problems, and of the importance of the environmental and social values and assets of the basin, and how these can be used and managed in future development. This will all be brought together in an IWRM-based Basin Development Strategy (see the box below)

#### IWRM-based development strategy

The Mekong basin cooperation model is built on ‘cooperation, coordination and mutual respect’. So, developing a common understanding of IWRM trans-boundary issues and the importance of the environmental and social values and assets of the basin, and how these can be used and managed in future development, is the essential supporting foundation for basinwide sustainability.

The IWRM-based Basin Development Strategy will be a statement by the LMB countries of their intention to share, use, manage and protect the basin’s resources in an equitable and sustainable way for economic growth and poverty reduction. The strategy will be adopted in 2010.

Having such a strategy will provide confidence that water can be allocated and used without significant unforeseen impacts. At the national level, this will make it easier to attract funding for projects, since developers will have some certainty about the water resources management processes against which proposals will be judged. At the basin level, this will provide incentives for a more beneficial implementation of agreed procedures under the 1995 Mekong Agreement.



## IWRM governance at the national level

Large changes in IWRM have occurred in all the LMB countries over the past five years, particularly relating to developing clear statements of national water-related policy and strategy, and developing institutional and regulatory frameworks to support these policies. All countries made a commitment to IWRM at the World Summit on Sustainable Development in 2002.

Of major importance is the continued need to improve agency and staff capacities in IWRM, and to develop a suite of modern analytical tools, particularly hydrologic, environmental and socio-economic modelling packages – at the river basin and national levels – that countries can use to assess new policies and development proposals and ensure sustainable use of the basin's resources.

*Cambodia* has developed a number of statements on water policy and strategy over recent years. Work is now proceeding to develop a clear implementation plan, or road map, that will more clearly guide the various sector agencies in water planning activities and allow the Ministry of Water Resources and Meteorology to monitor progress and compliance and foster the links to basin-scale activities, through close cooperation with the Cambodian National Mekong Committee.

A Law on Water Resources has recently been approved, which establishes IWRM as a fundamental principle for water planning and management and specifies the processes for national and river-basin-level water planning. This law is now being made operational. A Tonle Sap Authority has been established to coordinate water development and planning in that sub-basin. Basin forums could according to the law be established in some river basins and watersheds, advising on water planning and management issues. Irrigation scheme management is being transferred to the farmer level.

*Lao PDR* is developing a national water resources policy and strategy which will provide a clear perspective for all sector agencies to follow in water resource planning. Its

implementation will occur over the next five years and will be monitored by the Water Resources and Environment Administration (WREA).

The new policy and strategy will more clearly define agency roles and responsibilities and remove any overlap between agency functions. The Water Resources Law (from 1996) will be revised to provide WREA with clear legal backing and authority to manage national and river basin-level water resources. Provincial agencies are expected to be given greater responsibilities for water resource planning and management, and devolution of management of irrigation schemes has occurred to farmer level. Water planning will occur at a river-basin level and river basin organisations are being trialled to assess the appropriateness of this approach.

*Thailand* has undergone various water policy and strategy reforms over the past 10 years, emanating from the 1997 Constitution that guarantees the right of communities to protect and manage the environment and natural resources. The country has been subdivided into 25 river basins and river basin committees are becoming the main bodies for participatory water resources management at the basin and local level.

The National Water Resources Committee has developed a national water policy and strategy statements that guide the work of the basin committees and water-related agencies. The committee monitors progress of water resources planning and management against the endorsed policy and strategy.

The IWRM institutional framework has been strengthened since the establishment of the Department of Water Resources (DWR) within the Ministry of Natural Resources and Environment. Basin committees have a well-structured mandate and broad membership that allows all stakeholder groups in a basin to contribute and participate. They operate in a way that is similar to what is acknowledged as international best practice guidelines for participatory river basin planning and management.

Supporting initiatives now being addressed are the drafting of a river Water Resources Law, strengthening the basin committees, creating and developing information networks and systems for IWRM, and developing guidelines and plans for flood control and mitigation.

*Viet Nam* has created a National Water Resources Council and developed a comprehensive national water resources strategy that identifies the major challenges for IWRM in the country, priority activities and actions that are to be followed, and the agencies responsible for participating in the work. It

gives a clear roadmap for addressing emerging water resource problems in an integrated and participatory way.

The current Law on Water Resources is under review. Water resources planning is based on river basins rather than administrative boundaries, and several basin organisations have been established. Overlap between water-related ministries is being clarified. Decentralised decision-making and management for water supply and irrigation have been introduced.

## Stakeholder participation and consultation

New approaches to stakeholder participation and consultation are being developed in all the LMB countries. Such processes are a central part of IWRM. At the basin scale, stakeholder participation and consultation is a fundamental part of the MRC's activities. Access to information and engagement in the organization's activities and monitoring processes are key to this approach.

### STAKEHOLDER ENGAGEMENT AT THE MRC'S GOVERNANCE LEVEL

MRC is developing a policy that will see representatives of civil society and other interest groups join government agencies and development partners in having a greater say in how the organization is managed. A consultative forum is proposed that would provide inputs to the decision-making bodies of the MRC – the Joint Committee and the Council – where the overall strategic direction of the organization is agreed.

### STAKEHOLDER ENGAGEMENT AT THE MRC PROGRAMME LEVEL

Most of the MRC programmes develop their own stakeholder participation processes. The BDP programme, for example, organises stakeholder forums at the regional, national and sub-basin levels, operates a public submissions website, and conducts stakeholder surveys and IWRM training.

The MRC disclosure policy supports stakeholder engagement though improved access to information.

Working with NGOs to further improve these processes for transparent basinwide dialogue, and encouraging the development of national approaches to public participation that relate well to the basin perspective, are key priorities for the next few years. All of the strategic and management links (Table 5.2.1) must be effective for the full benefits of IWRM to be realised.

Table 5.2.1 Indicative management arrangements for IWRM

Management level and strategy	Purpose of strategy or plan	Coordination or management body	Partner, supporting or implementing bodies
<b>Basin-scale:</b> IWRM-based Basin Development Strategy	Guides water-related development and management in the LMB	MRC	National resource management agencies
<b>National:</b> National IWRM Strategy (linked to basin-scale strategy)	Plans the actions to achieve national goals, follows an IWRM approach. Takes account of the basin-scale strategy	• MOWRAM, Cambodia • WREA, Lao PDR • MNRE, Thailand, • MONRE, Viet Nam	National planning and sector agencies, private and non-government stakeholders, NMCS
<b>Sub-basin:</b> Sub-basin IWRM Strategy	Plans the actions for local-level socio-economic and resource protection, in accordance with the national IWRM strategy	• River basin organisation • Province level coordinating mechanism	National sector agencies (province level)
<b>Watershed:</b> Watershed plan of action	Provides information into sub-basin level plans	Watershed committee	Districts and commune agencies, local communities



## 5.3 THE MEKONG RIVER COMMISSION COOPERATION

Although the Mekong River acts as a national border in some places, the activities of people on the river seldom stay within the boundaries of one country. Human activity upstream can have serious impact downstream or across surrounding areas.

A demarcation is often drawn between environmental and economic goals but, in the Lower Mekong Basin, these objectives are closely related, with water and water resource management being critical to the economic development of the whole region.

Mekong water resources and aquatic biodiversity underpin the potential for hydropower, agriculture and forestry, fisheries, navigation and trade. Together, these industries contribute billions of dollars to the regional economy.

The riparian countries share a range of trans-boundary benefits through the water resources of the Mekong Basin. For example,

the beneficial effect of floods on agriculture; the benefit of alluvial silt deposits; and the importance of the Tonle Sap reverse flow on the cycle of fish breeding. Far from being a point of conflict, trans-boundary water use in the Mekong is an opportunity for cooperation and improved development across the region.

However, issues of population expansion, pollution, deforestation, mining, a growing demand for electricity and food and pressure to use the river system to lift the basin countries out of poverty is putting pressure on water resources. All of these pressures also have potential trans-boundary impacts as has been outlined in the previous chapters of this report.

The MRC's role is to support the governments of the Lower Mekong Basin to manage water resources – helping the Member Countries to exploit the river network in a sustainable way.

### Why is multilateral cooperation important?

All of the riparian countries have different needs when it comes to water resource management – and these are often related to their levels of socio-economic development. The difference in economic power translates to differences in regional political power and the potential for dominance of the water resources of the basin. This applies both within the LMB and also between the lower and upper basin countries.

Differences in population density translate to significant differences in water-use requirements. For example, more water is needed for irrigation in Thailand and Viet Nam where there are higher concentrations

of productive agricultural land, than in Cambodia and Lao PDR, which are more intensively forested.

While demand for water resources is spread unevenly between countries across the basin, so too are the resources themselves. Thailand and Viet Nam may be more energy hungry than other riparian countries, but almost all of the hydropower potential of the basin is located in Cambodia, and especially Lao PDR (see section 4.3). China has begun the process of constructing a cascade of hydropower dams on the mainstream of the Mekong, which is bound to have long-term trans-boundary impacts.

In recent years, Southeast Asian countries have started to take a regional approach to coordinating economic, social and environmental development and the countries of the Mekong Basin are no exception, with all or some of them being active in the Asian Development Bank's Greater Mekong Sub-region (GMS), and the Association of South East Asian Nations (ASEAN).

ASEAN has identified economic promotion and sustainable development of the Mekong River Basin as a major area of focus with a specific emphasis on traffic/transportation, trade and human resources development. In 2004, ASEAN Heads of State agreed on enhancing economic cooperation and integration among Cambodia, Lao PDR, Myanmar and Viet Nam to promote development.

The ASEAN Secretariat is a partner to the MRC Secretariat and Member Country governments and works with the Asian Development Bank, the GMS and other donors to identify opportunities for Mekong support.

Cooperation also exists between the MRC, GMS, ASEAN and upstream countries China and Myanmar, which have been

official Dialogue Partners to the MRC since 1996.

A cooperation agreement between China and ASEAN agreed to in 2004 includes a section on Mekong River Basin development cooperation which covers areas such as improving navigational safety on the Lancang–Mekong, expanding environmental impact assessments and the management and monitoring of water quality.

In 2008, the MRC and the Government of China agreed to extend the range of cooperation activities and signed an agreement for a further five years of continuing dialogue. China agreed to increase the amount of hydrological information about the Lancang–Mekong River that it provides to the MRC during the flood season. Visits to China by MRC staff to look at measuring stations and the data centre in Kunming and on the Yangtze River were crucial to helping countries in the LMB upgrade measuring equipment, train government staff and establish the data centre at the Provincial Bureau of Hydrology and Water Resources, Yunnan Province, China. Sharing of hydrological data from China contributes to MRC daily regional flood forecasts.

### Achieving cross-border cooperation

The MRC is working to increase cooperation between the riparian states to identify potential trans-boundary issues for negotiation, mediation and conflict prevention; and to develop mediation and conflict management capacity. Although almost all MRC programmes take a regional trans-boundary approach, some specific activities have been fostering dialogue between riparian nations.

The MRC plays a key role in promoting a river basin perspective through the lens of integrated water resources management (IWRM) principles, as discussed in the previous section. This means ensuring that decisions related to one sector, for example hydropower development, also reflect the existing uses and future needs of others,

such as agriculture, water supply, fisheries, aquatic ecosystem protection, flood management and water quality.

This structured trans-boundary approach to river governance helps ensure the sharing of the trans-boundary benefits of water-use. Examples include the following:

**Hydropower** – The MRC works to understand how countries can mitigate the trans-boundary environmental risks of hydropower by researching and making sure all governments and developers have access to information about processes in the river system and the consequences of development proposals. It is also taking a lead role in facilitating negotiation and dialogue between countries when upstream developments will



have a trans-boundary impact, by administering a formal notification and consultation process between affected countries when dams are planned (see section 4.3).

*The Basin Development Plan* – focuses on realising the economic value of the Mekong for development and poverty alleviation – specifically by:

- Promoting freedom of navigation
- Promoting regional integration
- Promoting water use for such activities as agriculture
- Promoting sustainable hydropower

*Talking to the neighbours* – the MRC gives the four member countries a collective bargaining chip when negotiating with upstream countries. Cooperation with China and Myanmar, the two Dialogue Partners, has been evolving through the MRC and a dialogue mechanism has been established. This is a framework of cooperation under which joint activities are undertaken. Both countries now regularly participate in MRC technical meetings, contributing to the dialogue on flood, fisheries and navigation

issues. This has also led to an increase in transparency from China, which now also shares information on development plans for dams on the Lancang-Mekong river upstream projects. The MRC and China are working on sharing information about dam designs and the impoundment of water in Chinese dams and the Chinese government has agreed to be part of the MRC's strategic environmental assessment of hydropower dams.

*Identifying areas of conflict* – The MRC has identified a range of potential trans-boundary 'hotspots' or critical areas of potential conflict, which includes seven critical areas or issues within the Mekong River Basin. Building on this initiative, a project has begun on the Lao/Cambodian border to help address potential problems at the Strung Treng wetlands site, where illegal and destructive fish harvesting activities, increased pressure on wetlands due to increasing human population in the area, threats to the endangered Mekong dolphin and change in flow and hydrological patterns due to developments in the upper stream of the Mekong River have the potential to cause conflict.

*MRC's Vision for the Mekong Basin: An economically prosperous, socially just and environmentally sound Mekong River Basin*

*MRC's Mission Statement: To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well being by implementing strategic programmes and activities and providing scientific information and policy advice*



Laos forest dwellers.

### History of the Mekong River Commission

The Mekong River Commission was founded in its current form with the signing of the 1995 Mekong Agreement, which established the rules and procedures of the organisation. It has its origin in the Mekong Committee, and the Interim Mekong Committee, which were in force between 1957 and 1995.

In 1957, just three years after Cambodia, Laos, and Viet Nam obtained independence from France both the United Nations and US government released separate reports that highlighted the huge potential for hydropower and irrigation development on the Mekong.

These reports were influential and largely responsible for arousing political interest in creating a trans-boundary organisation to manage Mekong water resources. The Mekong Committee was established the same year as the release of the two reports and irrigation and hydropower subsequently became a priority focus for the organisation. The relatively unexploited Mekong was seen by the newly independent riparian countries as a powerful potential economic resource; and trans-boundary cooperation an essential part of the drive for the development of the Lower Mekong.

The committee was initially part of the United Nations, with its Executive Agent being chosen from the rank and file of the UN Development Programme. The UN saw the Mekong Committee as a means of managing water and water resources to promote economic growth – and to help lift the region out of poverty. It hoped that the organisation would form a precedent for managing other trans-boundary river systems in poverty-stricken regions.

The committee's focus on hydropower intensified further in the early '70s as it became a more forceful advocate for large-scale dams and other projects. The release of the 1970 indicative basin plan called for 17 potential long-term development projects on the mainstream by the year 2000.

However, progress toward building these hydropower schemes, and trans-boundary cooperation in general, was hampered by ongoing regional conflict.

In 1975, Cambodia, Lao PDR and Viet Nam all underwent regime changes. The US abandoned support for the Mekong Committee due to embargoes it imposed on Cambodia (withdrawn in 1992), Lao PDR (withdrawn in 2004), and Viet Nam (withdrawn in 1994). International aid agencies and other donors, most notably the Scandinavian and Japanese governments, stepped in to replace the gap in financial support and continue to do so to this day.

By 1977 it was becoming clear that Cambodia would be unable to participate in the committee due to the rise of the Khmer Rouge. The committee passed a declaration, which resulted in the establishment of the Interim Mekong Committee in January 1978. The smaller three-country committee was also politically weaker and limited in scope to study large-scale projects and implement a few small-scale ones, almost exclusively in Thailand. The role of the organisation began to shift to data collection.

In 1987, the interim committee released a revised basin plan which called for less hydropower development than the 1970 plan. In 1991, Cambodia requested re-admission. Although this was initially opposed by the Thai government, negotiations over Cambodia re-joining the organisation culminated in a new structure altogether, with the signing of the April 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. The committee was renamed the Mekong River Commission (MRC) with four member countries: Cambodia, Lao PDR, Thailand and Viet Nam; and two Dialogue Partners: the People's Republic of China and the Union of Myanmar.

The MRC works with National Mekong Committees in each country to develop procedures for water utilisation to try to ensure 'reasonable and equitable use' of the Mekong River system. It rejects the ambitious irrigation and hydropower schemes planned in the 1970s and has adopted a more holistic approach to protecting the water resources of the basin to help all member countries to exploit the river network without damaging it. There is a greater emphasis on better management and preservation of existing water resources in the member countries than in previous years.



## Authors and acknowledgments

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### 1.3 HYDROLOGY

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### 1.6 THE ECONOMY OF THE LOWER MEKONG BASIN

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### 1.7 POPULATION, ECONOMIC AND SOCIAL INDICATORS

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## 2. PEOPLE AND LIVELIHOODS: STATUS AND TRENDS

### 2.1 INDICES OF HUMAN DEVELOPMENT

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### 2.2 PROGRESS TOWARDS THE MILLENNIUM DEVELOPMENT GOALS

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## 3. ENVIRONMENT: STATUS AND TRENDS

### 3.1 WATER RESOURCES

#### 3.1.1 Flow regimes

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#### 3.1.2 Water quality

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#### 3.1.3 Aquatic ecological health

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#### 3.1.4 Sediment characteristics and trends

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### 3.2 WETLANDS

#### 3.2.1 Wetland types and distributions

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#### 3.2.2 Wetland resources and biodiversity

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#### 3.2.3 Wetland functions and values

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### 3.3 FISH AND FISHERIES

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## 4. ECONOMIC STATUS AND TRENDS

### 4.1 THE MACROECONOMY OF THE LOWER MEKONG BASIN

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### 4.2 FORESTS AND FORESTRY

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### 4.4 SUSTAINABLE HYDROPOWER DEVELOPMENT

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### 4.5 DOMESTIC WATER SUPPLY AND SANITATION

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### 4.7 MINING AND OTHER INDUSTRIES

#### 4.7.1 Effects of mining on water resources

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#### 4.7.2 Effects of other industries on water resources

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### 4.8 TOURISM

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## 5. MEKONG COOPERATION TOWARDS SUSTAINABLE DEVELOPMENT

### 5.1 DEVELOPMENT IN THE MEKONG RIVER BASIN

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