

# Water Sector Roadmap Kingdom of Cambodia



*WATER for ALL*

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# Water Sector Roadmap

## KINGDOM OF CAMBODIA

### 1. Purpose

This “roadmap” summarises the Royal Government’s (RGC) goals for the water sector in Cambodia, as a basis for setting priorities and planning investment and development assistance. The water sector includes all aspects of water resources management and water service delivery, including water-related activities such as freshwater fisheries management and wastewater disposal. Water is an essential “raw material” for many other sectors of the economy, and has incalculable social and environmental values.

### 2. Poverty reduction and socio-economic development

The context for this “roadmap” is provided by the *National Poverty Reduction Strategy 2003-2005 (NPRS)*, the *Second Five Year Socioeconomic Development Plan 2001-2005 (SEDP-II)*, and the draft *National Water Resources Policy*. The targets and goals for 2005 and 2010 listed in Tables A and B are taken largely from these sources, and recent consultation with RGC officials. Sector issues and constraints (Table C) also are drawn largely from these sources, and from the *National Water Sector Profile*.

The RGC’s development strategies, laid out in *SEDP-II*, are (1) to foster broad-based sustainable economic growth with equity, with the private sector playing the leading role; (2) to promote social and cultural development by improving the access of the poor to education, health, water and sanitation, power, credit, markets, information and appropriate technology; (3) to promote sustainable management and use of natural resources and the environment; and (4) to improve the governance environment. The water sector plays a role in each of these strategies.

The *NPRS* includes many references to water resources management and water service delivery. These include water management for agriculture, fisheries management, Integrated Water Resources Management, building institutional and community capacity for water management, inland water transport, safe water and sanitation, and management of floods and droughts. The *NPRS* Action Plan lists hundreds of “actionable measures”, many of which relate to water, and are included in this “roadmap”. The actionable measures do not constitute a coordinated action plan that enables funding agencies to identify investment priorities.

Of Cambodia’s population, 36% is considered to be below the poverty line (US\$14/month), of whom 90% live in rural areas and 71% are employed in agriculture. The water sector can contribute to poverty alleviation in Cambodia primarily through:

- Improved rural livelihoods, food security, and nutrition (water management for agriculture, fisheries conservation)
- Improved access to safe drinking water and sanitation, with consequent reduced illness, mortality, and loss of opportunity for work and education
- Improved security against natural disaster, especially floods and droughts, with consequent reduced losses of property, crops, etc.
- Sustained conservation of aquatic ecosystems and biodiversity, to provide a common property resource for the benefit of future generations

### 3. Sector overview

Thanks to the Mekong River and extensive aquifers, Cambodia has abundant water – an estimated annual runoff of 475 BCM from the Mekong system and a groundwater resource of about 20 BCM. The Mekong River and Tonle Sap Lake are key elements of Cambodia’s identity, and an invaluable resource for agriculture, fish production, biological diversity, water transport, and hydropower.

Cambodians have adjusted to seasonally high river flows and flooding, and take advantage of their benefits to agriculture and fishing. In the wet season, excess water can cause flooding, loss of life, lost agricultural production, and damage to property and infrastructure. Flood mitigation consists principally of flood forecasting along the mainstem Mekong River, and a flood dyke that protects Phnom Penh. Elsewhere, the common response to flooding is to relocate until floodwaters recede.

During the long dry season, evapotranspiration far exceeds rainfall, and rivers drop to low levels. Water is in short supply in many places, even for domestic use, and there is growing competition for water. During the dry season, moreover, water quality is increasingly degraded, which creates more competition for water of

appropriate quality for drinking, livestock, ecosystem maintenance, etc. With agricultural development and intensification, and a growing urban population, water quality will be under increasing threat.

Cambodia is predominantly agricultural, with over 80% of its 12 million people living in rural areas. Over 80% of cropland is rain-fed, and farmers face the risk of crop failure or reduced yield as a result of drought or dry spells. A small percentage of cropland has irrigation systems that support multiple cropping, and most irrigation is supplementary. Many farmers use portable pumps to exploit surface and groundwater. The resulting uncontrolled competition presents a serious threat to water resources.

Less than 15 MW of Cambodia's large (estimated 15,000 MW) hydro-electricity potential has been developed and investment in hydropower is very expensive. Industry has a small total water requirement, and places relatively small contaminant loadings on water bodies. The Ministry of Environment's monitoring and enforcement programme deals with point-source contamination from industry.

Only ~24% of the rural population has access to "safe" water. The situation is improving in Phnom Penh and a few provincial towns. By 2000, 70% of the urban population had "safe" water, from 85% in Phnom Penh to an average 13% for 18 provincial towns. Service quality (hours of supply, potability) outside Phnom Penh is low, however. Access to improved sanitation is only ~50% for the urban population, and <10% for the rural population. The incidence of water-related disease is high, with serious consequences for employment, school attendance, and expenditure on treatment of illness.

Institutional arrangements in the water sector are undergoing rapid change. The MOWRAM recently was established as lead water sector agency, and a Law on Water Resources Management and a National Water Resources Policy are being considered by the RGC. Cambodia signed the Mekong Agreement in 1997. A critical issue is the capacity of water-related institutions, especially at sub-national level, as the Government devolves responsibility to provincial and local levels. Sustainable management of water will require adequate financial resources, an improved information base, and comprehensive capacity building.

The RGC has insufficient resources to carry all costs of construction, operation and maintenance (O&M) of water-related infrastructure and services. Cost recovery and beneficiary participation in irrigation scheme management are being introduced, with the creation of Farmer Water User Communities for newly constructed or rehabilitated schemes. Rural water supply facilities generally are provided by NGOs, with provision for O&M by beneficiaries. In urban areas, private sector management of water supply systems is being encouraged. The Phnom Penh Water Supply Authority (a public enterprise) is achieving financial sustainability. Water service delivery can be made financially sustainable through mechanisms like public-private partnerships or tariff reform, supported by a coordinated policy, legal and regulatory framework that provides security. However, water resources are a public good, and their management generally must be paid for from the public purse. National sources of funds (royalties, licence fees, etc) for water resources management must be developed, so that the resource is able to sustain delivery of water services.

#### **4. Sector issues and constraints**

The key issues and constraints in the water sector are grouped into the following topic areas:

- Legislation and policy
- Institutional arrangements
- Institutional capacity
- Providing data and information
- Managing irrigation and drainage systems and other water-related infrastructure
- Mitigating the impacts of water-related hazards
- Managing competition for water and deteriorating water quality
- Conserving aquatic ecosystems and fisheries
- Managing international water resources
- Managing the coastal zone
- Financing water resources development and management

#### **5. International engagement in the water sector**

Investment in the water sector depends heavily on the international community. This includes the World Bank, Asian Development Bank, and UN-system agencies including FAO, UNDP, WHO, World Food Programme. The Mekong River Commission's various basin-level programmes and country projects significantly benefit Cambodia. Bilateral donors make significant contributions, include the European Union,

France, Italy, and Japan. Many international NGOs are also engaged, particularly in rural areas, in water supply, sanitation, small-scale irrigated agriculture, and community development.

## 6. References

Key sources of more detailed information include:

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Royal Government of Cambodia, October 2001. *Second Five Year Socioeconomic Development Plan 2001-2005*. RGC, Ministry of Planning, Phnom Penh.

Royal Government of Cambodia, December 2002. *National Poverty Reduction Strategy 2003-2005*. Council for Social Development, Phnom Penh.

Royal Government of Cambodia, February 2003. *National Water Resources Policy, Kingdom of Cambodia*. MOWRAM, Phnom Penh (in draft, under consideration by the Council of Ministers).

## 7. Glossary

BCM	Billion cubic metres
CNMC	Cambodia National Mekong Committee
FAO	United Nations Food and Agriculture Organisation
FWUC	Farmer Water User Community
I&D	Irrigation and drainage
IMT	Irrigation management transfer
IO	International organisation
IWRM(&D)	Integrated water resources management (and development)
M&E	Monitoring and evaluation
MCM	Million cubic metres
MIME	Ministry of Industry Mines and Energy
MoE	Ministry of Environment
MOWRAM	Ministry of Water Resources and Meteorology
MRC	Mekong River Commission
MW	Megawatt
NDMC	National Disaster Management Committee
NGO	Non-governmental organisation
NMC	National Mekong Committee
NPRS	National Poverty Reduction Strategy
NRW	Non-revenue water
O&M	Operation and maintenance
ODA	Official development assistance
PIMD	Participatory irrigation management and development
PPWSA	Phnom Penh Water Supply Authority
R&D	Research and Development
RGC	Royal Government of Cambodia
SEDP-II	Second Five Year Development Plan
SFKC	Social Fund of the Kingdom of Cambodia
TA	Technical Assistance
UFW	Unaccounted for Water (= non-revenue water)
UNDP	United Nations Development Programme
WHO	World Health Organisation
WUG	Water User Group

## Water Sector Roadmap, Kingdom of Cambodia: Tables A to D

A. Sector Outcomes	1.1.1.1 Indicators			
	5 years past	Current status	2005 (end of SEDP-II)	2010 (end of SEDP-III)
<b>National Water Reforms</b>				
1. Effective national water policy	Several sub-sectoral policies and strategies drafted, e.g. Urban Water Supply and Sanitation Policy, National Environmental Action Plan.	Draft Law on Water Resources Management with National Assembly, draft National Water and Resources Policy with Council of Ministers.	Law and Policy both promulgated. Sub-decrees and regulations approved, and enforcement capacity in place.	<b>1.1.1.1.1.1</b>
2. Effective water sector apex body	Cambodia National Mekong Committee (CNMC) established to coordinate Mekong-related development. MOWRAM established with overall responsibility for water resources management.	CNMC implements the Mekong Agreement with NMCs of other MRC members, but is under-resourced. MOWRAM focuses on I&D, but is developing capacity in water resources policy and management.	CNMC is promoting and coordinating sustainable WRM&D for Cambodia's and other riparian countries. MOWRAM actively leading sustainable development and management of the Nation's water resources.	<b>1.1.1.1.1.2</b>
3. Effective water action agenda	Water-related activities largely sub-sectoral, with no overall plan for water resources management.	A National Water Resources Strategy prepared; and a draft Strategic Plan 2001-5 for MOWRAM.	MOWRAM implements its Strategic Plan 2006-2010 as a component of RGC's SEDP-III, and promotes national IWRM&D.	National Water Resources Strategy reviewed and revised to incorporate IWRM at all levels of government.
<b>1.1.1.1.2 Water Resources Management</b>				
4. Total annual withdrawals as share of annual water resources	About 0.1% (relative to annual Mekong River runoff 475 km <sup>3</sup> /y and a ground-water resource of 17.6 km <sup>3</sup> )	An estimated 0.75 km <sup>3</sup> /y, still << 1%	Increasing, but still <<1%. A growing quantity from groundwater and storages.	Increasing, but still <1%
5. Existing policy and capacity to collect and manage water data among agencies	Hydro-meteorological data collection capacity far below requirement, except for flood warning on the Mekong main stem. Inter-agency cooperation was negligible.	Hydrometeor-ological data collection capacity less than needed, except for flood warning on the Mekong. Inter-agency cooperation is weak but included in the draft Policy.	MOWRAM's hydro-meteorological capacity upgraded to minimum level needed. Line agencies implement the provisions of the National Water Policy with regard to data exchange.	MOWRAM's hydro-meteorological capacity meets national information needs. Line agencies implement the provisions of the National Water Policy with regard to data exchange.
6. River basin perspective for management and development	No national approach to river basin planning and development. MRC and CNMC provide a basin context for the 86% of the country in the Mekong basin.	River basin approach being considered. CNMC implements the Mekong Agreement within resource constraints. Flood forecasting within MRC system.	A river basin-based approach to IWRM&D developed, for application on a "pilot" basis to at least 2 or 3 major (sub) river basins within the Mekong basin.	<b>1.1.1.1.2.1.1</b>
7. Devolution of integrated water resources management	Limited stakeholder participation. Line agencies individually controlled all IWRM, except for drinking water and minor village irrigation. Steps were being taken towards PIMD and IMT, with FWUCs to take responsibility for irrigation O&M.	Growing stakeholder participation. PIMD and IMT promoted in I&D, with >100 FWUCs. IWRM principles disseminated but not yet adopted.	IWRM recognized by all agencies with water-related responsibilities. PIMD part of all new interventions in I&D, and extended to existing systems.	High awareness of IWRM with MOWRAM support in at sub-national and river basin levels and IWRD adopted at local level (Village Development Committees, FWUCs, etc.). Rural water supply/sanitation managed by beneficiaries..

8. Water quality impacts	Moderate impacts. Human activity degrading dry season surface water quality. Chemical quality of urban drinking water sources generally good. Many rural surface waters and unconfined aquifers contaminated. Taste, odour and potential health problems with deep aquifers.	Moderate impacts Surface water quality (except turbidity) during the wet season is good. Dry season water quality is high in the Mekong, but degraded in Tonle Sap and many other waters. Bacteriological quality of river water is severely degraded downstream from Phnom Penh. National standard for drinking water under preparation.	No targets for quality of natural waters appear to have been set. National standard for drinking water established.	As for 2005.
9. Water quality management in place	Partially effective. Law on Environmental Protection and Natural Resources Management provided for pollution control and quality standards defined. MoE had an enforcement program for point-source industrial/urban discharges.	Partially effective. MoE enforcement program partly effective for point source discharges. No management of rural water quality or non-point source contamination. Draft Law on WRM enables MOWRAM to manage water quality.	Capacity (technical guidelines, regulations, trained staff, data base) exists to manage point sources. Owners of contaminant sources obtain wastewater discharge permits and treat wastewater to national standards.	Data available on water quality at public areas, effluents, surface and groundwater, as a basis for measures to eliminate sources of contaminants. Necessary human resources and information available to establish such measures.
10. Adversely affected coastal zone.	Slight impacts. Coastal river basins and the coastal zone lightly populated; human impacts probably small, except at Kampong Som and other towns.	Slight impacts. Situation little changed. Growing pressure at Kampong Som offset by installation of wastewater treatment facilities.	Sustainable development of coastal areas promoted via strengthened legal framework, social coastal/fishery resource management communities.	<i>1.1.1.1.2.2</i>
11. Economic losses from floods and droughts (annual average from 1990 to 2000)	<i>1.1.1.1.2.3</i>	>2 million people affected by 2001 flooding, and 920,000 evacuated. Losses were \$36 m in 2001 (2,250 houses, 165,000 ha of crops, 7,940 km of rural roads damaged). Losses much less in 2002.	NCDM has capacity to mitigate. Cross-border flooding issues resolved. Communities educated to mitigate flooding. Measures planned to mitigate drought in vulnerable provinces.	Goals for 2010 to be developed during planning for SEDP-III
12. Annual Loss of life from floods and droughts.	Varied widely. Some 350 people died in the major flood in year 2000.	62 people in 2001 flooding, 70% children. Less than 10 died in 2002.	<i>1.1.1.1.2.4</i>	<i>1.1.1.1.2.4.1</i>
<b>Water Service Delivery</b>				
13. Incidence of children under 5 with diarrhea	Diarrhoe/dysentery accounted for >10% of referred cases; second most important after Acute Respiratory Infection.	<i>1.1.1.1.2.5</i>	Mortality reduced by 10%, 2003-7	MoH Program to reduce morbidity and mortality due to diarrhea and acute respiratory diseases among children <5
14. Urban population with access to safe water	Rapid progress made in Phnom Penh and some provincial towns. 70% of urban population had "safe" water (85% in Phnom Penh; average 13% in 18 provincial towns). Service quality low.	Situation improving in Phnom Penh, Sihanoukville and provincial towns receiving investment. 5 provincial centres have no piped supply. 15 public water-works are in operation; house connections range 3%-28%.	87% in Phnom Penh has access to safe water, and 37% in provincial towns	Goals for 2010 to be developed during planning for SEDP-III
15. Urban population with access to adequate sanitation	An estimated 40-55% of urban population had access to "improved" toilet facilities	Current situation is not changed significantly.	90% in Phnom Penh have access to sanitation facilities by 2005. No goals elsewhere.	Goals for 2010 to be developed during planning for SEDP-III
16. Performance of urban water supply/sanitation – non-revenue/unaccounted-for water	From ~80% UFW in 1993, Phnom Penh progressed to ~40%; UFW was 27-70% in provincial towns.	Improving: 22% UFW in Phnom Penh, 16-55% UFW in provincial water supply systems (private sector management).	Average 35% UFW for provincial towns.	Goals for 2010 to be developed during planning for SEDP-III

17. Amount (%) of urban effluent that is treated	No urban wastewater received treatment, except some primary treatment in Phnom Penh, and a small plant at Battambang.	Current situation for urban wastewater is unchanged. 70% of factories have their own wastewater treatment plant.	70% for Sihanoukville. No goals for other provincial/district towns.	Goals for 2010 to be developed during planning for SEDP-III
18. Cost recovery for urban water supply	Collection efficiency was ~85% in Phnom Penh, and 60 to 95% for other municipal systems.	<b>1.1.1.1.2.6</b> .	100% for Phnom Penh. 90% for provincial towns	Goals for 2010 to be developed during planning for SEDP-III
19. Private sector participation in urban water supply	Phnom Penh Water Supply Authority reorganized on private sector lines. Several provincial water supplies managed or owned by the private sector. Water vendors a major source of safe water for urban residents.	Private sector management of urban water supply is promoted. PPWSA is a self-sustaining public corporation. There is private sector ownership or management in 3 provincial and 8 district towns.	No goals for provincial towns. Goals are developed for 33 district towns, under a new project.	Goals for 2010 to be developed during planning for SEDP-III
20. Effective regulatory system for urban water supply	Regulatory arrangements unclear and fragmented. MIME oversaw utilities except PPWSA. A National Policy on Water Supply and Sanitation drafted.	<b>1.1.1.1.2.7</b>	<b>1.1.1.1.2.8</b>	<b>1.1.1.1.2.9</b>
21. Rural population with access to safe water	~24%. Over 6 million people used unprotected sources.	<b>1.1.1.1.2.10</b> %	40% have access to safe water by 2005	48% have access to safe water by 2011. (MDG is 80% by 2015)
22. Rural population with access to adequate sanitation	<10%	<b>1.1.1.1.2.11</b> %	20% by 2005	32% by 2011
23. Self-sustaining rural water supply systems	No systems exist. Rural water supply from ponds, rivers, and wells. Beneficiaries failed to maintain hand pumps.	No systems exist. Current situation is unchanged.	Community institutions formed for all new and many existing RWS systems, with performance standards, training, and private sector incentives.	<b>1.1.1.1.2.11.1</b> .
24. Irrigation efficiency	~50-70% estimated for some existing irrigation schemes but no reliable data.	Current situation unchanged.	No national target. Systems designed appropriately for local soil and construction material.	As for 2005.
25. Average yield per ha or yield per volume of water for rice	Yield rose from 1.61 t/ha in 1996 to 2.12 t/ha in 2001, then 1.92 t/ha in 2002, due to drought.	Yield averages 2 t/ha, is increasing, but is well below the achievable level of >5 t/ha	<b>1.1.1.1.2.11.2</b> .	Sustained 2.2-2.5 t/ha, with a cultivated area of 2.5 m ha.
26. Cropping intensity	At best, 100% average. There was little double-cropping. In 2000/1, 82% of the cultivated area was harvested.	The current situation is unchanged.	<b>1.1.1.1.2.11.3</b> .	As for 2005.
27. Cost-recovery for irrigation system O&M	<b>1.1.1.1.2.12</b> .	Policies implemented in 72 existing schemes, in all new/rehabilitated schemes and in 11 new "model" schemes. Training is ongoing for MOWRAM staff.	No specific targets. Goals are sustainable I&D systems, FWUCs motivated to fund O&M; minimized deterioration of infrastructure and need for rehabilitation; reduced recurrent expenditure; efficient use of funding.	An Irrigation Improvement Fund established. The general goal is improved farming systems, agricultural productivity, food and income security. No quantitative targets set yet.

28. User participation in irrigation	Some FWUCs established, with O&M and governance functions. Frameworks, a Guide for M&E, and strategies for implementing PIMD developed.	>100 FWUCs exist, with O&M and governance functions. A PIMD Training Manual produced. Draft Decree on PIMD and Sub-decrees on FWUC and Irrigation Management Transfer prepared.	A National Secretariat for PIMD and FWUCs established. FWUCs with a fee collection system linked to level of performance manage 80% of the irrigable area.	General goal is sustainable management/development of irrigation systems, and increased funds mobilisation for I&D sector. No quantitative targets set yet.
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1.1.1.1.3 B. Indicative	Current status	End SEDP-II (2005)	End SEDP-III (2010)
Appropriate national policy, legislation and strategy for IWRM	Draft National Water Resources Policy and WRM Law under consideration by Gvt. Various sub-sectoral policies and strategies in draft or adopted.	National Water Resources Policy and Law on Water Resources Management adopted and sub-decrees drafted to enable implementation. Sub-sectoral policies and strategies all adopted.	Sub-decrees adopted and effectively implemented. Sectoral and sub-sectoral policies and strategies effectively implemented.
Effective institutional arrangements for IWRM	MOWRAM (IWRM and I&D), CNMC (administering Mekong Agreement) and MoE (pollution control) have principal responsibility for IWRM; other agencies have responsibility for service delivery. Effectiveness is limited by lack of resources and inter-agency coordination.	Continued capacity building strengthens effectiveness of the key water-related agencies, and IWRM concepts become well understood and accepted in national and sub-national agencies. Organizational responsibilities clearly defined, especially for water quality management.	MOWRAM fully able to implement and promote IWRM, and other agencies carry out their responsibilities consistently. River basin committees established in 2-3 priority river basins for which basin management plans have been developed.
Sound basis for private sector participation in the water sector	Legal/regulatory basis for private sector participation in water service delivery is weak, and provides limited security. No arrangements to license/allocate rights to take/use water, but draft Law on WRM has provisions. A law on regulation of water supply in draft. Wastewater discharges are licenced by MoE.	Secure environment established for private sector investment in the economy. Law on WRM provides sound legal basis to allocate water rights, and capacity for administration is developed. The law on regulation of water supply passed, and necessary sub-decrees drafted to guide administration of licenses, fees, etc.	Secure environment well established for private sector investment in the economy. Procedures established for administration of water rights, regulations, and licenses for water service providers, and applied efficiently, fairly, and transparently.
Adequate water and climate-related data and information	Water and climate-related data and information inadequate to support IWRM, water project design, and I&D management. Flood forecasting for Mekong River fully functional.	Capacity-building projects for water and climate-related monitoring programs have committed funding. I&D Management Information System under development. Information on Mekong and Tonle Sap flows fully meets requirements.	Basic monitoring and archiving capacity operational, and water and climate archives extended. Information and systems required for I&D design, management, monitoring and evaluation, available on an operational basis.
Effective community response to water-related natural hazards (especially floods and droughts)	Severe impacts on the whole population and mitigation limited largely to flood forecasting along the Mekong, structural flood protection for Phnom Penh city, and after-the-fact flood/drought relief. NDMC responsible to coordinate disaster mitigation and MOWRAM to implement flood and drought mitigation. Effectiveness growing but resource-limited.	NDMC coordinates a national strategy for disaster management and MOWRAM has strategies for flood and drought mitigation. Communities trained to take precautions. An affordable combination of structural, non-structural and forecasting measures implemented. Provincial and district centers protected from 1:10 year floods, and 10,000 ha of agricultural land from 1:5 year floods	Loss of property, livelihood and life as a result of 1:10 year events minimal. In more severe (less frequent) events, losses significantly reduced below the present, and promptly mitigated by effective relief efforts.

Sustainable arrangements to manage and control water for agricultural production.	About 18% of cropland receives irrigation (largely supplementary) and about 20% of public I&D systems are fully operable. Sustainability low because of limited funds and organizational/community capacity. Uncontrolled and often unsustainable use of by many farmers to exploit groundwater and surface water for small-scale irrigation. Most cropland is rain-fed, and novel means of water control needed.	An updated comprehensive inventory/database on the physical, social and economic attributes of existing irrigation schemes exist. About 22% of cropland irrigated, with the area served by fully functional I&D systems increasing by 30,000 ha/year. Capacity to formulate and implement sustainable I&D projects using a participatory approach established. PIMD is applied to all new/rehabilitated systems, and to 80% of other systems. Sustainable techniques such as water harvesting promoted for crop water control in rain-fed areas.	About 25% of cropland irrigated. PIMD and IMT progressively extended to existing public I&D systems. Small-scale private water management widely practiced, within sustainable limits set by local water resources.
Effective regulation of competing demands for water	No legal basis for allocation of water or regulation of water use, and no implementation.	Law on WRM and supporting sub-decrees approved and provide a basis for allocation and regulation. MOWRAM capacity for enforcement built.	To be developed during planning for SEDP-III.
Improving water quality	Water quality is good in the Mekong and deep aquifers, but degraded in smaller rivers, shallow aquifers and the Tonle Sap, due to non-point source contamination, especially in the dry season, and in the Tonle Sap/Bassac Rivers by Phnom Penh sewers.	National standards for drinking water quality and monitoring systems for effluent discharge and receiving water quality at newly constructed wastewater treatment plants established.	To be developed during planning for SEDP-III.
Enhanced water supply, sanitation and public health in urban and rural areas	Incidence of water-related diseases very high, in part because sanitation and sewerage facilities inadequate. Concern about potential health effects of arsenic and pesticide contamination of ground waters.	Water well with hand pump (2000) or piped water system (155) provided and WUGs organized in target villages.	Health impacts of environmental pollution, particularly by arsenic and pesticides, addressed in the health sector strategic plan for 2003-7.
Increasing contribution of hydro-electricity generation to electric power supplies	Installed capacity ~12 MW (~10,000 MW potential), contributing <1% of total supply. Investment questioned because of environmental and capital costs. Inadequate data for design of new stations.	An inventory of hydropower potential at all scales available, and the social and environmental effects of development known. Plans for several medium-large scale hydropower projects ready.	To be defined in national Power Sector Strategy for 2006-10. Private sector investment actively promoted.
Effective management of the coastal zone	Growing human pressure on coastal waters and ecosystems. Several ministries and provincial agencies responsible for coastal and marine waters and resources, but no legal instruments provide for management, and knowledge lacking.	Legal framework for participatory coastal zone development and management established, with at least 10 coastal resource management committees. Treatment of wastewater from Kampong Som removed this source of stress.	To be developed during planning for SEDP-III.
Increasing importance of inland water transport	~1,800 km of waterways, over a third of which can be used year-round. Phnom Penh has a major port. Navigation limited by low water during the dry season, bars (particularly at the entrance to Tonle Sap Lake), lack of navigational aids, hydrographic surveys, and skilled sailors.	Ways of increasing investment in port facilities and facilitating shipping through Vietnam studied, and private sector management of port and landing facilities extended. Dredging program operational and an up-to-date hydrographic survey conducted.	A basic network of landing facilities enables inland water passenger transport. Inland waterways as a leading all-weather mode of transport, to link rural and urban centers.
Sustainable community-based fisheries	<b>1.1.1.1.3.2</b> .	Tonle Sap Environmental Management Project is implemented. Community-based management of fisheries is extended and protected areas introduced in the lower Mekong basin and coastal provinces, with 340 additional community fisheries by 2008.	Existing community fisheries strengthened, and becoming independent.

### C. Sector Issues and Constraints

**Legislation and policy.** There is not a coherent body of water-related law, regulatory instruments, or policy. A draft Law on Water Resources Management (WRM) is before the National Assembly, and a draft National Water Resources Policy is before the Council of Ministers. Several sub-sectoral policies are at various stages of development or approval, and a framework and law on regulation of water supply is in draft. The legal and regulatory environment needs further strengthening to provide a secure basis for private sector participation in the water sector, and to avoid the difficulties experienced elsewhere (e.g. forests, fisheries) with property rights, licensing, revenue collection, etc. Implementation of laws is generally weak, although advances are being made, e.g. in administering provisions of the Law on Environmental Protection and Natural Resources Management related to wastewater discharges. MOWRAM will need to develop institutional capacity to administer the Law on WRM when it is passed.

**Institutional arrangements.** Several RGC line ministries have responsibilities for aspects of water resources exploitation, while the CNMC deals with Cambodia's responsibilities under the Mekong Agreement. The MOWRAM was established in 1999 with a mandate to manage the Nation's water resources, but attends primarily to irrigation and drainage (I&D). Inter-agency relationships tend to be uncooperative, although MOWRAM has reached formal agreements with several other ministries to delineate responsibilities. Water quality management (as well as other matters) is within the mandate of several ministries as well as MOWRAM, and clearer responsibilities are needed. The RGC is devolving responsibilities to provincial and more local levels, which will require allocation of increased financial and trained human resources, to lessen reliance on non-governmental support.

Institutional arrangements for managing I&D are reasonably well-defined, with somewhat unclear responsibilities of MOWRAM, MRD and MAFF for water management for agriculture. Water management systems cannot be sustained because of limited government resources. MOWRAM is implementing a policy of irrigation management transfer and participatory irrigation management and development. These are applied to new and rehabilitated schemes and progressively introduced to existing systems, with establishment of Farmer Water User Communities. The process requires ODA for capacity building of FWUCs and sub-national government offices, and farmers are not always keen or able to accept responsibility. Functional I&D systems and infrastructure are few, and supply water on a supplementary basis using simple (and often decrepit) structures. The RGC goal of increasing irrigated area requires that institutional arrangements for assuring beneficiary participation and scheme sustainability must be established before schemes are completed.

**Institutional/community capacity.** RGC capacity (especially at sub-national levels) is limited, because of the loss of an entire cohort of people during the civil war, low public sector salaries, run-down infrastructure, etc. The RGC is implementing a variety of measures in civil service and governance reform. Capacity building, of physical facilities, operational funding, and human resources development will continue to be required in MOWRAM, other water-related institutions, and the public service as a whole. Sustainable results of capacity building will be unlikely until the RGC sets public service salaries at realistic levels. The successful development of PPWSA as a public corporation exemplifies what is possible, and the RGC seeks greater private sector and/or beneficiary involvement in water services provision (water supply, sanitation, hydropower, I&D). For MOWRAM, a major re-training and/or recruitment programme will be required, at both central and provincial/district levels, for water resources management, law enforcement, support for community groups, etc. This will assist it fully to carry out its mandate in water resources planning, management and regulation.

**Providing data and information.** Capacity to provide the data and information required for design of water-related infrastructure, IWRM&D, and management of droughts and floods is limited, leading to inefficient design. International programmes in the Mekong River basin (flood forecasting, water quality investigations, fisheries management, etc.) provides valuable support. Exchange of existing information among RGC institutions is inefficient, because of a lack of awareness of what is available, a lack of formal mechanisms for obtaining access, and possessiveness of information. Hence, the heavy investment by international funding agencies in natural resources information has not been fully effective. The draft National Water Resources Policy includes

policies on exchange of data and information. Mechanisms and willingness to implement these policies will be required. A large investment in the collection, archiving, and dissemination of data and information about water resources and use (quantity and quality; surface water and groundwater), river basin characteristics, weather and climate still is needed, via a coordinated water and climate information strategy. The possible impacts of climate variability and change also will need to be considered.

**Managing irrigation and drainage (I&D) systems and related infrastructure.** Poverty is concentrated in rural areas, but agricultural production is low, cultivable land is under-utilised, and rural incomes and food security are not assured. Limited progress has been made in the last ten years to deal with this situation. Improved water control is regarded as essential; only ~18% of agricultural land is irrigated now, mostly by supplementary irrigation, and multiple cropping is uncommon. Much of Cambodia's water-related infrastructure, especially for I&D, fell into disrepair during the 1980s and 1990s, becoming unusable or able to provide only poor standards of service. A 1994 survey showing that 20% only of I&D systems were fully operable, and 14% completely inoperable. Irrigation management is undeveloped, with little effort to promote water use efficiency and sharing, even in new schemes. Rehabilitation is proceeding as rapidly as the RGC, donors, and farmers can provide resources, but has not always produced sustainable results. Infrastructure deteriorates rapidly, and sustainability requires resources for on-going O&M. The RGC cannot afford to carry the whole burden of rehabilitation, operation and maintenance of all water-related infrastructure.

For newly rehabilitated I&D systems, MOWRAM and funding agencies generally require the formation of FWUCs to participate in design and take responsibility for O&M. This as yet applies to 10-15% of systems, and only to secondary and lower-level canals, and is not always successful. Considerable ability is required for farmers to manage a FWUC, which takes time to develop, and good training by RGC staff, who also need training. Persistence will be needed to fully implement PIMD. MOWRAM emphasizes the need to rehabilitate medium and large-scale public I&D schemes, while MAFF tends to promote smallholder-scale developments, e.g. using groundwater. The latter are regarded as avoiding the organisational problems of public schemes, while requiring more manageable investment. Perhaps 70% of cropland is not readily irrigable by public schemes, and small-scale investments e.g. in water harvesting will be needed also. A national strategy for I&D is needed to achieve an appropriate mix of approaches, combined with workable arrangements to ensure sustainability. It must take account of the many other factors that can increase agricultural production and productivity, e.g. improved varieties, diversification, product quality, access to urban/international markets. rry the whole burden of rehabilitation, operation and maintenance of all water-related infrastructure.

**Managing water supply and sanitation facilities.** There is a high incidence of water-related diseases in Cambodia, including diarrhoea, dysentery, typhoid. A significant contributor is that domestic water supply and sanitation is at a low level in Cambodia, except in the capital city. Rural water supply is in many villages dependent on streams, open ponds and shallow wells, which constitute a health hazard. Water supply systems in the <20 towns that had them have deteriorated to a very poor state, with low coverage (maybe 10% of households in a town), short periods of supply (a few hours a day), and water that is not potable without boiling. Urban wastewater treatment is largely absent in Cambodia, except for primary (lagoon) treatment of some sewerage in Phnom Penh, a small plant at Battambang, and planned investment in Siem Reap and Kampong Som. An expected doubling of urban population by 2030 will greatly increase pollutant loadings on rivers, unless there is large scale investment (e.g. \$300 m to rehabilitate Phnom Penh's sewerage system). Private sector involvement in urban water supply and sanitation requires that companies can be sure of profitability, within a regulatory environment that protects both public and private interests.

NGOs and IOs (especially UNICEF) are largely active in installing tube wells and latrines to provide safe water and improved sanitation in rural areas. For small-scale facilities such as handpumps, Donors normally introduce arrangements for beneficiary O&M, but these are not consistently successful. Motivation, training and education, spare parts, etc, are needed to enable beneficiaries to take responsibility for facilities. Key constraints are lack of funds for O&M, lack of management skills from financial management to the ability to replace parts in a pump, and lack of information on the distribution of high quality water, which has led to the drilling of many wells that have proved to be unusable.

**Mitigating the impacts of water-related hazards.** Floods and droughts are a severe constraint on development and poverty alleviation, and in a bad year like 2000 can cause huge economic losses, disruption, and loss of life. Measures such as construction of secure flood embankments around Phnom Penh city, participation in the MRC's flood forecasting system for the Mekong, and establishment of the NDMC are significant advances. Much remains to be done, especially in rural areas where farmers are exposed to the risk of impoverishment by natural disasters. A structural approach to flood mitigation is unaffordable, probably would be disastrous for the Mekong-Tonle Sap fishery and ecosystem, but is favoured by some officials. I&D infrastructure can mitigate the effects of dry spells and drought in localities that are already well-watered, but the ~70% of the cultivable area that will continue to be rain-fed needs alternative approaches to water management. A strategic approach is needed that efficiently combines structural and non-structural means of mitigating the impacts of floods, dry spells and droughts, and assists the rural community – particularly in the non-irrigable, rain-fed areas – to respond to extreme conditions without being plunged into indebtedness.

**Managing competition for water and deteriorating water quality.** Cambodia is "water wealthy" during the wet season, but during the dry season ponds, streams, and rivers other than the major ones dry up. All but the Mekong are showing increasing signs of contamination by human and animal waste, fertilisers, etc. With agricultural development and intensification, and a growing urban population, continued degradation of water quality is likely. During the dry season, arable farming is impracticable over much of the country without irrigation. Abstractive and instream water uses are uncontrolled, and the Law on WRM is still only in draft. Enforcement will need capacity building in MOWRAM, but will not easily address non-point source pollution, abstraction by smallholders, etc. Rivers like the Battambang are lined with hundreds of motor pumps that collectively have greater impact than a single large irrigation offtake; toileting, animal watering, etc. degrade chemical and bacteriological water quality. The consequences include depleted streamflows, widespread water-related illness, algal blooms, and potential degradation of the freshwater fishery. The Law on Environmental Protection and Resource Management cannot deal easily with non-point and informal/community sources of contamination. The public are ill-disposed to governmental regulation, or even to community-level cooperation, and are poorly informed about water resources issues like pollution. Community education and participation are required to engage the public – especially children – in safeguarding water resources from competition and mis-use. Reliance on regulatory measures is unlikely to be successful. Competition for water is managed most effectively at river basin level, and the impacts of developments such as impoundments and of processes such as deforestation can only be managed there. Cambodia has little capacity or experience in river basin management. The RGC recently has been promoting IWRM principles in the river basin framework through conferences etc. They will need to be made operational, by funding of river basin planning and management exercises.

**Conservation of aquatic ecosystems, biodiversity and fisheries.** Environmental degradation of seasonally flooded areas, conversion of floodplain forests to agriculture, and growing fishing pressure threaten the internationally important biodiversity “resource”, aquatic ecosystems and capture fisheries. The catch of large and medium-sized fish is declining, though the catch of small, less valuable fish is increasing. The Mekong-Tonle Sap ecosystem includes many migratory species, whose life cycles may be disrupted by activity elsewhere in the basin. An estimated 1 million people depend on fishing for their livelihoods, and fish provide the principal source of protein in Cambodia, so conservation of aquatic ecosystems is essential for socio-economic as well as ecological reasons. Ecotourism provides a growth area whose development requires that natural ecosystems be protected.

**Managing international water resources.** Cambodia is a signatory to the Mekong Agreement, and benefits from MRC programmes, e.g. flood forecasting, and investigations/ surveys of fisheries, aquatic ecosystems, and water quality. Donors increasingly take a basin-level perspective on water and aquatic resources development and management, e.g. through MRC’s Basin Development Programme, which provides a broad context for Cambodia. However, Cambodia, as the most downstream country except for the delta area of Vietnam, feels very exposed to the impact of activities both upstream and downstream. It has experienced negative impacts from hydropower development and I&D in Vietnam, and many RGC officials believe that land use change, damming, river works etc in the upper Mekong affect the frequency and severity of floods, sedimentation, fish populations, etc. Cambodia will need reassurance that multilateral cooperation through MRC will safeguard its interests. Donors have a role in this, e.g. through appropriate conditions on investments.

**Managing the coastal zone.** The coastal zone of Cambodia is thinly populated, and human pressure on the coastal zone is light, except at Sihanoukville. The population is particularly dependent on marine and coastal resources, however. Aquaculture and mangrove clearance, as well as contaminated runoff, discharges from ships in ports and shipping lanes, and offshore oil/gas exploitation present considerable threats to coastal and marine waters. No legal instruments provide for management of marine and coastal waters, and at least 5 RGC ministries, as well as provincial government, have unclear and poorly coordinated responsibilities. The knowledge base also is weak, and investigations tend to be piecemeal. Coastal waters offer significant opportunities for social and economic development, but will need careful management to avoid the rapid degradation experienced in so many other countries.

**Financing water resources development and management.** Basic pre-requisites for financial sustainability include competent management, functional administrative and information systems, and freedom from corruption. Additional work is required before these are achieved in the water sector. The RGC is heavily subsidised by external sources of funds for water resources development. A long-term decline in availability of donor funds is likely, and alternative means of funding investment are needed. Steps are being taken, particularly in urban water supply, to promote private sector investment. Private enterprises will require the security of good, enforced laws, regulations, licencing arrangements, and policies, presently all an area of weakness. The costs of O&M of water schemes normally are not met by funding agencies. Financial sustainability of water service delivery should be achievable, since a service is provided to identifiable users from whom a charge can be levied. However, beneficiaries have been resistant to paying for poor service or participating in O&M. Consequently, post-project sustainability is always at risk, with deteriorating infrastructure, declining standards of service delivery, and a need for repeated rehabilitation. This situation is being tackled by such mechanisms as FWUCs, Irrigation Service Fees, and Water User Groups, as well as private sector engagement, but continued engagement of the RGC will be necessary, e.g. to provide primary-level I&D infrastructure. A comprehensive approach, based on sound R&D into mechanisms appropriate for Cambodia, is needed. On-going management of water resources (a common property resource) requires funding from public sources. It now receives negligible funding in the RGC budget, and limited external funding, except for piecemeal investigations, research, and master/strategic planning. There is a serious risk, therefore, that projects to exploit water resources will proceed, but that the resource is not maintained in a state able to sustain those projects. Substantial building of RGC capacity and reliable long-term funding for resource management are needed. Alternative funding sources, such as royalties/licences for water use, will be required, although their application in Cambodia may be difficult for some years to come.

Project/program/area of activity	By Issue	Schedule	ADB	Others/ External
<i>1.1.1.1.3.3 Irrigation, drainage, rural development</i>				
PRASAC Rehabilitation and Support Programme for Cambodia’s Agricultural Sector	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Managing water supply and sanitation facilities</li> </ul> The project has a broad rural development span, with water supply, small-scale irrigation rehabilitation, and capacity building components	1995-2003		EU \$80 m grant (\$6.25 m on irrigation and water supply)
Agricultural Productivity Improvement Project: agricultural hydraulics component (national)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Managing I&amp;D systems and related infrastructure</li> </ul>	1997-2004		World Bank \$8.3m Govt: \$0.95m
“Special Programme for Food Security” and “Women in Irrigation and Nutrition” programme (Siem Reap, Takeo, Kampot, Kg Cham)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Conserving aquatic ecosystems and fisheries</li> </ul> The projects includes support for small-scale irrigation and aquaculture	1998-		FAO

Prey Nup polder construction	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1998-2002		France \$8.0 m JICA \$1.7 m
Kamping Puoy irrigation scheme construction	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1998-2005		APS (Italy) \$5.2 m JICA \$0.4 m
Small irrigation and drainage infra-structure rehabilitation: 33 sub-projects	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1999-2001		SFKC \$1.1 m
Colmatage canal rehabilitation, Mekong and Bassac Rivers	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1999-2002		Japan \$11.7 m France \$0.6 m
Stung Battambang land and water resources study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2000-1		JICA
Master Plan for Stung Slakou irrigation system	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Providing data and information</li> </ul>	2001-2		JICA \$1.5 m
Small irrigation system rehabilitation: Svay Khorm, Boeung Kyang, Tropeang Veng, O Veng, Labang, Kampong Pot, Kandal Stung	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2000-3		JICA \$1.3 m
Stung Chikreang development study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001		France \$0.33 m
Stung Kandal development study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001-		JICA
Northwest Irrigation Sector PPTA Project. A Policy and Strategy; B. Project Preparation	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure</li> </ul>	2001-3	\$1.2 m TA grant	
Food Aid for Recovery and Rehabilitation: Rural Infrastructure Rehabilitation Food-for-Work component	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul> <p>Water-related work is 5% of total</p>	2001-3		WFP \$3.0 m
Chan Thnal irrigation system and emergency rehabilitation	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2001-4	\$1.75 m	
Agriculture, Irrigation & Forestry Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Providing data and information</li> </ul>	2001-5		MRC \$35.6 m
Rural Infrastructure Development	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity</li> </ul> <p>The project has a broad rural development span, including water-related activities</p>	2001-8		IFAD \$4.0 m
Stung Chinit Irrigation and Rural Development Project	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2001-8	\$16 m loan	France (AFD) \$2.6 m grant Govt.: \$4.8 m Benefic.: \$400,000
Tamauk irrigation system	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2002-4		KOICA \$1.9 m committed
Reducing chronic under-nourishment in people	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> <li>Institutional/community capacity</li> </ul>	2002-7		WFP/Japan \$17.5 m
Small irrigation system rehabilitation: Samaki, Kandal Stung, Tropeang Thmar, Basak, Kpob Trabek, Bavel, Opuk, Ton Or, O-Damrei Chlang, Tamouk	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2003-5		JICA \$6.6 m committed
Food security and integrated rural development (~15 projects, mainly in northwest)	<ul style="list-style-type: none"> <li>Managing water supply/sanitation facilities</li> </ul> <p>The project has a broad community and agricultural development span</p>	2003-6		EU \$4 m (~20% water-related)
Northwest Irrigation Sector Project (northwestern provinces)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity</li> </ul>	2004 -9	\$23m loan	AFD \$3.48 m grant Govt: \$7m Benefic.: \$1.75m

Community and agricultural development	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Managing water supply and sanitation facilities</li> </ul> <p>The project has a broad community and agricultural development span</p>	2004-9		EU \$20 m grant
<i>1.1.1.1.3.4 Water supply and sanitation</i>				
<i>1.1.1.1.3.5 ge</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Projects include studies, master planning, water treatment plant extension, pipelines</p>	1997-2004	\$20 m loan	OPEC: \$4 m NORAD: \$3m PPWSA: \$3.2 m Govt.: \$5.5 m Benefic.: \$200,000
Urban water supply project (Phnom Penh and Sihanoukville)	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity / Legislation and policy</li> </ul>	1998-2003		World Bank \$31m Govt: \$8.8 m
<i>1.1.1.1.3.6</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Includes non-water related areas, as well as sewerage in Sihanoukville and rehabilitation of waterworks in 6 provincial towns.</p>	2000-5	\$18.3 m loan	
<i>1.1.1.1.3.7</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2001-4		EU \$1.2 m
<i>1.1.1.1.3.8</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity / Technical assistance in arsenic mitigation</li> </ul>	2001-5		UNICEF \$2.5 m
<i>1.1.1.1.3.9</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Drill 500 wells in 6 southern provinces</p>	2002-3		China \$1.7 m grant
<i>1.1.1.1.3.10 sanitation</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2003	\$0.6 m TA grant	
<i>1.1.1.1.3.11 )</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2002-8 (in prep)		World Bank \$20 m Japan \$6.5 m
Rural water supply and sanitation (Pursat, Kampong Thom, Kampot)	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity</li> </ul>	2004-9	\$18m loan	Govt.: \$3 m Benefic.: \$3 m
Water supply system, Siem Reap	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Providing data and information</li> </ul> <p>Study and master planning 1996-2000</p>	1996-2000 Planning stage 2003-		JICA \$not yet determined
<i>1.1.1.1.3.12</i>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>			UNDP, World Bank, France/Japan \$29 m
<i>1.1.1.1.3.13 Water resources management</i>				
Improvement of the hydro-meteorological network, Mekong River Commission (regional)	<ul style="list-style-type: none"> <li>Providing data and information / Institutional/community capacity</li> </ul>	1996-2000		MRC \$1.94 m
Water quality monitoring network, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing competition for water and deteriorating water quality / Providing data and information</li> </ul>	1998-2000		MRC \$1.95 m
Groundwater surveys in southern and central provinces	<ul style="list-style-type: none"> <li>Providing data and information / Managing water supply and sanitation facilities / Institutional/community capacity</li> </ul> <p>The projects evaluate groundwater potential and formulate development plans</p>	1996-2002		JICA \$3.32 m

Water Utilisation Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing international water resources / Managing competition for water and deteriorating water quality</li> </ul>	2000-6		MRC \$16.3m (World Bank/GEF \$11m; Finland/France/ Japan \$5.3m)
Basin Development Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing international water resources</li> </ul>	2001-4		MRC \$6.16 m (SIDA Ausaid, Danida, Japan, Switerland)
Water resources management programme (hydrology), Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001-5		MRC \$3.84 m
Water resources sector development	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	In prep	\$0.8 m TA grant	
Provincial power transmission and distribution (includes feasibility studies for BOT development of small hydropower in the west)	<ul style="list-style-type: none"> <li>Funding water resources development and management</li> </ul>	2005-9	\$26 m loan \$0.6 m PPTA grant	
Water resources management programme (hydropower), Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Funding water resources development and management</li> </ul>	2001-5		MRC \$1.7 m
<i>1.1.1.1.3.14 Capacity Building</i>				
<i>1.1.1.1.3.15</i>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and infrastructure</li> </ul>	2000-5		JICA \$4 m
<i>1.1.1.1.3.16</i>	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2001	\$0.8 m TA Grant	
<i>1.1.1.1.3.17 s</i>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure</li> </ul>	2001-9	\$2.2 m	
Workshops on IWRM	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2002		GWP/SEATAC \$0.04 m
Providing assistance for the professionalisation of the water sector	<ul style="list-style-type: none"> <li>Institutional/community capacity (support to develop mechanisms for private sector engagement in water devlp.)</li> </ul>			AFD (France)
Support for the development of agriculture sector policies (3 RGC ministries)	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> <li>25% of the project involves irrigation management</li> </ul>	2002-5		France \$1.4 m
Capacity Building for Sustainable Development, Tonle Sap Region	<ul style="list-style-type: none"> <li>Institutional/community capacity / Conserving aquatic ecosystems and fisheries</li> </ul> <p>Project addresses community-based nrm, bio-diversity conservation in Tonle Sap Biosphere Res</p>	2002-5		UNDP/Cap 21 \$0.63 m
National Capacity Development Project (cross-ministry, including water-related)	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul> <p>The project has a broad environmental span, with a water resources management component.</p>	2002-6		DANIDA \$2.45 m
<i>1.1.1.1.3.18 Navigation</i>				
<i>1.1.1.1.3.19</i>	<ul style="list-style-type: none"> <li>Providing water transport</li> </ul>	completed		Denmark \$18 m

<b>1.1.1.1.3.20 )</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing water transport</li> </ul> <p>The project promotes transport in the lower Mekong</p>	2002-		Belgium
<b>1.1.1.1.3.21</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing water transport</li> </ul> <p>The project promotes transport in the lower Mekong</p>	2003-		Belgium
<b>1.1.1.1.3.22 )</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Managing international water resources / Providing water transport</li> </ul> <p>The project promotes transport in the lower Mekong</p>	2004-9		MRC \$13.44
<b>1.1.1.1.3.23 Flood mitigation</b>				
<b>1.1.1.1.3.24 )</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Mitigating the impacts of water-related hazards / Providing data and information / Managing international water resources</li> </ul> <p>Includes a regional FMM Centre, structural and non-structural measures, trans-boundary mediation</p>	1998-2000 2002-8		MRC \$0.99 m MRC \$21.51m
<b>1.1.1.1.3.25</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul> <p>Feasibility studies and scheme design</p>	1999		JICA \$1.2 m
<b>1.1.1.1.3.26</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards</li> </ul> <p>Open sewerage and pumping station construction</p>	199-2003	ADB \$6 m	
<b>1.1.1.1.3.27</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul>	2000-1		MRC/JICA \$0.53 m
<b>1.1.1.1.3.28</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information / Managing I&amp;D systems and infrastructure</li> </ul>	2001-4		JICA \$1.5 m
Emergency Flood Rehabilitation Project	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure / Mitigating the impacts of water-related hazards</li> </ul> <p>The project includes non-water-related investment.</p>	2001-3	\$10.8m loan	
Flood Emergency Rehabilitation Project (flood control, I&D component is ~23% of total project) (national scope)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure / Mitigating the impacts of water-related hazards</li> </ul> <p>The project includes non-water-related investment. It Included Kab Srov dike to protect Phnom Penh.</p>	2001-4		World Bank \$9.3m
<b>1.1.1.1.3.29 )</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul>	2001-6		MRC/Ausaid \$4.1 m
<b>1.1.1.1.3.30</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards</li> </ul> <p>Addresses river and local rainfall flooding</p>	2002-4		Japan \$17.2 m grant
<b>1.1.1.1.3.31 Environmental and resource management</b>				
Major wetland protection and management in Lower Mekong Basin (Tonle Sap Lake area)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information / Funding water resources development and management</li> </ul> <p>The project addressed participatory integrated resource management, community development.</p>	1999-2002	\$1.65 m PPTA grant	

Environment Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information / Managing international water resources</li> </ul>	2001-6		MRC (Denmark, Sweden, Switzerld.) \$23.46 m
Tonle Sap Environmental Management Project	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Conserving aquatic ecosystems and fisheries</li> </ul> <p>Objectives relate to nrm, community-based nrm, bio-diversity conservation in Tonle Sap Biosphere Res.</p>	2003-8	\$10.9m loan	GEF: \$3.2 m UNDP: \$627,000 Gvt.: \$3.9 m
Mekong River Basin Wetland Biodiversity Conservation and Sustainable Use Programme (Cambodian component in Stung Treng)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2003-8		UNDP/GEF \$10.5 m Other \$21.1 m
Tonle Sap Sustainable Livelihood Sector Project	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2006-2012 2004-5	\$15 m loan \$0.6 m PPTA grant	
Environmental governance and flood management and mitigation (Mekong basin)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Mitigating the impacts of water-related hazards</li> </ul> <p>The project supports capacity building in MRC and national Mekong Committees</p>	Being formulated		UNDP
Chong Kneas environmental improvement (Siem Reap)	<ul style="list-style-type: none"> <li>Managing competition for water and deteriorating water quality / Managing water supply and sanitation facilities / Conserving aquatic ecosystems and fisheries</li> </ul>	2004-2010	\$15m loan,	
Consolidation of hydrometeorological data and multi-functional roles of Tonle Sap Lake and surroundings	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	Being formulated		JICA
<i>1.1.1.1.3.32 Coastal zone management</i>				
Environmental management of coastal zone in Cambodia	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity</li> </ul> <p>Project covers broadly based rural/ community development, including marine and coastal resource management</p>	2000-2		DANIDA \$1.75 m
<i>1.1.1.1.3.33 Fisheries</i>				
Management of freshwater capture fisheries of Cambodia Phase II (inland fisheries provinces)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	1999-2005		MRC/Danida \$4.18 m
Assessment of Mekong fisheries: migration and spawning and impact of water management (regional scope; 3 provinces)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Providing data and information</li> </ul>	2000-2		MRC/Danida \$5.34 m
Management of reservoir fisheries in the Mekong basin Phase II (regional scope; Kandal and Kampong Cham)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2000-2		MRC/Danida \$4.46 m
Aquaculture of indigenous Mekong fish species (regional; inland fisheries provinces)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information</li> </ul>	2000-5		MRC/Danida \$2.63 m
Agriculture Productivity Improvement Programme, fisheries component	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2000-5		World Bank \$2.97 loan
Rural aquaculture development	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul> <p>Small-scale farmer aquaculture and aquatic resources management</p>	2001-4		AIT/Sida \$0.4 m
Establishing and strengthening Fisheries Communities	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul> <p>Mekong/Tonle Sap</p>	2002-3		Gvt.: \$75,000

Inland Fisheries Research and Development Institute (IFREDI)	<ul style="list-style-type: none"> <li>Kick-start of IFREDI as research and development institute / Institutional (policy development and dialog) / Research &amp; development / Technology transfer</li> </ul>	2003-2004	\$900,000	Govt.: \$180,000
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Project/program/area of activity	By Issue	Schedule	ADB	Others/ External
<i>1.1.1.1.3.34 Irrigation, drainage, rural development</i>				
PRASAC Rehabilitation and Support Programme for Cambodia's Agricultural Sector	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Managing water supply and sanitation facilities</li> </ul> <p>The project has a broad rural development span, with water supply, small-scale irrigation rehabilitation, and capacity building components</p>	1995-2003		EU \$80 m grant (\$6.25 m on irrigation and water supply)
Agricultural Productivity Improvement Project: agricultural hydraulics component (national)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Managing I&amp;D systems and related infrastructure</li> </ul>	1997-2004		World Bank \$8.3m Govt: \$0.95m
"Special Programme for Food Security" and "Women in Irrigation and Nutrition" programme (Siem Reap, Takeo, Kampot, Kg Cham)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Conserving aquatic ecosystems and fisheries</li> </ul> <p>The projects includes support for small-scale irrigation and aquaculture</p>	1998-		FAO
Prey Nup polder construction	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1998-2002		France \$8.0 m JICA \$1.7 m
Kamping Puoy irrigation scheme construction	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1998-2005		APS (Italy) \$5.2 m JICA \$0.4 m
Small irrigation and drainage infra-structure rehabilitation: 33 sub-projects	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1999-2001		SFKC \$1.1 m
Colmatage canal rehabilitation, Mekong and Bassac Rivers	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	1999-2002		Japan \$11.7 m France \$0.6 m
Stung Battambang land and water resources study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2000-1		JICA
Master Plan for Stung Slakou irrigation system	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Providing data and information</li> </ul>	2001-2		JICA \$1.5 m
Small irrigation system rehabilitation: Svay Khorm, Boeung Kyang, Tropeang Veng, O Veng, Labang, Kampong Pot, Kandal Stung	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2000-3		JICA \$1.3 m
Stung Chikreang development study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001		France \$0.33 m
Stung Kandal development study	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001-		JICA
Northwest Irrigation Sector PPTA Project. A Policy and Strategy; B. Project Preparation	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure</li> </ul>	2001-3	\$1.2 m TA grant	
Food Aid for Recovery and Rehabilitation: Rural Infrastructure Rehabilitation Food-for-Work component	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul> <p>Water-related work is 5% of total</p>	2001-3		WFP \$3.0 m
Chan Thnal irrigation system and emergency rehabilitation	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2001-4	\$1.75 m	
Agriculture, Irrigation & Forestry Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Providing data and information</li> </ul>	2001-5		MRC \$35.6 m
Rural Infrastructure Development	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity</li> </ul> <p>The project has a broad rural development span, including water-related activities</p>	2001-8		IFAD \$4.0 m
Stung Chinit Irrigation and Rural Development Project	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2001-8	\$16 m loan	France (AFD) \$2.6 m grant Govt.: \$4.8 m Benefic.: \$400,000
Tamauk irrigation system	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2002-4		KOICA \$1.9 m committed

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Reducing chronic under-nourishment in people	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> <li>Institutional/community capacity</li> </ul>	2002-7		WFP/Japan \$17.5 m
Small irrigation system rehabilitation: Samaki, Kandal Stung, Tropeang Thmar, Basak, Kpob Trabek, Bavel, Opuk, Ton Or, O-Damrei Chlang, Tamouk	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure</li> </ul>	2003-5		JICA \$6.6 m committed
Food security and integrated rural development (~15 projects, mainly in northwest)	<ul style="list-style-type: none"> <li>Managing water supply/sanitation facilities</li> </ul> <p>The project has a broad community and agricultural development span</p>	2003-6		EU \$4 m (~20% water-related)
Northwest Irrigation Sector Project (northwestern provinces)	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity</li> </ul>	2004 -9	\$23m loan	AFD \$3.48 m grant Govt: \$7m Benefic.: \$1.75m
Community and agricultural development	<ul style="list-style-type: none"> <li>Managing I&amp;D systems and related infrastructure / Institutional/community capacity / Managing water supply and sanitation facilities</li> </ul> <p>The project has a broad community and agricultural development span</p>	2004-9		EU \$20 m grant
<b>1.1.1.1.3.35 Water supply and sanitation</b>				
	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Projects include studies, master planning, water treatment plant extension, pipelines</p>	1997-2004	\$20 m loan	OPEC: \$4 m NORAD: \$3m PPWSA: \$3.2 m Govt.: \$5.5 m Benefic.: \$200,000
Urban water supply project (Phnom Penh and Sihanoukville)	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity / Legislation and policy</li> </ul>	1998-2003		World Bank \$31m Govt: \$8.8 m
<b>1.1.1.1.3.36</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Includes non-water related areas, as well as sewerage in Sihanoukville and rehabilitation of waterworks in 6 provincial towns.</p>	2000-5	\$18.3 m loan	
	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2001-4		EU \$1.2 m
<b>1.1.1.1.3.37 t</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity / Technical assistance in arsenic mitigation</li> </ul>	2001-5		UNICEF \$2.5 m
<b>1.1.1.1.3.38</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul> <p>Drill 500 wells in 6 southern provinces</p>	2002-3		China \$1.7 m grant
<b>1.1.1.1.3.39</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2003	\$0.6 m TA grant	
<b>1.1.1.1.3.40</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>	2002-8 (in prep)		World Bank \$20 m Japan \$6.5 m
	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Institutional/community capacity</li> </ul>	2004-9	\$18m loan	Govt.: \$3 m Benefic.: \$3 m
	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities / Providing data and information</li> </ul> <p>Study and master planning 1996-2000</p>	1996-2000 Planning stage 2003-		JICA \$not yet determined

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<b>1.1.1.1.3.41</b>	<ul style="list-style-type: none"> <li>Managing water supply and sanitation facilities</li> </ul>			UNDP, World Bank, France/Japan \$29 m
<b>1.1.1.1.3.42 Water resources management</b>				
Improvement of the hydro-meteorological network, Mekong River Commission (regional)	<ul style="list-style-type: none"> <li>Providing data and information / Institutional/community capacity</li> </ul>	1996-2000		MRC \$1.94 m
Water quality monitoring network, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing competition for water and deteriorating water quality / Providing data and information</li> </ul>	1998-2000		MRC \$1.95 m
Groundwater surveys in southern and central provinces	<ul style="list-style-type: none"> <li>Providing data and information / Managing water supply and sanitation facilities / Institutional/community capacity</li> </ul> <p>The projects evaluate groundwater potential and formulate development plans</p>	1996-2002		JICA \$3.32 m
Water Utilisation Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing international water resources / Managing competition for water and deteriorating water quality</li> </ul>	2000-6		MRC \$16.3m (World Bank/GEF \$11m; Finland/France/ Japan \$5.3m)
Basin Development Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Managing international water resources</li> </ul>	2001-4		MRC \$6.16 m (SIDA Ausaid, Danida, Japan, Switzerland)
Water resources management programme (hydrology), Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Providing data and information</li> </ul>	2001-5		MRC \$3.84 m
Water resources sector development	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	In prep	\$0.8 m TA grant	
Provincial power transmission and distribution (includes feasibility studies for BOT development of small hydropower in the west)	<ul style="list-style-type: none"> <li>Funding water resources development and management</li> </ul>	2005-9	\$26 m loan \$0.6 m PPTA grant	
Water resources management programme (hydropower), Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Funding water resources development and management</li> </ul>	2001-5		MRC \$1.7 m
<b>1.1.1.1.3.43 Capacity Building</b>				
<b>1.1.1.1.3.44</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and infrastructure</li> </ul>	2000-5		JICA \$4 m
<b>1.1.1.1.3.45</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2001	\$0.8 m TA Grant	
<b>1.1.1.1.3.46</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure</li> </ul>	2001-9	\$2.2 m	
Workshops on IWRM	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2002		GWP/SEATAC \$0.04 m
Providing assistance for the professionalisation of the water sector	<ul style="list-style-type: none"> <li>Institutional/community capacity (support to develop mechanisms for private sector engagement in water devlp.)</li> </ul>			AFD (France)
Support for the development of agriculture sector policies (3 RGC ministries)	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul> <p>25% of the project involves irrigation management</p>	2002-5		France \$1.4 m

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Capacity Building for Sustainable Development, Tonle Sap Region	<ul style="list-style-type: none"> <li>Institutional/community capacity / Conserving aquatic ecosystems and fisheries</li> </ul> Project addresses community-based nrm, bio-diversity conservation in Tonle Sap Biosphere Res	2002-5		UNDP/Cap 21\$0.63 m
National Capacity Development Project (cross-ministry, including water-related)	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul> The project has a broad environmental span, with a water resources management component.	2002-6		DANIDA \$2.45 m
<i>1.1.1.1.3.47 Navigation</i>				
<b>1.1.1.1.3.48</b>	<ul style="list-style-type: none"> <li>Providing water transport</li> </ul>	completed		Denmark \$18 m
<b>1.1.1.1.3.49</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing water transport</li> </ul> The project promotes transport in the lower Mekong	2002-		Belgium
<b>1.1.1.1.3.50</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing water transport</li> </ul> The project promotes transport in the lower Mekong	2003-		Belgium
<b>1.1.1.1.3.51</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Managing international water resources / Providing water transport</li> </ul> The project promotes transport in the lower Mekong	2004-9		MRC \$13.44
<i>1.1.1.1.3.52 Flood mitigation</i>				
<b>1.1.1.1.3.53</b>	<ul style="list-style-type: none"> <li>Institutional/community capacity / Mitigating the impacts of water-related hazards / Providing data and information / Managing international water resources</li> </ul> Includes a regional FMM Centre, structural and non-structural measures, trans-boundary mediation	1998-2000 2002-8		MRC \$0.99 m MRC \$21.51 m
<b>1.1.1.1.3.54</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul> Feasibility studies and scheme design	1999		JICA \$1.2 m
<b>1.1.1.1.3.55</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards</li> </ul> Open sewerage and pumping station construction	199-2003	ADB \$6 m	
<b>1.1.1.1.3.56</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul>	2000-1		MRC/JICA \$0.53 m
<b>1.1.1.1.3.57</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information / Managing I&amp;D systems and infrastructure</li> </ul>	2001-4		JICA \$1.5 m
Emergency Flood Rehabilitation Project	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure / Mitigating the impacts of water-related hazards</li> </ul> The project includes non-water-related investment.	2001-3	\$10.8m loan	
Flood Emergency Rehabilitation Project (flood control, I&D component is ~23% of total project) (national scope)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Managing I&amp;D systems and related infrastructure / Mitigating the impacts of water-related hazards</li> </ul> The project includes non-water-related investment. It Included Kab Srov dike to protect Phnom Penh.	2001-4		World Bank \$9.3m

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<b>1.1.1.1.3.58</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards / Providing data and information</li> </ul>	2001-6		MRC/Ausaid \$4.1 m
<b>1.1.1.1.3.59</b>	<ul style="list-style-type: none"> <li>Mitigating the impacts of water-related hazards</li> </ul> <p>Addresses river and local rainfall flooding</p>	2002-4		Japan \$17.2 m grant
<b>1.1.1.1.3.60 Environmental and resource management</b>				
Major wetland protection and management in Lower Mekong Basin (Tonle Sap Lake area)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information / Funding water resources development and management</li> </ul> <p>The project addressed participatory integrated resource management, community development.</p>	1999-2002	\$1.65 m PPTA grant	
Environment Programme, Mekong River Commission (regional scope)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information / Managing international water resources</li> </ul>	2001-6		MRC (Denmark, Sweden, Switzerld.) \$23.46 m
Tonle Sap Environmental Management Project	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information / Conserving aquatic ecosystems and fisheries</li> </ul> <p>Objectives relate to nrm, community-based nrm, bio-diversity conservation in Tonle Sap Biosphere Res.</p>	2003-8	\$10.9m loan	GEF: \$3.2 m UNDP: \$627,000 Gvt.: \$3.9 m
Mekong River Basin Wetland Biodiversity Conservation and Sustainable Use Programme (Cambodian component in Stung Treng)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2003-8		UNDP/GEF \$10.5 m Other \$21.1 m
Tonle Sap Sustainable Livelihood Sector Project	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2006-2012 2004-5	\$15 m loan \$0.6 m PPTA grant	
Environmental governance and flood management and mitigation (Mekong basin)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Mitigating the impacts of water-related hazards</li> </ul> <p>The project supports capacity building in MRC and national Mekong Committees</p>	Being formulated		UNDP
Chong Kneas environmental improvement (Siem Reap)	<ul style="list-style-type: none"> <li>Managing competition for water and deteriorating water quality / Managing water supply and sanitation facilities / Conserving aquatic ecosystems and fisheries</li> </ul>	2004-2010	\$15m loan,	
Consolidation of hydrometeorological data and multi-functional roles of Tonle Sap Lake and surroundings	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	Being formulated		JICA
<b>1.1.1.1.3.61 Coastal zone management</b>				
Environmental management of coastal zone in Cambodia	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity</li> </ul> <p>Project covers broadly based rural/ community development, including marine and coastal resource management</p>	2000-2		DANIDA \$1.75 m
<b>1.1.1.1.3.62 Fisheries</b>				
Management of freshwater capture fisheries of Cambodia Phase II (inland fisheries provinces)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	1999-2005		MRC/Danida \$4.18 m

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Assessment of Mekong fisheries: migration and spawning and impact of water management (regional scope; 3 provinces)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Providing data and information</li> </ul>	2000-2		MRC/Danida \$5.34 m
Management of reservoir fisheries in the Mekong basin Phase II (regional scope; Kandal and Kampong Cham)	<ul style="list-style-type: none"> <li>Conserving aquatic ecosystems and fisheries / Institutional/community capacity / Providing data and information</li> </ul>	2000-2		MRC/Danida \$4.46 m
Aquaculture of indigenous Mekong fish species (regional; inland fisheries provinces)	<ul style="list-style-type: none"> <li>Institutional/community capacity / Providing data and information</li> </ul>	2000-5		MRC/Danida \$2.63 m
Agriculture Productivity Improvement Programme, fisheries component	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> </ul>	2000-5		World Bank \$2.97 loan
Rural aquaculture development	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> <li>Small-scale farmer aquaculture and aquatic resources management</li> </ul>	2001-4		AIT/Sida \$0.4 m
Establishing and strengthening Fisheries Communities	<ul style="list-style-type: none"> <li>Institutional/community capacity</li> <li>Mekong/Tonle Sap</li> </ul>	2002-3		Gvt.: \$75,000
Inland Fisheries Research and Development Institute (IFREDI)	<ul style="list-style-type: none"> <li>Kick-start of IFREDI as research and development institute / Institutional (policy development and dialog) / Research &amp; development / Technology transfer</li> </ul>	2003-2004	\$900,000	Gvt.: \$180,000