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# **IWRM-based development in a small Cambodian river basin**

**by**

**Watt Botkosal**

**Center for River Basin Organizations and Management,  
Solo, Central Java, Indonesia**

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The author:

Watt Botkosal

Deputy Director General, Cambodia National Mekong Committee

watt\_botkosal@hotmail.com

CRBOM

Center for River Basin Organizations and Management,  
Solo, Central Java, Indonesia

[www.crbom.org](http://www.crbom.org)

[info@crbom.org](mailto:info@crbom.org)

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## Location map



## Acronyms and abbreviations

BCCDM:	Basin Coordinating Committee for Development and Management
CNMC:	Cambodia National Mekong Committee
GWP:	Global Water Partnership
IWRM:	Integrated water resources management
MDG:	Millennium Development Goals
MOWRAM:	Ministry of Water Resources and Meteorology (Cambodia)
NGO:	Non-governmental organisation
RBO:	River basin organisation
RGC:	Royal Government of Cambodia
UXO:	Un-exploded ordinance

## Glossary

Governance can be defined as the range of political, social, economic, and administrative systems that are in place to support sustainable development of water and other related natural resources in order to achieve a better society, promote economic growth and protect the environment

IWRM (integrated water resources management) (as defined by Global Water Partnership): A process which promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems

Stakeholder (in the context of water resources management): (i) A person or an organisation with an interest in water resources management or water-related development; or (ii) a person or an organisation likely to be affected, positively or negatively, by a planned development initiative, intervention or regulation

## Summary

The 4-Ps area in NE Cambodia is formed by four tributaries (preks) on the left (or eastern) bank of the Mekong. The basin area is 12,472 km<sup>2</sup> and the population is around 143,000 persons. Many people in the area depend on agriculture, often conducted on a subsistence basis. The average rice yield ranges from 1.4 to 1.9 tons per ha. Floods and drought are prevalent.

An IWRM-based development has been piloted in support of improved livelihoods and risk exposure, covering flood management, water supply and sanitation, irrigation for agriculture development, and small scale hydro-power development. It is hoped that this development will generate benefits to local economies and minimize the negative environmental impacts. A participatory approach plays a central role in the development of the investment plans.

Apart from significant achievements in their own right, the work has demonstrated the benefits of political will; basin-level management, inter-sector coordination, and a functional public participation, feeding valuable local knowledge into the planning process.

# 1 Introduction

This paper describes an IWRM-based development initiative for a thinly populated river basin characterized by low incomes and poor access to safe water and sanitation.

The paper was prepared as a contribution to ADB's 'Eye on Asia' session at the World Water Week, Stockholm, August 2009. It is based on work conducted by Cambodia National Mekong Committee and Cambodia Water Partnership with support from ADB and Global Water Partnership.

## 2 Background

### 2.1 Legal and institutional framework

The Royal Government of Cambodia (RGC) has adopted Integrated Water Resources Management (IWRM) as a means to sustainable development and the achievement of the Millennium Development Goals (MDGs) as well as the Cambodian MDGs<sup>1</sup>. This holistic approach will directly support the implementation of Cambodia Government Rectangular Strategy putting into practices, laws and regulation in natural resources development and management with full participatory of local communities and direct stakeholders. The river basin approach is one of the policies to be developed for IWRM application in the country (MOWRAM, 2007).

Cambodia National Mekong Committee (CNMC) under its capacity as a national coordinating agency has recently been working with international partners in addition to its mandate within Mekong River Commission Framework. This effort is to promote IWRM process and its implementation in the country. In 2006, CNMC became the host institution of CamboWP and has conducted national dialogues, workshops, consultation workshops and meetings.

The CamboWP is a network of agencies, institutions, businesses, social entities, professional associations, scientists, NGOs, and water users in the water sector and related management areas in the country. CamboWP collaborates with other SE Asian Water Partnerships and with GWP. Its first pilot project established the 4-Ps Basin Functional Water Partnership in Kratie province. Presently (2009), CNMC is developing an investment roadmap for water-related development in the 4-Ps Area in collaboration with ADB.

### 2.2 The 4-Ps area

The 4-Ps Basin is located in the eastern part of Cambodia. It covers 12,472 km<sup>2</sup> (7% of the country's area), of which Kratie Province (downstream) covers 45% and Mondulkiri Province (upstream, a plateau landscape) covers 55%. The population is about 143,290 persons (or 1% of the national population).

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<sup>1</sup> As compared with the Universal Millennium Development Goals, Cambodia has established 7 identical goals, 1 similar goal and 1 new goal (about land mines and UXO), totalling 9 goals; and 9 identical indicators, 9 similar indicators, 1 indicator split into 2, and 6 new indicators, totalling 25 indicators

Figure 1: Map of the 4-Ps area



Please refer to Appendix 1 for a short description of the basin.

## 3 IWRM implementation in the 4-Ps Basin

### 3.1 Context

IWRM is still a new concept in Cambodia. The Water Law (2007) introduces an IWRM approach, which will support important strategic investments in water resources development and assure a transparent, accountable and participatory management.

The Government policy on decentralization and de-concentration delegates power and ownership to the local (provincial) government for administration and financial management.

The 4-Ps pilot project identified the following strategic priorities:

- Economic development and poverty alleviation;
- environment protection;
- social development and equity;
- flood and drought management;
- integration through basin planning;
- water resources information management;
- regional cooperation; and
- governance.

The pilot area (and Cambodia in general) can benefit from IWRM in water and related resources development for social, economic and environment protection. It will open equitable access for basic needs to water, sanitation and electricity; livelihoods-rural and urban; and reduced risk exposure (floods, drought). IWRM will promote value generated by production: Agriculture, fisheries, hydropower, industries, services; value generated by tourism and navigation. IWRM leads to better strategy for investment climate supported by good governance; timely response and adaptation to new risks and opportunities; and prevention of water-related conflicts.

### 3.2 Institutional arrangements

The 4-Ps Basin Coordinating Committee for Development and Management (BCCDM) has been established as an IWRM-based committee, headed intermittently by the two provincial governors, assembling different stakeholders, and providing a framework for IWRM promotion and implementation at the local level.

This framework reflects strong political will and support to the IWRM process at the basin level, because the two provincial authorities and other agencies concerned are working together for participation and decision making in the development planning. The clear and shared development vision and objectives were formulated together.

#### **An investment roadmap**

An IWRM-based development roadmap is presently being prepared, facilitated by BCCDM, based on a wide array of participation and collaboration by all stakeholders, and incorporating different sector aspects and priorities.

Investment priorities are:

- Development of village-level potable water supply schemes
- Irrigation system improvements
- Basinwide water resources assessment and planning
- Development of hydropower (in Prek Te)
- Development of 4-Ps basin development plan initiatives

Please refer to Appendix 2 for an elaboration of the framework.

### 3.3 Results

At this stage, key results can be highlighted as follows:

- Awareness has been built of IWRM concepts and implementation at provincial level.
- The Cambodia Water Partnership (CamboWP) was established in 2006 and the 4-Ps Basin Functional Water Partnership was established in 2007 (initially covering Kratie Province) to exemplify contemporary IWRM practices.
- Agreement has been reached on basin-level management and development of water and related resources within Kratie and Mondulkiri Provinces.
- Coordination and cooperation has been promoted among different agencies, engaging all stakeholders in the decision process, planning, implementation, and monitoring and evaluation.
- Top management support has been mobilised for water governance by identifying key issues for water and other related resources, in support of socioeconomic development and environment protection.
- Stakeholder participation modalities and strategies have been discussed and agreed on, in line with the Water Law and government strategies, especially on poverty reduction.

- IWRM best practices have been identified by mobilising local knowledge and aspects on water resources issues and identifying options for solutions with new IWRM concepts. Main issues were identified together with IWRM-based solutions.
- The new BCCDM was discussed and identified, and Terms of References have been prepared for its functions and initiatives.
- A basin development roadmap and investment initiatives have been discussed and initiated, expectedly covering basic and strategic multi-purpose development within hydropower; flood and draught control and management; irrigation; fisheries development; navigation; water supply and sanitation; capacity building in IWRM; and river basin management and water governance.

## 4 Lessons learnt

At the national level, Government policies and strategies are in place to deal with management and development of water and related resources. However they can be enhanced with IWRM and basin-level aspects. Inter-sector integration is limited.

Also, incentives and supportive financial instruments are needed, as well as continued awareness and capacity-building, to provide for simple and effective implementation and enforcement, not to speak of public participation.

Some key challenges were identified during the Pilot Project but can relate to the entire country:

- Establishment of a national IWRM-based governance framework for water and related resources, consistent with the Water Law, aligned with the Government Rectangular Strategy Phase 2;
- effective and sustainable coordination between national and sub-national line agencies and other stakeholders for water management and development;
- strong commitment for cooperation between different water related sectors to discuss on common issues for water management and development;
- strong commitment for IWRM promotion and implementation of agencies related to water management and development by overcoming their fragmented responsibilities and overcome and change the traditional single sector management approach to integrated or multi-sector management approach;
- proper mechanisms with full participatory approach for monitoring and evaluating the degree of enforcement of policies and strategies as well as the Water Law;
- continued upgrading of existing management instruments towards a more holistic (cross-sector and inter-agency) perspective; and
- mobilizing financial resources for IWRM investment at national and local level for water and related sectors.

## 5 Management aspects

In the 4-Ps Basin, the following aspects were found to be important determinants of successful IWRM-based development planning:

- **Political will** is a necessity, in this case notably at the provincial governmental level, as well as national aspects above the basin level: Legal framework, institutional arrangements, and allocation of budgets.
- **Local knowledge** shall be encouraged and applied, along with new scientific knowledge, in support of each other for decisions and management.
- **Community involvement** is the basic factor for all management of natural resources in the 4-Ps Basin. Local communities utilize, protect and manage the natural resources by themselves and their involvement must be encouraged and promoted to any investment project and programme. The existing 4-Ps Basin Functional Water Partnership in Kratie Province (developed in 2007 under the pilot project) is recognized by Kratie Provincial Authority as a development partner, and has to be strengthened and replicated in Mondulkiri Province.
- **Effective partnerships** must be maintained, involving the communities within each Prek (in the Prek Community Councils), building strong networks to facilitate the coordination of initiatives by different communities/stakeholders in the Preks.

The following indications of effective partnerships were observed:

- (1) Stakeholders share views by setting up a common vision and long term development objectives for the basin;
- (2) stakeholders encourage and agree to apply IWRM as a useful tool for their adoptive management, considering the local knowledge as a starting point, and aiming at mutual benefits to all;
- (3) commitment from all to provision of inputs and to a participatory approach to decision-making;
- (4) agreed approach to development roadmap formulation, allowing all stakeholders to come together to share views regarding different aspects of a problem, to identify issues related to that problem, and to find better options for solutions.

## 6 Conclusion

Effective basin-level IWRM implementation can serve as a local platform for national policy implementation, and a link to people involved in or depending on management of water and related natural resources. This can take place without overlaps of responsibilities, given a functional coordination among the management levels.

Hereby, basin-level management can support sustainable socioeconomic development and environmental protection. It is one of the ways to support the national policy on decentralization and de-concentration, as well as the effective enforcement of the Water Law and its aim of good water governance.

The IWRM approach can provide transparency, accountability and sustainable public participation in the whole system of decision making and development planning cycle. In due time, this can help to build a strong capacity of local institutions inter-sector coordination, allowing for better socioeconomic development and environment protection at the sub-national level, with particular regard to poverty reduction.

The implementation of national policies and strategies for water resources management and development in Cambodia is still facing many challenges. The concept of river basin management - both in theory and practical examples - has been discussed with key national line agencies and stakeholders through this Pilot Project. Undoubtedly, this is only the start of a long development process. Until the livelihood of people has been lifted, and the poverty reduced, the awareness and learning process will continue. The next step shall be to actually identify the potentials and constraints, and propose measures and interventions both structural and non-structural in order to actually remove the constraints to finally reduce poverty in the areas.

## References

- ADB and CNMC (May 09): The 4-Ps Area, Cambodia -development needs and opportunities. Working paper 3, prepared under ADB's RETA 6470: *'Managing water in Asia's river basins: Charting progress and facilitating investment'*
- CamboWP and CNMC (Sep 07): IWRM in Cambodia - where are we, and where do we want to go? Discussion paper. Cambodia Water Partnership and Cambodia National Mekong Committee
- CNMC/ADB/CamboWP (Mar 09): 4-Ps Basin, Final Report, prepared under ADB TA 6325
- CNMC/GWP/CamboWP (07): 4-Ps pilot study, Phase 1 report
- CNMC/GWP/CamboWP (08): 4-Ps pilot study, Phase 2 report
- MOWRAM (2007): Law on Water Resource Management in Cambodia
- Watt Botkosal (Jun 09): IWRM application in the 4-Ps Basin: National IWRM implementation pilot project (Cambodia). Country paper presented at the Regional Workshop on River Basin Organization and Management, Yogyakarta

## Appendix 1: The 4-Ps basin

*This appendix is quoted from ADB and CNMC (May 09).*

### **Geography**

The 4-P area is located on the eastern (or left) bank of the Mekong. It forms a triangle delineated by the Mekong towards west, by the Sre Pok Basin towards northeast, and by the Prek Chhloung Basin towards south.

The Mekong mainstream itself is not regarded as a part of the area, because this section of the mainstream has its own particular development agenda.

The area covers 12,472 km<sup>2</sup> (which is 7 percent of Cambodia's entire area) and has a population of some 143,290 persons (or 1 percent of the national population).

Only around one percent of the area is cultivated (excluding plantations and orchards), with a quarter of the cultivated areas served by irrigation infrastructure. The major parts are covered by forests, in various states of degradation, and forest plantation.

Many people in the area are vulnerable to floods and drought, as they are heavily dependent upon agriculture, often conducted on a subsistence basis. The average rice yield ranges from 1.4 to 1.9 tons per ha.

Safe water - whether by piped network, from orderly wells, or bought from vendors - is accessible to 40% of the population in Kratie Province and only 25% in Monduliri Province. The majority of remote areas have no such access, and this situation affects people's health and life expectancy. Monduliri Province has the highest infant mortality rate in Cambodia (with 125-170 deaths per 1,000 live births).

The study area covers a major part of the 222,500 ha Phnom Prich Wildlife Sanctuary and a minor part of the 250,000 ha Lomphat Wildlife Sanctuary.

*Figure 2: River network*



### ***Development agenda***

Examples of development needs and opportunities are listed below in random order:

- Access to safe water and electricity
- Support to sustainable livelihood development in general and rural livelihoods in particular, for example by development of agricultural extension services; agro-industry processing and handicrafts; and tourism
- Improved land use and land management
- Increased groundwater exploitation for rural water supply
- Irrigation system rehabilitation and development, and expansion of small-scale and medium-scale water storage capacity
- Flood and drought preparedness, warning systems and disaster relief
- Poor soils improvement/management
- Diversification of farming and development of markets
- Increased micro-hydropower infrastructure
- Management plans for protected areas and national parks and critical upper watersheds
- Promotion and consolidation of agricultural development communities and water user communities
- Export-oriented agro-industry
- Human resources development

Border trade reforms, whether bilateral or regional, can offer new opportunities for economic growth in the area.

Adjacent to the 4-Ps Basin, the Mekong mainstream development needs and opportunities include for example (i) the urgent need of bank protection in front of the provincial town of Kratie; (ii) the potential for tourism (featuring the Mekong dolphin and other rare species); and (iii) the scope for hydropower development (presently being studied at feasibility level).

*Figure 3: Subsidence farming in the 4-Ps basin*



## Appendix 2: Proposed institutional arrangements

The 4-Ps Basin is the first national pilot project for implementation of a Basin Coordinating Committee for Development and Management. The 4-Ps Basin Development Plan Initiative (DPI) needs to be developed and discussed among stakeholders and approved by two provincial Governors of Kratie and Mondulkiri. CNMC in cooperation with MOWRAM provides technical assistance for operating of BCCDM by establishment of the working groups as follows:

**a. *The Prek-based Community Group***

This group will be formed in each province of Kratie and Mondulkiri. The group focuses on community capacity building development and strengthening/awareness in creating IWRM-based planning capacity.

**b. *The Data and Information Group***

Data and information are important for plan development. This group focuses on improving the understanding of natural resources situation in the basin and providing information on its impact on socioeconomic and environment as well as its people living in the Basin.

**c. *The Planning and Water Resources Experts Group***

This group focuses on promoting and engaging providers in delivering quality planning and development options strategic plan in 4-Ps Basin.

**d. *The IWRM Awareness and Planning Group***

This group will increase awareness and support capacity-building for water management in support of effective decision making.

**e. *The Policy and Advocacy Group***

This group coordinates water and related resources policy development and establishes a public policy agenda in support of decision-making about water resources management and planning. This group works with the other groups on policy and advocacy issues throughout the BCCDM planning.

**f. *The 4-Ps Plan Project Team (PPT)***

The PPT is appointed by the BCCDM to provide overall plan guidance and direction to the five year plan and its strategic directions, including people's livelihoods and poverty reduction. The PPT consists of chairs from each of the above five working groups. Its suggestions will be submitted to the Government via the two provincial governors.

**Center for River Basin Organizations and Management,  
Solo, Central Java, Indonesia  
[www.crbom.org](http://www.crbom.org), [info@crbom.org](mailto:info@crbom.org)**