



**WELCOME
TO**

The First General Meeting Network of Asian River Basin Organisation

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INTRODUCTION

- Cambodia is located in the Tropical Region which has favorable weather condition for crop plantation. 85% of the population are farmers. .
- Cambodia has abundant of rivers, but we can not develop and manage it yet. Water resources are the main key for the development of Cambodia (Agriculture, Hydro-Electricity, Fisheries, Health, Tourism, Navigation...)
- Due to the importance of water resources management and development, the RGC has been formulated legislative framework such as water law, water policy and other related .

C l i m a t e i n C a m b o d i a

•Rainy season start from mid- May until end October, amount of precipitation maximum is in August and minimum is in December. The mean total in the years about 1200mm.

•Direction wind from May to September blow from South-West, from October to November blow from the East and North-East, From December to February blow from North-East, March to May blow from South-East and South.

• The mean annual humidity is 76% at Phnom Penh .

•Number of days with rainfall in the year about 180.

•The maximum temperature is in April 35.5°C, the minimum is in January 15.0°C.mean annual 27°C

POPULATION

- Total population 13 million, 52.2% are female and 47.8% are male;
- An average growth 2.4%;
- Population density of 51% per sq. km;
- 85.4% living in rural area, 7.7% in urban area and 6.9% in Phnom Penh.

Socio-Economy

- Current per capita GDP of 292 USD;
- 38% of households are living under poverty line in general;
- 90% of household in rural areas are living under poverty line;
- 85% of total population are employee of agriculture sector.

Water Resource Potential in Cambodia

Water Resource	Power (MW)	Irrigated Area (ha)
Main Stream	10,800	734,000
Mekong Tributaries	2,727	253,000
Mekong Flooded Area	-	179,000
Tonle Sap Tributaries	306	358,900
Outside Mekong Basin	1,146	142,000
Total	14,979	1,667,300

Vision for Water Resources in Cambodia

1. Access for all to safe, adequate and affordable drinking water hygiene and sanitation .
2. Freedom for all from the threat of loss of life and livelihood as a result of floods and droughts .
3. Sufficient water where it is needed, to provide for food security, peoples livelihood and economic activity.
4. A water environment that is unpolluted and support healthy fisheries and aquatic ecosystems.

Cambodia's process to develop a Vision for water

1. Drafting of law on water resources management and the supporting sub-degrees required for implementation.
2. Compilation of a national water sector profile .
3. Drafting a national water resources policy.
4. Compilation of a national water resources strategy.
5. Development of strategy, policy, and action plan in specific sub- sector (urban and rural water supply, irrigation management.....)

Major events for water resources management

1. Seminar on National water sector profile (**August 2000**) .
2. National conference on Cambodia's water resources An Agenda for Action (**December 2000**) .
3. National conference on Cambodia's water resources Next step
4. National workshop on Water, Public awareness and sustainable development (**March 2002**) .
5. Celebration of national water day (**March 2002**) .
6. National workshop on Defining water Issues (**August 2002**) .
7. National workshop on water Resources Policy (**October 2002**) .
8. National workshop on Capacity for IWRM (**June , 2003**)
9. National workshop on Water Governance (**October 2003**)
10. Consultative meeting on River basin management (**February 2004**)

Arrangements for river basin management

The RGC is committed to devolution of responsibilities national to provincial, district, and commune levels, even though at the present the government takes a strong lead (MOWRAM), and public participation in decision making is limited.

A structure of provincial, commune and village Development Committees is being established, which works in parallel with the government system (although the Provincial Governors chair the PDCs). The MOWRAM has a provincial level at which water resources management is implemented. It will be necessary to work out how to carry out river basin-based management in the context of sub-national government arrangements.

Articles 5 and 25 of the Draft water law provide for water resources management on a river basin basis. Also the draft national water resources policy (Chapter 4, point 4.1.2 makes clearly a commitment to the river basin management (5 policies).

At present, RBO has not yet been formally established and implemented. The actual procedures and responsibility for river basin management still need to be developed , e. g for consultation with stakeholders and beneficiaries and establishment of RBO.

Up to know the competition among water users has not been great, and there has been little development of water resources in the upper catchment of the rivers. But Cambodia can expected that in the future the national economy (Irrigation, Hydropower...) will increase and develop so the competition water user will be occurs in the country.

Institutional Basis related to river basin management .

1. Cambodia National Mekong Committee
2. Ministry of Water Resources and Meteorology
3. Ministry of Industry, Mine and Energy
4. Ministry of Rural Development
5. Ministry of Public Work and Transport
6. Ministry of Environment
7. Ministry of Agriculture, Forestry and Fisheries

Linkages in WRM



River Basin Management – Relevant Processes



Alternative approaches to water resources development and management

- Water resources development and management is still limited .
- Recently in Cambodia only re-open kiriom hydro power station.
- Strategic plan of MOWRAM has included of large scale irrigation, drainage, flood control projects, but the ability of the development is limited by lack of finance.
- Example Prek Thnot river basin near Phnom Penh, offer the potential for Integrated river basin management and development, but the RGC has had difficult attracting investors or donors .

As a result of all this, the type of large scale infrastructural development that threatens to the damage water and aquatic resources in other part of the Mekong river basin .

Areas in which alternatives need to be explored include,for Ex non-structural method for flood management or farm scale irrigation practices that are based on groundwater, water harvesting or on farm storage.

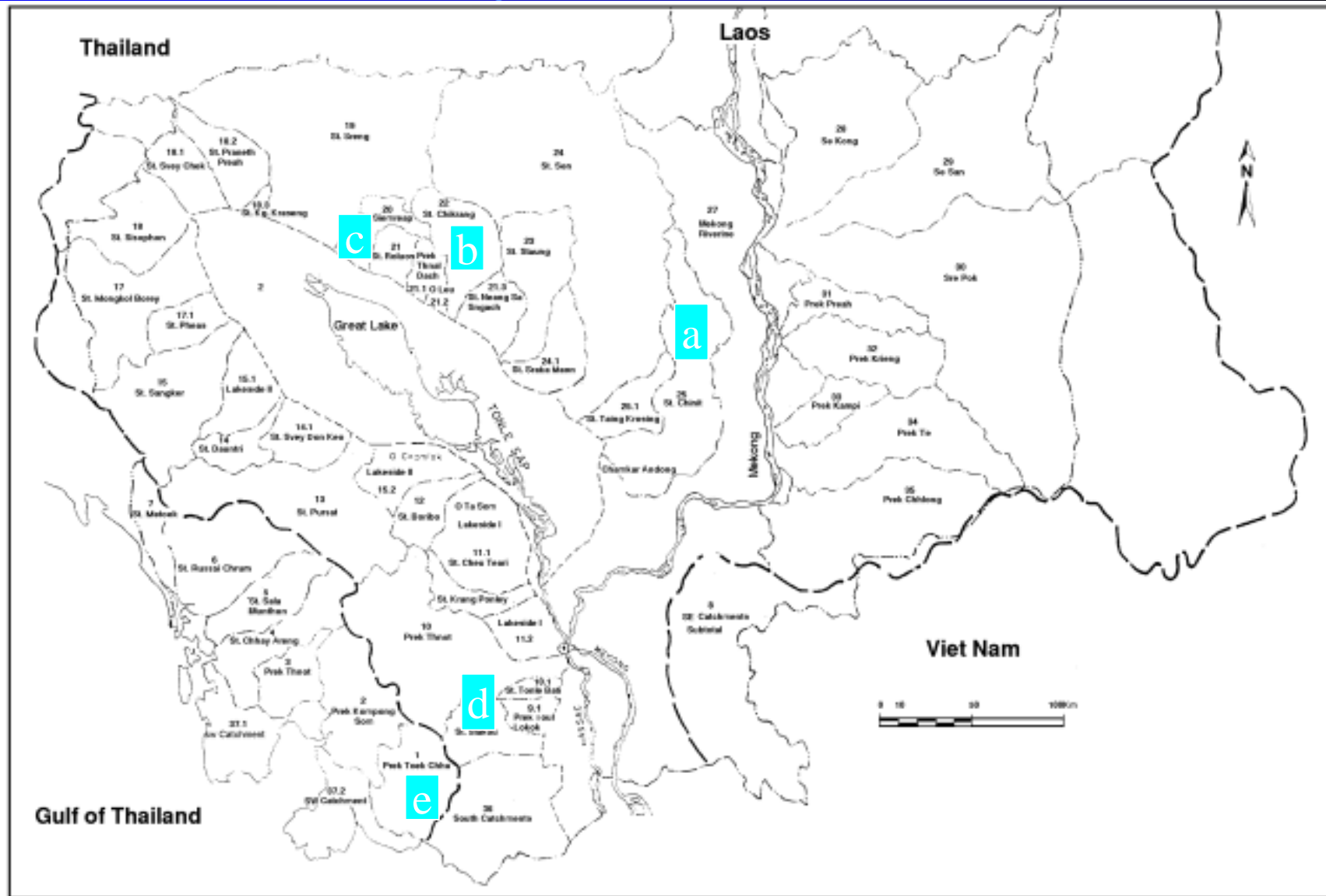
A recent appraisal of water sector issues was identified a need for the development of strategy in several areas of the water sector .

Assistance in this areas would be ADB Japan WB and other international organisations .

River Basin Studies in Cambodia

Basins	Provinces	Prime focus	Support	Status
a. St.Chinit	Kampong Thom	Irrigation	ADB/AFD	Ongoing
b. St.Chikreng	Siem Reap	Irrigation	AFD	Completed 2002
c. St. Siem Reap	Siem Reap	Watershed	MRC	Completed 2002
d. St. Slakou	Takeo	Irrigation	JICA	Completed 2001
e. St. Kbal Chhay	Kampong som	Watershed	DANIDA	Ongoing

Location Map of the rivers basin studies



Cambodia in the Mekong River basin context



Cambodia is signatory the *Agreement on the cooperation for the sustainable development of Mekong River basin*, 5 April 1995 .

Many year Cambodia did not participate with MRCs due to internal conflict

Cambodia's participation is administered through the CNMC

Cambodia benefits considerably from MRC programmes

- The principle area of benefit is flood management. Data and forecasts provided through the international monitoring and forecasting system are essential to the MOWRAM's capacity to provide the National Disaster Management Committee with useful forecasts.
- Cambodia participates in and benefits from other MRC programmes, notably the Water Utilization Programme (WUP), BDP, river works, navigation and the Environment Programme Training and capacity building are essential elements of MRC's programmes, which are of great value to the RGC's staff .

water use Issues

- At present there are few cases of direct competition for water. In the wet season water is abundant, and the main issues is excess.in the dry season , water shortage occurs in may localities. The main instances of competition are at community level between rice farmers and fishers people, and between upstream and downstream farmers along a river system.
- Competition can easily grow into conflict and sabotage , but at present it is managed more or less effectively by village and commune.

Issues on river basin management

The key issues for river basin planning and management :

- Legal framework ;
- Lack of RBO;
- Mechanisms for coordination among line ministries and other stakeholders, particularly at national and sub-national levels ;
- Lack of Data and information management systems;
- Staff training in river basin planning and management is limited;
- Flood and Draught every years;
- Lack of resources, particularly international expertise and financial support.

Issues on flood, drought and other harmful situation

Flooding of the Mekong river is a recurrent event, as can be seen from the satellite image. Almost every year the flood take hundreds of life and cause damage to the agriculture, rural infrastructure and human activities. In 1996 2000 and 2001 the agricultural production in the lower mekong was reduced by the flood and thousands of kilometers of national and rural road were damaged.

Drought also effect to the Cambodian people. In the bed year 1994, 1996

only 69% of the total rice growing areas was harvested, with crop loss ranging from 20% in Kampong Speu up to 54% in Battambang province.

In the Period of drought the farmers in rain-fed areas strongly need emergency pumping of water to supply the paddy fields.

Issues on water quality

In general, Cambodia's water quality is good, particularly during the wet season when large volumes of water are flowing and diluting contaminants. However, particularly during the dry season and downstream from population centres, surface waters can be contaminated with human, animal and other wastes. Some groundwater wells have levels of arsenic, fluoride and total hardness that are a cause for concern, and the possibility of contamination of shallow aquifers by human and animal waste and agricultural chemicals must be taken very seriously.

Issues on Environment

- The principle environmental issues facing Cambodia have been considered in the national Environmental action plan 1998-2002.

The two most important issues from water resources perspective are:

1- Forest management, management of fisheries, management of water quality, aquatic ecosystem and floodplain agriculture in the Tonle Sap region.

2-For the investigation and management of the above environmental issues, Cambodia has received and supported from MRC and other external support.

Institutional Issues

- Lack of mechanism for coordination with the line agencies that related to the water resources sector.
- Overlap responsibility and functions .
- Several RGC institutions have responsibilities in water sector.
- Now MOWRAM as a new ministry that is responsible for water management in the whole country, But it still lack of capacity.
- To ensure to the issues it is necessary to strengthen the capacity building staff of MOWRAM at all level.

Trans- boundary issues

-Recently, Due to in the upper catchment of the river basin quickly develop, the Cambodia have had facing some issues such as :

-Water quality

-Water quantity

-Flow regime

-Fish migration

The role of civil society and community participation in WR management

- Water resources management in Cambodia is carried out largely by civil society .
- Agriculture is the largest user of water, in terms of volume.
- About 85% of farmers are engaged in rain-fed cultivation .
- Medium and large irrigation systems are managed by the MOWRAM and PWDRAM. The RGC is progressively to increase farmer participation in scheme operation & maintenance, and to transfer costs to the beneficiaries.

FWUC are being established to take responsibility for operation & maintenance. At present about 100 FWUCs have been established.

Other principal area of water resources management & development is water supply. This area is responsible by the government-owned company, and in the provincial – private sector company.

Conclusions / Recommendations

- Cambodia is a country that is considered to have abundant water resources and its play an importance role for national economic development in many areas such as : agriculture, hydropower, navigation, tourism, industry, environmental protection and daily life.
- Cambodia 's river basins in general are in good condition in comparison with many others countries in Asia. IWRM and RBO are necessity to create opportunities for the management conservation & development and to ensure suitable environment aspect.

- Develop and endorse water law and sub degrees
- Develop national water policy and water strategies
- Prepare the national conference or workshop to identify issues related to the River Basin Management and Development.
- Build Capacity and train on IWRM to the MOWRAM staff at all level .

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Thank you for your attention!