

**Learning from the lakes:
IWRM implementation
in Tonle Sap Lake of Cambodia and
Songkhla Lake Basin of Thailand**

COMMUNICATION OUTREACH PROJECT

Prepared by

CAMBODIA NATIONAL MEKONG COMMITTEE

and

THAILAND NATIONAL MEKONG COMMITTEE

Under

THE MEKONG-IWRM PROJECT OF MEKONG RIVER COMMISSION

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Project fact Sheet

Title:	IWRM implementation in Tonle Sap Lake of Cambodia and Songkhla Lake Basin of Thailand
Raised by:	CNMC and TNMC
Location:	Songkhla Lake Basin, South Thailand; and Tonle Sap Basin, Northwest Cambodia
Sectors:	Multi-sector, covering resource-based livelihoods (including agriculture, fisheries and tourism); flood management; environmental management; governance modalities and institutional aspects
Vision:	In 2018, both sister lakes become better IWRM-based governed through stronger cooperation from people of two basins for information and knowledge exchange and sharing, reached to improved IWRM-based management and development of water and related resources of the lakes.
Objective:	Good basin-level resource governance in support of prosperous and healthy lakes, for the benefit of the residents, and serving as an example for inspiration elsewhere
Rationale:	<p>Between them, the two areas provide an ideal '<i>laboratory</i>' for examination of IWRM-related concerns and opportunities.</p> <p>With their similarities and differences, they can serve as references for each other during the analysis, hereby broadening the perspective for recommendations and lessons learned.</p> <p>The two NMCs in collaboration with M-IWRMP are in a particular position to conduct the study and promote its results for implementation. This is due to their functional inter-agency networks and their familiarity with regional collaboration.</p>
Expected benefits:	<ul style="list-style-type: none"> - Good IWRM-based governance practices demonstrated, consolidated and disseminated; - Strengthened institutional capacities and human resources, in support of healthy and prosperous lake basins.
Duration:	3 years (2013 – 2015)
Budget:	400,000 USD
Beneficiaries:	<ul style="list-style-type: none"> - People with resource-dependent livelihoods in the basins, including farmers, fishermen and people working in the tourism sector as well as other people living in or related to the basins; - The organizations in charge of basin-level coordination: The Songkhla Lake Basin Committee (SLBC) and the Tonle Sap Authority (TSA); and de-central government agencies and various development partners involved in management of natural resources and the environment in the basins; - Practitioners elsewhere in SE Asia involved in basin-level IWRM.
Implementation:	<p>Execution: MRC (via M-IWRMP)</p> <p>Implementation will take place with the NMCs as national focal points, and otherwise by national working groups, to be established for the purpose.</p>

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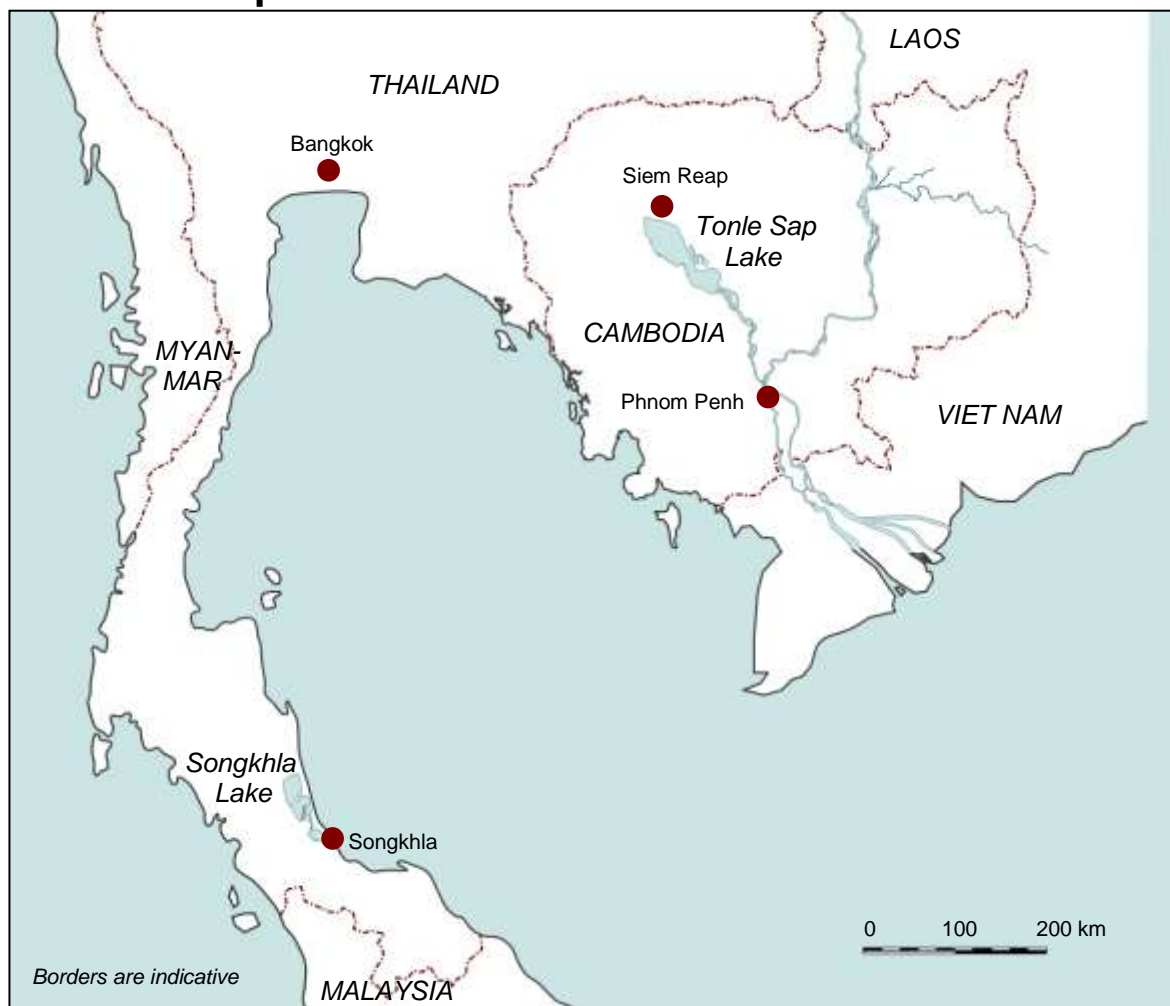
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Acronyms and abbreviations

APWF	Asia-Pacific Water Forum
CNMC	Cambodia National Mekong Committee
CRBOM	Center for River Basin Organizations and Management (Solo, Central Java)
DF	Department of Fisheries
DLA	Department of Local Administration
DMCR	Department of Marine and Coastal Resources
DWR	Department of Water Resources
ESCAP	Economic and Social Committee for Asia and the Pacific (of United Nations)
FWUC	Farmers Water User Committee (Cambodia)
GWP	Global Water Partnership
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
LBC:	Lake Basin Committee
MAC	Ministry of Agriculture and Cooperatives (Thailand)
MAFF	Ministry of Agriculture, Forestry and Fisheries (Cambodia)
MIME	Ministry of Industry, Mines and Energy (Cambodia)
M-IWRMP	The Mekong IWRM Project (of MRC)
MOE	Ministry of Energy (Thailand)
MOE	Ministry of Environment (Cambodia)
MOH	Ministry of Health (Cambodia)
MOI	Ministry of Industry (Thailand)
MOP	Ministry of Planning (Cambodia)
MOWRAM	Ministry of Water Resources and Meteorology (Cambodia)
MPH	Ministry of Public Health (Thailand)
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
MRD	Ministry of Rural Development (Cambodia)
MSDHS	Ministry of Social Development and Human Security
NARBO	Network of Asian River Basin Organizations
NEB	National Environment Board (Thailand)
NESDB	Office of the Office of the National Economic and Social Development Board, Thailand
NMC	National Mekong Committee
OEPP	Office of Environmental Policy and Planning (Thailand)
ONEP	Office of Natural Resources and Environmental Policy and Planning (Thailand)
PCMU	Project Coordination and Management Unit (of the M-IWRMP)
PBS	Thai Public Broadcasting Service
PSU	Prince of Songkhla University
RBC	River Basin Committee
SEAWF	Southeast Asia Water Forum
SLBC	Songkhla Lake Basin Committee

TNMC	Thailand National Mekong Committee
TSA	Tonle Sap Authority
TSBRS	Tonle Sap Biosphere Reserve Secretariat
UNEP	United Nations Environment Programme
WB	The World Bank
TSB	Tonle Sap Basin
SLB	Songkhla Lake Basin

Location map



Terminology

'Tonle Sap Lake' is the conventional short name for '*The Great Lake of Tonle Sap*'. Tonle Sap is the name of the river connecting the lake with the Mekong.

The Songkhla Lake Basin Committee (SLBC) is the only '*LBC*' in Thailand - the other 24 basin committees in the country are '*river basin committees*' (RBCs) - but are otherwise similar.

Executive Summary

This communication outreach project has been prepared by CNMC and TNMC under MRCS Mekong-IWRM Project. Both CNMC and TNMC share the strong conviction that long term social and environmental sustainability can be promoted through the establishment of a forum where people of the two lake basins can communicate and share their good practices and learning experiences.

This project outlines a programme for fine-tuning and consolidation of IWRM modalities, aiming at good governance in support of healthy and prosperous lakes and lake basins in the project area and beyond. It is designed to be a 'rolling plan' providing flexibility to allow for revisions and adjustment, as deemed appropriate. The outputs and outcomes will be annually assessed and revised taking into account changed circumstances and increasing uncertainties; so that problems can be identified and corrected, and improvements and synergies can be enhanced.

Songkhla Lake is the largest natural lake in Thailand, and Tonle Sap Lake is in Cambodia, the largest natural lake in Southeast Asia. Both lakes have a high social, economic, environmental and cultural significance. With their rich but sensitive ecosystems, they offer a broad range of resource-based livelihoods to the surrounding population and attractive potentials for further economic, social and environmental benefits.

Both basins have extraordinary environments and a broad range of resource-dependent livelihoods. Within each of them, complex sets of dependencies exist between the welfare of the population and the environmental quality. These dependencies must be wisely managed and seen as opportunities as much as constraints.

Between them, the two lake basins provide an ideal '*laboratory*' for a study of IWRM-related concerns and opportunities. With their similarities and differences, they can serve as references for each other during the analysis, hereby broadening the perspective for recommendations and lessons learned.

Both CNMC and TNMC agreed a shared vision for the project expressed that in 2018, both sister lakes become better IWRM-based governed through stronger cooperation from people of two basins for information and knowledge exchange and sharing, reached to improved IWRM-based management and development of water and related resources of the lakes.

The over-all objective of the project is

Good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere.

The following (closely related) outcomes will contribute to the achievement of the overall project objective:

- 1 *Programme management:* Improved project management and administration, including internal organization administration, as well as communication and involvement of public agencies, working partners, other relevant actors and international donors.
- 2 *IWRM-based governance:* IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors.
- 3 *The future of resource-based livelihoods:* Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods.
- 4 *Healthy lakes:* Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis.

1 Introduction

This communication outreach project has been prepared by CNMC and TNMC under MRCS Mekong-IWRM Project. CNMC and TNMC believe that mutual benefits can be derived by bridging Tonle Sap Lake of Cambodia and Songkhla Lake Basin of Thailand, linking the people of the two lake basins. Both CNMC and TNMC share the strong conviction that long term social and environmental sustainability can be promoted through the establishment of a forum where people of the two lake basins can communicate and share their good practices and learning experiences.

This proposal outlines a programme for fine-tuning and consolidation of IWRM modalities, aiming at good governance in support of healthy and prosperous lakes and lake basins in the project area and beyond. It is designed to be a *'rolling plan'* providing flexibility to allow for revisions and adjustment, as deemed appropriate. The Activities progress will be quarterly assessed through reporting, the Outputs will be six monthly assessed through reporting and Outcomes will be annually assessed and revised taking into account changed circumstances and increasing uncertainties; so that problems can be identified and corrected, and improvements and synergies can be enhanced.

The project has been developed at meetings between CNMC and TNMC in Bangkok on 4 August 2011 and in Siem Reap on 3 November 2011, and at a small public consultation meeting in Songkhla on 8 September 2011. A joint study tour to Tonle Sap took place on 1-4 November 2011, the further joint meetings conducted 24-25 December 2012 in Siem Reap province, Cambodia and 13-14 May 2013 in Bangkok, Thailand to finalize the joint project proposal.

2 Justification

Both basins have extraordinary environments and a broad range of resource-dependent livelihoods. Within each of them, complex sets of dependencies exist between the welfare of the population and the environmental quality. These dependencies must be wisely managed and seen as opportunities as much as constraints.

Between them, the two basins provide an ideal *'laboratory'* for a study of IWRM-related concerns and opportunities.

With their similarities and differences, they can serve as references for each other during the analysis, hereby broadening the perspective for recommendations and lessons learned.

3 Scope

This project outlines the objectives, outcomes, activities and cooperation framework of the M-IWRMP communication outreach project between Cambodia and Thailand entitled *'Learning from the lakes: IWRM implementation in Tonle Sap Lake of Cambodia and Songkhla Lake Basin of Thailand'*.

The project will be implemented under the MRCS M-IWRMP funded by the World Bank grant as has been approved by the WB Board in May 2013. Given the condition that the WB grant was available in November 2012 and that the M-IWRMP Project Steering Committee approved this project proposal since PSC meeting in Lao Plaza hotel, Vientiane, Lao PDR in 2012, its implementation will be performed directly by the respective LMB countries with the coordination and facilitation with the communication unit of ICCS/MRCS on the technical communication management. The M-IWRMP Project Coordination and Management Unit (PCMU) will actively support the countries with respective facilitation. In addition, the work will be pro-actively and technically supported by implementation partners in the project areas to achieve the objectives, outcomes, outputs and activities.

The three following key governing principles have been assumed:

- (i) The implementation will be under the leadership of the two neighboring countries of Cambodia and Thailand. As stated above, the M-IWRMP PCMU will provide facilitating supports to be compliance with the principles, guidelines, regulation of the MRCS requirements such as the Monitoring, Evaluation, Reporting system, Gender mainstreaming concepts and strategies, Imprest Account operation, procurement guideline, etc. as well as the World Bank procurement

procedures. Further, as the nature of this project is the Communication Outreach project, the project implementation needs to close coordination and facilitation with the communication unit of ICCS/MRCS on the technical communication management. This approach reflects the MRC decentralization process, where the MRC countries take a proactive lead in implementing IWRM activities, while the MRCS facilitates and provides needed supports.

- (ii) The countries and the M-IWRMP PCMU will ensure that the communication outreach project will be implemented according to the overall M-IWRM Project aims, objectives and activities. This includes that the relevant MRC Procedures and Technical Guidelines will be fully taken into account wherever applicable at both the national and regional levels.
- (iii) The communication outreach project will be aligned with the national M-IWRMP activities under WB funding. Therefore, this project will exclusively focus on joint, bilateral and communication outreach activities of water resource management issues and will not duplicate any activities that are already implemented under the national component. However, synergies will be exploited to the highest possible extent.

The progresses of the Activities, Outputs and Outcomes of the project will be reported to the M-IWRMP as the its mandatory requirements of the M-IWRMP and to the M-IWRMP Project Steering Committee through M-IWRM Project on a regular basis in Project Steering Committee meetings which has been organized by the PCMU/M-IWRMP.

4 Background

4.1 The study areas

Songkhla Lake is the largest natural lake in Thailand, and Tonle Sap Lake is the largest in Southeast Asia.

Both lakes have a high social, economic, environmental and cultural significance. With their rich but sensitive ecosystems, they offer a broad range of resource-based livelihoods to the surrounding population and attractive potentials for further economic, social and environmental benefits.

A governance framework is in place in both basins: The Songkhla Lake Basin Committee (SLBC), and the Tonle Sap Authority (TSA).

A comprehensive knowledge base is available and readily accessible for each lake.

4.2 National IWRM implementation

Overview

Table 1: Summary of national IWRM frameworks

	Cambodia	Thailand
Over-all national development coordination	Cambodia Development Council	National Economic and Social Development Board
Water resources apex body	Being formulated so called National Inter-Ministerial Committee for Water Resources Management	National Water Resources Committee (1996)
Water law	May 2007	(in preparation)
Ministry in charge of water resources	MOWRAM (1998)	MONRE (2002)
Other ministries with water-related tasks	MAFF; MOE; MOH; MOP; MIME; MRD	MAC, MOE, MOI, MPH

	Cambodia	Thailand
De-central management levels	Provinces/municipalities; districts; communes; villages	Provinces/towns; districts; communes; villages
Basin-level bodies	1 (TSA)	25 RBCs (including SLBC)
National planning	Successive 5-years strategic plans; rolling 3-years sector-wise public investment plans at the national and province level	Successive 5-years strategic plans; annual sector-wise public investment plans at the national and province level
National IWRM strategy/plan	IWRM strategy and roadmap in Cambodia (by MOWRAM, June 2006)	National Water Vision and National Water Policy (2000); National Water Resources Strategic Plan (2007)

Cambodia

Since 1998 (and formally promulgated in 1999), MOWRAM has been in charge of water resources and meteorology, as well as irrigation, while environmental management is undertaken by MOE, and agriculture and fisheries by MAFF.

Cambodia Water Partnership (under Global Water Partnership) is a network of various bodies involved in water-related management and development.

The national water law was passed in 2007. An IWRM strategy and roadmap in Cambodia was formulated by MOWRAM in 2006, but has not been implemented. Also, a Joint Strategy for Agriculture and Water 2006-2010 (by MAFF and MOWRAM) was not widely observed. A new such strategy, covering 2010-13 was passed in 2010.

Sub-decrees are in preparation about (i) water licensing; (ii) river basin management; and (iii) water quality.

The Tonle Sap Authority (TSA) was formed in 2009 for coordination of resources management in the lake and its surroundings.

Major water-related concerns and opportunities include provision of safe water and sanitation; continued expansion of the irrigation infrastructure; management of the active floodplains and the unique inland capture fisheries; and hydropower development.

Cambodian ministries involved in water management and basin-level governance

(by order of alphabet):

Ministry of Agriculture, Forestry and Fisheries (MAFF)
 Ministry of Environment (MOE)
 Ministry of Health (MOH)
 Ministry of Industry, Mines and Energy (MIME)
 Ministry of Interior (MOI)
 Ministry of Land Management, Urban Planning and Construction (MLMUPC)
 Ministry of Planning (MOP)
 Ministry of Public Works and Transport (MPWT)
 Ministry of Rural Development (MRD)
 Ministry of Tourism (MOT)
 Ministry of Water Resources and Meteorology (MOWRAM)
 Ministry of Women's Affairs (MWA)

Thailand

The National Water Resources Committee was established in 1996. Since 2002, MONRE has been in charge of water resources and the environment (but not irrigation).

Legally, water remains a 'free good'. A water law has been considered for many years, with the present draft initiated in 2004.

A National Water Vision and a National Water Policy were passed in 2000, and a National Water Resources Strategic Plan in 2007.

Thailand's 25 RBCs have a uniform structure. They assemble representatives from government and non-government bodies, with a composition that varies from one RBC to another, but often with prominent participation by the private sector. They are chaired by the provincial governor (by rotation when more than one province is involved). Secretariat services are provided by the regional offices of Department of Water Resources (DWR) (under MONRE). Each RBC can have a number of sub-basin committees.

They have little formal authority but substantial responsibilities that include guidance on general water resources management, including water-sharing; water resources management planning; coordination of water-related planning and development initiatives by various agencies; conflict resolution; and public awareness-building of good practices. Some work well, others do not, while still others are in different stages of consolidation. Concerns include infrequent meetings, lack of authority and lack of capacity (including inadequate budgets).

Thai ministries involved in water management and basin-level governance

(by order of alphabet):

Ministry of Agriculture and Cooperatives
 Ministry of Culture
 Ministry of Energy
 Ministry of Industry
 Ministry of Interior
 Ministry of Natural Resources and Environment
 Ministry of Public Health
 Ministry of Science and Technology
 Ministry of Social Development and Human Security
 Ministry of Tourism and Sports
 Ministry of Transport

4.3 Regional IWRM initiatives

At the regional level, IWRM implementation is supported by studies, networking and in other ways by organizations such as for example APWF, CapNet, ESCAP, GWP, IUCN, MRC, NARBO, UNEP and SEAWF.

A high-level *2nd Asia-Pacific Water Summit* was scheduled for 2-6 February 2012 in Bangkok, but has been postponed.

5 Objective

The over-all objective of the proposed study is

“Good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere.”

6 Project outcomes, outputs and key activities

6.1 Overview

This project proposal covers the following outcomes that will contribute to the achievement of the overall project objective:

Outcome 1, Programme management: Improved project management and administration, including internal organization administration, as well as communication and involvement of public agencies, working partners, other relevant actors and international donors.

Outcome 2, IWRM-based governance: IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors.

Outcome 3, The future of resource-based livelihoods: Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods.

Outcome 4, Healthy lakes: Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis.

The four project outcomes consist of several outputs and activities, which are foreseen to be implemented and developed in parallel. However, the interaction between the activities and outputs will be crucial to ensure the project's objective achievement. Therefore, potential synergies between them need to be exploited to the highest possible extent.

The outputs and activities will be detailed and adapted accordingly (Annex 3).

This project is designed to be the *'rolling plan'*. The activities will be quarterly assessed, outputs with its respective budget planning will be six monthly assessed with the possibilities to revise and outcomes will be annually assessed; so that problems can be identified and corrected, and improvements and synergies can be enhanced.

6.2 Outcome 1: Programme management:

Rationale

In order to achieve the set objectives, not only are academic, technical and expert needs, but equally important is the good project management and administration. This is particularly true for the IWRM-based projects where multi-objectives and multi-stakeholders are involved.

Enhance public communication and involvement of public agencies and other working partners

The activities under this heading are designed to improve managerial capabilities of the organization and the task teams. Mechanisms are also established which enhance communication and close co-ordination between the task teams of the two basins, as well as between them and involved public agencies, working partners, other relevant actors and international donors.

Project monitoring and evaluation

Quality control and quality assurance are both necessary and essential for the success of the project's results measurement. The project has incorporated the key indicators and milestones under each respective activity which will be closely monitored and evaluated.

Outputs and key activities

Output 1.1: Enhance public communication and involvement of public agencies and other working partners

Activity 1.1.1: Enhance public relation activities and involve public agencies and working partners in meetings and workshops.

Activity 1.1.2: Improve interaction with national planning and line agencies through direct participation of MRC and NMCs/M-IWRMP staff in relevant fora and working groups.

Activity 1.1.3: Build partnerships with relevant regional actors and the international donor Community.

Output 1.2: TSB & SLB Activities well managed

Activity 1.2.1: Managerial and administrative procedures strengthened.

Activity 1.2.2: Conduct the project monitoring and evaluation.

6.3 Outcome 2: IWRM-based governance

Rationale

Basin-level IWRM can appear as a crossroads of different concerns and preferences regarding allocation of land and water, development planning, and balance between immediate and long-term benefits. Such diversities can appear as constraints or, preferably, as potential synergies: A basin can very well be '*prosperous*' and '*healthy*' at the same time.

Figure 2: A healthy and prosperous river basin



... visualized by Phasouriya Khanthavialy, Lao PDR, 12 years (at the time), published in the 2005 MRC calendar

Broad agreement can add relevance and validity to the development efforts and improve the prospects for implementation.

Visionary governance

Visionary governance, in a dialogue with stakeholders, can contribute to such broad agreement by identifying and consolidating the overlap of interests, to serve as a platform for long-term planning as well as immediate initiatives.¹

So can the '*informal authority*' of the river basin management body: The respect and confidence it enjoys from water users, decision-makers and other stakeholders.

¹ At the regional level, this is illustrated by the operation of MRC, which reflects values and preferences shared by the member countries.

Stakeholder involvement

Active and functional involvement of stakeholders is decisive to successful development planning, not to speak of the subsequent implementation.

Stakeholder participation is an inherent attribute of IWRM. The 2nd *'Dublin principle'* states that *'water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels'*.

Stakeholder collaboration

People - and organizations - can disagree for several good reasons. Examples:

- The applied perspective - whether a household, a company, a local community, a country, or the global community. When facing a choice, many will tend to favour local development over national (or global) development;
- The time horizon. Poor families need food on the table in the short term (but will also give high priority to education for their kids, which is a definite long-term perspective). Some politicians, concerned about their next election, may favour a corresponding time horizon. Choices are particularly difficult if they involve costs or inconvenience up front with benefits emerging at a much later stage;
- The agenda - for example when facing a choice between preservation and conservation on the one hand, and pro-active change on the other. Active flood plains is a case in point, as is forested headwater areas; and/or
- The attitude to various (and perhaps uncertain) risks - economic, social or environmental. Risks can be *'real'* or *'perceived'*, but even perceived risks can make a real difference to the quality of life of a household, or for an investment climate that is important for a private business. So can a small risk of a major disaster (like a dam break).

The point is that disagreements do not at all need to be a matter of *'who is right and who is wrong'*. On the contrary, disagreements can exist between fully reasonable, rational and unselfish people (or organizations) who are both *'right'* - although in different ways.

People (and organizations) will tend to agree, even on difficult choices, provided that the circumstances are supportive. This can depend on for example:

- Shared values;
- Understanding of each other's positions;
- Respect for each other's perspectives and concerns;
- Confidence among the participants about the process and its over-all purpose; and
- A shared vision for the basin and agreed principles for its development;

Confidence is an overruling condition for successful collaboration among the participating organizations and individuals. This, in turn, involves access to information; and real involvement in the decision process.

Quoted from Slamet Budi Prayitno (March 2011)

Linking the management levels

IWRM often takes place at the basin level,² while national planning takes place at the national level and de-centrally, at the province level (important in both Cambodia and Thailand), the district level, the commune level and the village level.

The national planning boundaries are different from the drainage basin boundaries. The national planning is sector-based, for good reasons, while the basin planning is multi-sector (for equally good reasons). More of the expertise is located in national line agencies, and the budget allocation takes place within the national system but it must be accurately complied with the MRC Financial and Administration System.

² Article 18.9 of Agenda 21 recommends that *'IWRM, including the integration of land- and water-related aspects, should be carried out at the level of the catchment basin or sub-basin'*

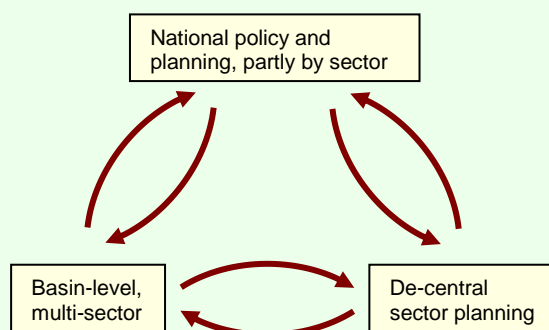
IWRM-based basin-level planning must interact and harmonize with the national planning, so that the processes can add value to each other. Such consistency is a precondition for success. Lack of consistency can cause delays or failure of basin-level initiatives.

Basin-level and national policy and planning

Cambodia and Thailand (and many other Asian countries) apply strategic, national social and economic 5-years development plans. These plans serve as the framework for annual public investment plans, which, in turn, provide the framework for annual de-central (province level) investment plans. The purpose is to maintain a sense of direction, while, at the same time, keep an eye on the allocation of finite national finances. The process proceeds by sector, due to a strong involvement by sector ministries. The inter-sector coordination is mostly done at the top level, at a late stage, where most of the attention is paid to necessary but sensitive cost-cutting.

Basin-level planning must be consistent with national development policies and planning, for the sake of legitimacy, and to facilitate implementation.

This does not mean that basin-level planning should passively reflect national policies. Rather, in the medium and long term, a mutual convergence can be aimed at, with basin-level planning feeding into the national level, just as it is the case for de-central sector planning. This is illustrated in the figure below. An important contribution by the integrated basin-level planning is to add value to the thematic sector planning.



Adapted from ADB and CRBOM (April 2011)

Spin-off activities

The project will identify many opportunities for related initiatives in support of *'good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere'*. Some of these initiatives can be implemented as a part of the project, but many will require additional resources, and/or more time, or will for various other reasons be better suited for implementation in different contexts. This could be under the public investment plans, by private enterprises, by NGOs, or, in some cases, under on-going MRC programmes.

Identification of spin-off activities

- Literature screenings, consultations;
- Workshops and study tours;
- Case studies and pilot activities prepared under the project;
- Others:

These suggestions and opportunities will emerge across the project and will be reported in various documents - workshop reports, case study papers, and synthesis reports. In order to improve their visibility, and support their promotion, they will be regarded as separate outputs in their own right, one for each outcome, and will be compiled in dedicated working papers.

Outputs and key activities

Output 2.1: Visionary governance

Activity 2.1.1: Conduct a literature study of good practices in Thailand and Cambodia and elsewhere.

Activity 2.1.2: Analyze and synthesize relations, dependencies and synergies, immediate as well as long-term, and including over-all aspects such as public health, environmental quality and investment climate.

Activity 2.1.3: Review and validate findings of activities 2.1.1 & 2.1.2 including recommendations.

Output 2.2: Stakeholders mobilized

Activity 2.2.1: Analyse and map stakeholders in TSL & SLB.

Activity 2.2.2: Conduct an exchange visit on selected areas in Tonle Sap and Songkla lakes.

Activity 2.2.3: Conduct stakeholders' analysis consultation workshop in report consultation (i.e bring the result to the workshop).

Output 2.3: Consolidated linkages between management levels and capacity building for both lakes

Activity 2.3.1: Prepare a literature-based overview of planning practices in the two countries, including planning levels and sector planning.

Activity 2.3.2: Analyze links within the basin-level planning: 'Vertical' (among the planning levels), and 'horizontal' (between sectors).

Activity 2.3.3: Conduct consultation meetings (within the two basin organizations, with resource persons, and others) about observations regarding needs, barriers and opportunities in both countries.

Activity 2.3.4: Prepare analysis (of the results from Activities 2.3.2 & 2.3.3) and make recommendations

Activity 2.3.5: Conduct training workshop on the Basic Knowledge for Basin Level Planning

Activity 2.3.6: Training for TSA/CNMC/MOWRAM in planning Atlas and 3D digital map development for Tonle Sap Lake (to be provided by ITC).

Output 2.4: Pilot Implementation

Activity 2.4.1: Prepare a concept note for pilot implementation in SLB (Study to identify suitable issues for pilot implementation; Roundtable meeting of experts to screen and map the agenda, concerns and preferences, by sectors, in SLB; Prepare draft concept notes for pilot implementation activities; Support & facilitate pilot implementation activities).

Activity 2.4.2: Identify site for pilot implementation on the 'Fishery' issue (Develop criteria for site selection; Prepare report on state of fishery resource around the implementation site; Convene workshop to plan activities of the implementation site).

Activity 2.4.3: Identify site for pilot implementation on the 'Community empowerment' issue (Develop criteria for site selection; Prepare report on community organisation around the implementation site; Convene workshop, exchange learning experiences, so as to establish the implementation site).

Activity 2.4.4: Identify site for pilot implementation on the 'Climate change adaptation' issue, with emphasis on selected issues (Develop criteria for site selection; prepare report on the climate change issue, identify significant impacts; Convene workshop to plan activities of the implementation site).

Activity 2.4.5: Implementing pilot activities with communities.

Activity 2.4.6: Conduct assessment of fish stock and natural resources in selected area of Tonle

Sap lake by strengthening communities' involvement.

Activity 2.4.7: Prepare consolidated report on fishery stock assessment outlining IWRM implication for best practice in fishery, tourism, and water pollution management.

Examples of possible spin-off activities in support of IWRM-based governance (Pending external support)

- MSc or PhD studies related to IWRM-based governance, possibly involving international collaboration;
- Joint case studies, generic research and publications (perhaps including collaboration with water users and other stakeholders, gender aspects, mobilisation of the private sector, mobilisation of the academic community, and news media relations);
- Networking among agencies, within each area and among them, and perhaps extended to other lakes in Asia;
- Perhaps an '*Asian lakes seminar*';
- Perhaps a '*lake chapter*' under Network of Asian River Basin Organizations (NARBO)?

6.4 Outcome 3: The future of resource-based livelihoods

Rationale

Many river basins in Southeast Asia share the following challenges: ³

- Competition for finite water resources between agriculture, households, industries, and in-stream demands;
- General technological development of production systems (new technology, improved access to existing technology), affecting the efficiency of production systems and the related competitive advantages;
- Lower trade barriers (as promoted by AFTA, APEC, ASEAN and WTO, not to speak of the Asian '*noodle bowl*' of bilateral trade agreements); '*porous borders*'; increased global food prices; and increased weather irregularities - all of which, separately or jointly, will impose new efficiency criteria for primary production systems due to exposure to regional and global competition;
- Continuous urbanization and changed lifestyles; higher demand of water and energy; and increased generation of solid waste and wastewater;
- Expanding tourism;
- Demand of biofuel, causing shifts of land use and production systems - not to speak of escalating prices (driven by demand from China), which in turn affects the economic feasibility of biofuel production both in Thailand and Cambodia; and
- The need of climate proofing and adaptation to climate change.

The transition between today and the future is a major challenge. If conducted smoothly, our river basins will emerge as prosperous and competitive, well placed to generate income and food for the population. If conducted less smoothly, there is a risk of unemployment, and rural incomes that are even lower than today. This can happen if the changes take place too fast, or without appropriate support.

Overruling concerns in this connection, in both countries, are sustainable livelihoods; rural income generation; and environmental quality.

Good basin-level governance can contribute visibly by identifying relations and dependencies, in support of wise response to the various challenges.

³ Entire rationale adapted from Watt Botkosal (June 2011)

Policy options

Below are listed some policy options, in random order, as applicable from case to case, and with a particular view to knowledge-sharing between the two countries:

- **Efficiency improvement** (water efficiency as well as the economic efficiency);
- **Livelihood generation**, preferably including rural livelihoods;
- A **value chain** perspective, in support of agro-processing, including innovative products, and partly undertaken de-centrally by small and medium enterprises;
- **Branding** of products and related marketing;
- Gentle, pro-poor **market regulation** in support of shifting to new products (perhaps including biofuel?), and in support of affordable food prices while at the same time maintaining an income of the farmers that at least exceeds their production cost;
- **Credit**, including (but not limited to) **micro-credit**, in support of investment and innovation, and some kind of risk insurance, so that farmers can keep their land in case of emergencies;
- **Regulation of water uses**, covering both surface water and groundwater;
- **Disaster preparedness** (for floods, drought and pests);
- **Organization of farmers and fishermen** can facilitate efficiency improvements, other kinds of technological development, and access to markets;
- Interaction must be maintained between development of **irrigation and cultivation**. Upgrading one without upgrading the other is not optimal.;
- **Soil management** will become more important (and the benefits more visible) when water is sparse and in connection with diversifying the cultivation on lands that are not well suited crops other than rice;
- **Use of pesticides** must be kept at acceptable levels, supported by education and awareness campaigns and supportive extension and weather forecast services; and
- Continued **research**, with dissemination supported by education and pilot applications.

Adapted from Van Ngo (April 2010)

The value of wetlands: Social and economic benefits of aquatic habitats

Water-related assets in a river (or lake) basin span across natural resources, livelihoods and culture, and are for that reason well suited for highlighting the linkages between these perspectives. Knowledge and awareness of them can expand the decision basis for development planning, land management, cause-effect analysis and impact prediction. Due regard to assets can assist in identification of 'shared values' within a basin, and can contribute to a visionary focus for its long-term development.⁴

Management of assets is not merely about conservation, but can very well be oriented towards proactive development, while paying attention to an appropriate balance between present and future needs.

Both basins have unique assets - including wetlands with an extraordinary economic, social and environmental significance. In both basins, comprehensive studies have been conducted in recent years of the diverse benefits of wetlands. Even though the systems are complex, a good (if less than perfect) understanding is available about states, processes and cause-effect relationships. This knowledge can be placed in a context of basin-level IWRM, aiming at highlighting the significance of the wetlands and mainstreaming the related potential benefits in the basin-level development planning.

⁴ This and the following paragraph quoted from Muanpong Juntopas (February 2010)

This can be supported by preparation and dissemination of *case studies*, including *success stories* and *lessons learned*.

Outputs and key activities

This project component is expected to involve consultations with (or active participation by) researchers from universities and *'think-tanks'* in the two countries.

Output 3.1: Resource-based livelihoods integrated in the development planning

Activity 3.1.1: Conduct a literature study of resource-based livelihoods in selected lakes basin Southeast Asia and elsewhere (Saroma lake in Japan, Chilika lake in India), with observations on concerns, threats and opportunities.

Activity 3.1.2: Conduct an open assessment of the potential in each basin (irrespective of trends, financial constraints etc.)

Activity 3.1.3: Conduct roundtable discussions in each basin about concerns, threats and opportunities.

Activity 3.1.4: Prepare synthesis and a draft report.

Activity 3.1.5: Conduct a one day national workshop on the project progress.

Activity 3.1.6: Prepare an annual report.

Activity 3.1.7: Conduct interview with communities in selected areas on their concerns, threats and opportunities on resources-base livelihoods in Tonle Sap lake future.

Activity 3.1.8: Review, analyze and synthesize trends with key indicators for Tonle Sap Lake focusing on fishery, tourism and water pollution hydrometeorology operation and management in Basin in the context of IWRM.

Output 3.2: The values of SLB and TSL demonstrated and appreciated

Activity 3.2.1: Conduct a literature study on cause-effect relationship behind concerns, threats and opportunities.

Activity 3.2.2: Conduct consultations with resource persons in local communities and from universities and development organizations involved in wetlands management.

Activity 3.2.3: Present case studies at a seminar, and otherwise dissemination as appropriate.

Activity 3.2.4: Compile and disseminate a synthesis report of the above case study.

Activity 3.2.5: Review and synthesize working papers base on which develop political recommendation for integrated management of the Tonle Sap Lake.

Activity 3.2.6: Consolidate the outline report in line with political recommendations for lake management interventions to be aligned with national and local planning initiatives.

Examples of possible spin-off activities in support of resource-based livelihoods (Pending external support)

- MSc or PhD studies related to resource-based livelihoods, possibly involving international collaboration.
- Joint case studies, generic research and publications, possibly including improved revenue generation and improved water and energy efficiencies.
- Branding and support to marketing of resource-based niche products.
- Knowledge-sharing and/or initiatives related to ecotourism.
- Thematic networking among farmers, fishermen, water users, within each area and perhaps among them.
- Value chain initiatives (post-processing etc).
- Initiatives aimed at reductions of post-harvest losses.
- Structural measures: Flood proofing, storage capacity,
- Knowledge-sharing and/or initiatives related to groundwater management.

If so desired, the activity can be expanded to cover forest ecosystems as well.

6.5 Outcome 4: Healthy lakes

Rationale

An appropriate environmental quality of the lakes and their surrounding areas is one cornerstone of achieving the *'triple bottom line'* of social, economic and environmental benefits, which can support and amplify each other, in the short as well as the long term, as demonstrated by river basins that are prosperous as well as healthy.

Healthy lakes are supported by good, IWRM-based governance (Outcome 2), and will in turn support sustainable resource-based livelihoods (Outcome 3).

This project component will apply social marketing as a cost-effective supplementary means for healthy lakes.

Social marketing⁵

Social marketing is the use of traditional commercial marketing for social development. Based on education and awareness-building, social marketing takes on the further step to change the attitudes and improve the behavior of the target group for their own benefit, as well as for the benefit of society as a whole.

Social marketing can be an inexpensive and highly efficient supplement to costly structural developments (such as water supply, sanitation, or flood protection). Sometimes, social marketing is an attractive option in its own right, to achieve some development where formal regulation can be less practical or have unintended side effects (such as the appropriate use of pesticides in agriculture).

Social marketing for IWRM can give people the behavioral experience that change is not only possible, but can be positive and beneficial to them.

⁵ Rationale borrowed from Arco, Edwin S and Caridad Rivera-Corridor (August 2010)

Examples of themes for social marketing

- Water utilization and energy consumption by households.
- Water utilization and energy consumption by industries.
- Water utilization for irrigation.
- Appropriate solid waste disposal.
- Appropriate use of fertilizers and pesticides.
- Disaster preparedness and response: Floods, drought.

Outputs and key activities

Output 4.1: Improved public awareness on quality of the lakes and their surrounding areas, supported the healthy state of the environment and social marketing

Activity 4.1.1: Conduct a literature review on the healthy lake issues

Activity 4.1.2: Consult stakeholders and resource persons on healthy lake issues to Tonlesap lake and Songkhla Lake Basin.

Activity 4.1.3: Consolidate the study result & scenario setting

Activity 4.1.4: Develop a mechanism to enhance the basic knowledge on healthy lake for Tonlesap Lake into education system of Cambodia.

Output 4.2: Awareness monitoring tools & healthy lake indicators tools are designed and implemented.

Activity 4.2.1: Develop communities' awareness on applying monitoring tools and healthy lake indicators tools developed by MRC.

Activity 4.2.2: Strengthen the implementation of monitoring tools and healthy lake indicators tools.

Examples of possible spin-off activities in support of healthy lakes (Pending external support)

- MSc or PhD studies related to healthy lakes, possibly involving international collaboration
- Joint case studies, generic research and publications; could include options for cost recovery (Polluter Pays Principle, Beneficiary Pays Principle, ...)
- Awareness campaigns/social marketing campaigns (with private sponsorships?)
- Improved practices for wastewater management and disposal, including septic tank operation
- Improved practices for solid waste management, recycling and disposal
- Improved practices for mining, including wastewater and tailings disposal
- Improved practices for land use in upstream parts
- Structural measures: Water supplies, sanitation, sludge disposal, waste disposal;
- Perhaps initiatives related to payment for ecosystem services

6.6 Reporting and dissemination

Reporting

The project report will be an effective by applying the MRCS M-IWRMP PCMU Reporting System enabling to monitor the project progress and evaluation of the project at the end of the project.

Dissemination

The complete report will be disseminated to both countries' lakes competent line agencies concerned and to MRC Secretariat for publication and use as necessary.

It is expected that several monographic papers will be produced for general publication.

Progress and findings will be presented for discussion at suitable workshops and seminars during the study and after it has been completed.

6.7 Monitoring and Evaluation

The project will follow the MRCS M-IWRMP PCMU Monitoring and Evaluation System designed for all relevant MRCS Programmes implementation. The Report of the project will clearly indicate its performance indicators which have been achieved by the project. The comprehensive M&E System implementation process will be developed during the project cycles widely participated by various involved stakeholders in order to make sure that the project had been influencing the significant change and improvement of IWRM for both lake basins.

6.8 Gender Mainstreaming in M-IWRMP

The project will be implemented by incorporating the gender mainstreaming aspects to all project activities by ensuring participation of women and men equally. Project will promote and enhance gender mainstreaming aspects in lakes management by involving participation of men and women equally. Stakeholders' analysis will focus on gender roles and responsibilities in water resources and lake management by using existing MRC numerous gender tool kits and guidelines and practical use.

7 Project implementation arrangements

7.1 Overview

Implementation of the projects will take place by the part/full time of National Transboundary Projects Consultant(s) in close collaboration with the respective line agencies under the leadership of the two neighboring countries of Cambodia and Thailand, represented by their respective NMC (National M-IWRM Project Coordinator), with supervision, facilitation and support by the M-IWRMP/PCMU.

The following framework is tentatively assumed:

Execution:	MRC (via M-IWRMP)
Implementation:	Implementation will take place with the NMCs as national focal points (National M-IWRM Project Coordinators with the strong implementation supports by the National Transboundary Project Consultants), and otherwise by national working groups, to be established for the purpose. Further, for the communication technical management, the project will coordinate with MRCS/ICCS Communication Technical Unit for technical support as well.
Key partners:	SLBC; Prince of Songkla University; and TSA.

7.2 Over-all execution

To gain synergies from this project, both countries will have to ensure effective communication and sufficient bilateral exchange to achieve the project objectives in a joint cooperation manner. The designated task managers (mobilised from participating NMCs and line agencies) need to coordinate

and implement activities jointly and ensure effective information as well as expertise exchange. This can be enabled through a joint collaborative working group - comprising task managers from Cambodia and Thailand – and through regular working group meetings.

Progress of activities, outputs and outcomes implementation and constraints will be reported to the M-IWRMP/PCMU but pre-dominantly to the M-IWRMP Project Steering Committee, which the meeting will be organized by the PCMU/M-IWRMP twice a year.

The progress of the project implementation will be assessed through the M-IWRMP involving tailor-made progress indicators for monitoring and evaluation (Annex 1).

The project will be conducted and reported in English for the official uses, except for some of the specific workshops and consultation meetings, and some of the working papers, which will be in national languages.

A project implementation plan with a time schedule is attached as Annex 3.

7.3 National project implementation

Involved institutions for Cambodia

National project coordination and progress monitoring:

- Cambodia National Mekong Committee (CNMC).

National project implementation:

- Cambodia National Mekong Committee (CNMC) and its member lines agencies, chaired by Tonle Sap Authority.

Involved line agencies:

- Ministry of Agriculture, Forestry and Fisheries (MAFF);
- Ministry of Environment (MOE);
- Ministry of Industry, Mines and Energy (MIME).
- Ministry of Rural Development (MRD);
- Ministry of Tourism; and
- Ministry of Water Resources and Meteorology (MOWRAM).

Furthermore, representatives from one or two universities will be invited to participate.

Involved institutions for Thailand

National project coordination and progress monitoring:

- Thailand National Mekong Committee (TNMC).

National project implementation:

- Thai National Mekong Committee (TNMC) and its member agencies.

Involved line agencies:

- Ministry of Agriculture and Cooperatives;
- Ministry of Natural Resources and Environment;
- Ministry of Social Development and Human Security; and
- Ministry of Tourism and Sports.

Other implementation partners:

- Prince of Songkla University

7.4 MRCS

The MRCS will facilitate and support the transboundary project implementation through:

- Mekong IWRMP Project Coordination and Management Unit and its Project Steering Committee.

Communication and liaison will be maintained with

- MRC Basin Development Plan;
- MRC Environment Programme;
- MRC Fisheries Programme;
- MRC Fisheries Programme;
- MRC ICCS/Communication Unit.

8 Budget and financial arrangements

8.1 Budget

This communication outreach project will be financed through the MRCS M-IWRMP, funded by the World Bank grant as has been approved by the WB Board in May 2013.

The budget is distributed across the four outcomes as follows:

Outcome	Budget	Key areas of work
Outcome 1: Programme Management	246,000 USD	Effectiveness of project management and evaluation and monitoring reports.
Outcome 2: IWRM-based governance	945,200 USD	IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders.
Outcome 3: The future of resource-based livelihoods	424,800 USD	Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods.
Outcome 4: Healthy lakes	17,600 USD	Social marketing initiatives identified and implemented on a pilot basis.
Total	400,000 USD	

8.2 Financial arrangements

Management of finances and logistics for the Project will be undertaken by the CNMC and TNMC as per their established policies and procedures. One Imprest account for each will be opened by CNMC and TNMC for disbursement of project funds.

M-IWRMP/PCMU of the MRCS will transfer an initial amount of cash flow for the project to the designated bank account at the CNMC and TNMC for a first installment while their Joint Single PIP and PDA are signed by the three concerned parties include CNMC, TNMC, and MRCS according to the six monthly activities and budget planning of the current fiscal year, followed by subsequent installments subject to orderly monthly expense accounting.

The bank accounts (current accounts) shall be established at banks approved by MRC. The bank accounts should be named "MRC – (project) – (location)". Only expenses directly related to the approved work plans and the Imprest account budget can be charged to the Imprest account. A monthly Imprest account report including expenses and possible income for the previous month should

be forwarded to the MRCS for replenishment no later than the 5th of every month (detail of the Imprest account implementation shall refer to the MRCS' financial manual).

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ANNEXES:

Annex 1: Logical framework

<i>Objective, outcomes, outputs</i>	<i>Indicators</i>	<i>Sources of data</i>
Project objective		
Good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere	Extent of cumulative achievement of outcomes and outputs monitored and evaluated below	M-IWRM M&E and progress reports Progress reports of national agencies Working papers produced under the project
Outcomes		
Outcome 1, Programme management	OI 1.1: Level of effectiveness of the project management	Reports and M&E System implementation
	OI 1.2: Project implementation with comprehensive participation	Consultation process modalities
Outcome 2, IWRM-based governance: IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors	OI 2.1: Level of support from (i) agencies; (ii) water users; and (iii) other stakeholders	Feedback from consultation workshop
	OI 2.2: Stakeholder dialogue modalities introduced	Consultation reports
Outcome 3, The future of resource-based livelihoods: Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods	OI 3.1: Recommendations produced, disseminated and agreed	Consultation reports
	OI 3.2: Number of case studies produced and disseminated	Case study papers
Outcome 4, Healthy lakes: Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis	OI 4.1: Recommendations produced, disseminated and agreed	Working paper(s)
	OI 4.2: Social marketing campaign(s) piloted	Progress reports

Outputs		
Outputs leading to Outcome 1		
Output 1.1: Enhance public communication and involvement of public agencies and other working partners	OI 1.1.1: Procedures and guideline made	A guideline
Output 1.2: TSB & SLB Activities well managed	OI 1.2.1: Communication modality and channel network established and applied	Website and Reports
Outputs		
Outputs leading to Outcome 2		
Output 2.1, Visionary governance	OI 2.1.1: Recommendations made, negotiated and agreed	Working paper(s)
Output 2.2, Stakeholders mobilized	OI 2.2.1: Recommendations made, negotiated and agreed	Working paper(s)
Output 2.3, Consolidated linkages between management levels and capacity building for both lakes	OI 2.3.1: Recommendations made, negotiated and agreed	Working paper(s)
Output 2.4, Pilot Implementation	OI 2.3.4: Portfolio compiled and disseminated	Working paper(s)

Outputs leading to Outcome 3		
Output 3.1, Resource-based livelihoods integrated in the development planning	OI 3.1.1: Trends and opportunities identified	Working paper(s)
	OI 3.1.2: Recommendations made and disseminated	Working paper(s)
Output 3.2, The values of SLB and TSL demonstrated and appreciated	OI 3.2.1: Case studies prepared	Case study papers, progress reports
Output leading to Outcome 4		
Output 4.1, Improved quality of the lakes and their surrounding areas, supported by social marketing	OI 4.1.1: Needs and opportunities assessed	Progress reports
	OI 4.1.2: Social marketing campaign(s) piloted	Progress reports
Output 4.2, Awareness and discussion/training materials are designed and disseminated	OI 4.2.1: Portfolio compiled and disseminated	Working paper(s)
Output 4.3 : Awareness monitoring tools & healthy lake indicators tools are designed and implemented	OI 4.3.1:	What would be the deliverable

Annex 2: Key project activities

Activities	Task manager	Deliverables	Completion
Outcome 1: Programme management			
Output 1.1: Enhance public communication and involvement of public agencies and other working partners		Guideline	
Activity1.1.1: Enhance public relation activities and involve public agencies and working partners in meetings and workshops		Guideline	
Activity 1.1.2: Improve interaction with national planning and line agencies through direct participation of MRC and NMCs/M-IWRMP staff in relevant fora and working groups		Guideline	
Activity 1.1.3: Build partnerships with relevant regional actors and the international donor community		Guideline	
Output 1.2: TSB & SLB Activities well managed		Guideline	

Activities	Task manager	Deliverables	Completion
Activity 1.2.1: Managerial and administrative procedures strengthened		Guideline	
Activity 1.2.2: Conduct the project monitoring and evaluation		Guideline	
Activities	Task manager	Deliverables	Completion
Outcome 2: IWRM-based governance: IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors			
Output 2.1: Visionary governance			
Activity 2.1.1: Conduct a literature study of good practices in Cambodia, Thailand and elsewhere		Working paper	
Activity 2.1.2: Analyze and synthesize relations, dependencies and synergies, immediate as well as long-term, and including over-all aspects such as public health, environmental quality and investment climate		Working paper	
Activity 2.1.3: Review and validate findings of activities 2.1.1 & 2.1.2 including recommendations		Workshop report	
Output 2.2: Stakeholders mobilized			
Activity 2.2.1: Analyse and map stakeholders in TSL & SLB		Working paper	
Activity 2.2.2: Conduct an exchange visit on selected areas in Tonle Sap and Songkla lakes		Working paper	
Activity 2.2.3: Conduct stakeholders analysis consultation workshop in report consultation (i.e. bring the result to the workshop)		Workshop report	
Output 2.3: Consolidated linkages between management levels and capacity building for both lakes			
Activity 2.3.1: Prepare a literature-based overview of planning practices in the two countries, including planning levels and sector planning		Working paper	

Activities	Task manager	Deliverables	Completion
Activity 2.3.2: Analyze links within the basin-level planning: 'Vertical' (among the planning levels), and 'horizontal' (between sectors)		Working paper	
Activity 2.3.3: Conduct consultations meetings (within the two basin organizations, with resource persons, and others) about observations regarding needs, barriers and opportunities in both countries		Working paper	
Activity 2.3.4: Prepare analysis (of the results from Activities 2.3.2 & 2.3.3) and make recommendations		Workshop reports	
Activity 2.3.5: Conduct training workshop on the Basic Knowledge for Basin Level Planning		Workshop report	
Activity 2.3.6: Training for TSA/CNMC/MOWRAM in planning Atlas and 3D digital map development for Tonle Sap Lake (to be provided by ITC).		Synthesis report	
Output 2.4: Pilot Implementation			

Activities	Task manager	Deliverables	Completion
<p>Activity 2.4.1: Prepare a concept note for pilot implementation in SLB (Study to identify suitable issues for pilot implementation ; Roundtable meeting of experts to screen and map the agenda, concerns and preferences, by sectors, in SLB ; Prepare draft concept notes for pilot implementation activities ; Support & facilitate pilot implementation activities)</p>		Working paper	
<p>Activity 2.4.2: Identify site for pilot implementation on the 'Fishery' issue (Develop criteria for site selection; Prepare report on state of fishery resource around the implementation site ; Convene workshop to plan activities of the implementation site)</p>		Report and working paper What would be the deliverable for this activity?	
<p>Activity 2.4.3: Identify site for pilot implementation on the 'Community empowerment' issue (Develop criteria for site selection; Prepare report on community organisation around the implementation site ; Convene workshop, exchange learning experiences, so as to establish the implementation site)</p>		Report and working paper What would be the deliverable for this activity?	
<p>Activity 2.4.4: Identify site for pilot implementation on the 'Climate change adaptation' issue, with emphasis on selected issues (Develop criteria for site selection; prepare report on the climate change issue, identify significant impacts; Convene workshop to plan activities of the implementation site)</p>		Report and working paper What would be the deliverable for this activity?	
<p>Activity 2.4.5: Implementing pilot activities with communities</p>		Report and working paper What would be the deliverable for this activity?	
<p>Activity 2.4.6: Conduct assessment of fish stock and natural resources in selected area of Tonle Sap lake by strengthening communities' involvement.</p>			
<p>Activity 2.4.7: Prepare consolidated report on fishery stock assessment outlining IWRM implication for best practice in fishery, tourism, and water pollution management.</p>		Report and working paper What would be the deliverable for this activity?	
<p>Outcome 3: The future of resource-based livelihoods: Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods</p>			

Activities	Task manager	Deliverables	Completion
Output 3.1: Resource-based livelihoods integrated in the development planning			
Activity 3.1.1: Conduct a literature study of resource-based livelihoods in selected lakes basin Southeast Asia and elsewhere (Saroma lake in Japan, Chilika lake-in India), with observations on concerns, threats and opportunities		Working paper	
Activity 3.1.2: Conduct an open assessment of the potential in each basin (irrespective of trends, financial constraints, etc.)		Working paper	
Activity 3.1.3: Conduct roundtable discussions in each basin about concerns, threats and opportunities		Working paper	
Activity 3.1.4: Prepare synthesis and a draft report		Session reports	
Activity 3.1.5: Conduct a one day national workshop on the project progress.		Synthesis report (draft)	
Activity 3.1.6: Prepare annual report		Seminar report	
Activity 3.1.7: Conduct interview with communities in selected areas on their concerns, threats and opportunities on resources-base livelihoods in Tonle Sap lake future		Synthesis report (final)	
Activity 3.1.8: Review, analyse and synthesize trends with key indicators for Tonle Sap Lake focusing on fishery, tourism and water pollution issues.			
Output 3.2: The values of SLB and TSL demonstrated and appreciated			
Activity 3.2.1: Conduct a literature study on cause-effect relationship behind concerns, threats and opportunities		Working paper	
Activity 3.2.2: Conduct consultations with resource persons in local communities, and from universities and development organizations involved in wetlands management		Working paper	
Activity 3.2.3: Present case studies at a seminar, and otherwise dissemination as appropriate		Working paper	
Activity 3.2.4: Compile and disseminate a synthesis report of the above case study		Case study papers	

Activities	Task manager	Deliverables	Completion
Activity 3.2.5: Review and synthesize working papers base on which develop political recommendation for integrated management of the Tonle Sap Lake		Seminar report	
Activity 3.2.6: Consolidate the outline report in line with political recommendations for lake management interventions to be aligned with national and local planning initiatives		Synthesis report	
Outcome 4: Healthy lakes: Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis			
Output 4.1: Improved quality of the lakes and their surrounding areas, supported by social marketing			
Activity 4.1.1: Conduct a literature screening review on the healthy lake issues		Working paper	
Activity 4.1.2: Consult stakeholders and resource persons on healthy lake issues		Working paper	
Activity 4.1.3: Consolidate the study result & scenario setting		Concept note(s) (draft and final)	
Output 4.2: Awareness and discussion/training materials are designed and disseminated			

Activities	Task manager	Deliverables	Completion
<p>Activity 4.2.1: Identify the key messages to strengthen the public awareness and integrate into the national policy on healthy lake.</p> <p>Activity 4.2.2: Mainstream the basic knowledge on healthy lake for Tonle Sap Lake into education system of Cambodia.</p> <p>Activity 4.2.3: Conduct pilot training workshop on healthy lake for Tonle Sap Lake.</p> <p>Output 4.3: Awareness monitoring tools & healthy lake indicators tools are designed and implemented.</p> <p>Activity 4.3.1: Develop communities 'awareness on applying monitoring tools and healthy lake indicators tools developed by MRC.</p> <p>Activity 4.3.2: Strengthen the implementation of monitoring tools and healthy lake indicators tools.</p>		Working paper	

Annex 3: Joint Single Project Implementation Plan with budget allocation by Activities, by Outputs and By Outcomes.

OUTCOMES/ OUTPUTS/ ACTIVITIES	Implemented Institutions	Agreed Budget	2013				2014				2015			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
M-IWRMP Overall objective: Good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere		400,000												
Outcome 1 : Programme management		246,000												
Output 1.1: Enhance public communication and involvement of public agencies and other working partners		74,000												
Activity 1.1.1: Enhance public relation activities and involve public agencies and working partners in meetings and workshops	TSA, SLBC, Thai PBS & Other medias, DWR	26,000												

Activity 1.1.2: Improve interaction with national planning and line agencies through direct participation of MRC and NMCs/M-IWRMP staff in relevant fora and working groups	TSA, DWR, SLBC	28,000																												
Activity 1.1.3: Build partnerships with relevant regional actors and the international donor community	TSA, DWR, SLBC	20,000																												
Output 1.2 : TSB & SLB Activities well managed		172,000																												
Activity 1.2.1: Managerial and administrative procedures strengthened	TSA, SLBC	142,000																												
Activity 1.2.2: Conduct the project monitoring and evaluation	TSA,	30,000																												

Outcome 2: IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors		94,200																												
Output 2.1 : Visionary governance		16,500																												
Activity 2.1.1: Conduct a literature study of good practices in Thailand and Cambodia and elsewhere	TSA, SLBC, PSU	6,500																												
Activity 2.1.2: Analyze and synthesize relations, dependencies and synergies, immediate as well as long-term, and including over-all aspects such as public health, environmental quality and investment climate	TSA, SLBC, PSU	5,000																												
Activity 2.1.3: Review and validate findings of activities 2.1.1 & 2.1.2 including recommendations	TSA, SLBC	5,000																												

Activity 2.3.2: Analyze links within the basin-level planning: 'Vertical' (among the planning levels), and 'horizontal' (between sectors)	TSA, SLBC, NESDB, Central & Local Agencies (to be determined)	4,500																																					
Activity 2.3.3: Conduct consultation meetings (within the two basin organizations, with resource persons, and others) about observations regarding needs, barriers and opportunities in both countries.	TSA, SLBC	4,600																																					
Activity 2.3.4: Prepare analysis (of the results from Activities 2.3.2 & 2.3.3) and make recommendations	TSA, SLBC, DWR	2,000																																					
Activity 2.3.5: Conduct training workshop on the Basic Knowledge for Basin Level Planning	TSA,	3,500																																					

<p>Activity 2.3.6 Training for TSA/CNMC/MOWRAM in planning Atlas and 3D digital map development for Tonle Sap Lake (to be provided by ITC).</p>	<p>TSA,</p>	<p>12,000</p>																																						
<p>Output 2.4: Pilot Implementation</p>		<p>28,200</p>																																						
<p>Activity 2.4.1: Prepare a concept note for pilot implementation in SLB (Study to identify suitable issues for pilot implementation ; Roundtable meeting of experts to screen and map the agenda, concerns and preferences, by sectors, in SLB ; Prepare draft concept notes for pilot implementation activities ; Support & facilitate pilot implementation activities)</p>	<p>TSA, SLBC, Local Agencies, Local Communities</p>	<p>1,600</p>																																						

<p>Activity 2.4.2: Identify site for pilot implementation on the 'Fishery' issue (Develop criteria for site selection; Prepare report on state of fishery resource around the implementation site ; Convene workshop to plan activities of the implementation site)</p>	<p>TSA, SLBC, Fishery WG</p>	<p>1,000</p>																																						
<p>Activity 2.4.3: Identify site for pilot implementation on the 'Community empowerment' issue (Develop criteria for site selection; Prepare report on community organizations around the implementation site ; Convene workshop, exchange learning experiences, so as to establish the implementation site)</p>	<p>TSA, SLBC, Community empowerment WG</p>	<p>1,000</p>																																						

<p>Activity 2.4.4: Identify site for pilot implementation on the 'Climate change adaptation' issue, with emphasis on selected issues (Develop criteria for site selection; prepare report on the climate change issue, identify significant impacts; Convene workshop to plan activities of the implementation site)</p>	<p>TSA, SLBC, Climate change WG</p>	<p>1,000</p>																																						
<p>Activity 2.4.5: Implementing pilot activities with communities</p>	<p>TSA, SLBC, Three WGs, Local Agencies, Local communities</p>	<p>16,200</p>																																						
<p>Activity 2.4.6: Conduct assessment of fish stock and natural resources in selected area of Tonle Sap lake by strengthening communities involvement.</p>	<p>TSA,</p>	<p>3,700</p>																																						

<p>Activity 2.4.7: Prepare consolidated report on fishery stock assessment outlining IWRM implication for best practice in fishery, tourism, and water pollution management.</p>	<p>TSA,</p>	<p>3,700</p>																																					
<p>Outcome 3: The future of resource-based livelihoods - Improved understanding of social, economic and environmental cause-effect relationships and policy options in support of sustainable, resource-based livelihoods</p>		<p>42,800</p>																																					
<p>Output 3.1 : Resource-based livelihoods integrated in the development planning</p>		<p>26,000</p>																																					
<p>Activity 3.1.1: Conduct a literature study of resource-based livelihoods in selected lakes basin Southeast Asia and elsewhere (Saroma lake in Japan, Chilika lake-in India), with observations on concerns, threats and opportunities</p>	<p>TSA, SLBC, PSU</p>	<p>4,400</p>																																					

<p>Activity 3.1.2: Conduct an open assessment of the potential in each basin (irrespective of trends, financial constraints, etc.)</p>	<p>TSA, SLBC, PSU</p>	<p>2,000</p>																																			
<p>Activity 3.1.3: Conduct roundtable discussions in each basin about concerns, threats and opportunities</p>	<p>TSA, SLBC, Local Communities, Local Agencies</p>	<p>2,000</p>																																			
<p>Activity 3.1.4: Prepare synthesis and a draft report</p>	<p>TSA, SLBC</p>	<p>2,000</p>																																			
<p>Activity 3.1.5: Conduct a one day national workshop on the project progress.</p>	<p>TSA, SLBC, DWR, Central & Local Agencies, Local Communities</p>	<p>9,000</p>																																			
<p>Activity 3.1.6: Prepare annual report</p>	<p>TSA, SLBC</p>	<p>1,200</p>																																			

<p>Activity 3.1.7: Conduct interview with communities in selected areas on their concerns, threats and opportunities on resources-base livelihoods in Tonle Sap lake future.</p>	<p>TSA,</p>	<p>2,000</p>																												
<p>Activity 3.1.8: Review, Analyse and synthesize trends with key indicators for Tonle Sap Lake focusing on fishery, tourism, water pollution and Hydro-meteorology operation and management in Basin in the context of IWRM.</p>	<p>TSA,</p>	<p>3,400</p>																												
<p>Output 3.2: The values of SLB and TSL demonstrated and appreciated</p>		<p>16,800</p>																												
<p>Activity 3.2.1: Conduct a literature study on cause-effect relationship behind concerns, threats and opportunities</p>	<p>TSA, SLBC, PSU</p>	<p>2,200</p>																												

<p>Activity 3.2.6: Consolidate the outline report in line with political recommendations for lake management interventions to be aligned with national and local planning initiatives.</p>	<p>TSA, SLBC, PSU, DWR</p>	<p>4,500</p>																																									
<p>Outcome 4: Healthy lakes - Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis</p>		<p>17,000</p>																																									
<p>Output 4.1: Improved public awareness on quality of the lakes and their surrounding areas to support the healthy state of the environment and social marketing</p>		<p>14,000</p>																																									
<p>Activity 4.1.1: Conduct a literature review on the healthy lake issues to integrate into the national policy</p>	<p>TSA, SLBC, PSU</p>	<p>4,400</p>																																									

<p>Activity 4.1.2: Consult stakeholders and resource persons on healthy lake issues for Tonle Sap Lake and Songkhla Lake Basin.</p>	<p>TSA, SLBC, Local Agencies, Local Communities, Local Authorities</p>	<p>5,900</p>																																						
<p>Activity 4.1.3: Consolidate the study result & scenario setting</p>	<p>TSA, SLBC, PSU</p>	<p>2,000</p>																																						
<p>Activity 4.1.4: Mainstream the basic knowledge on healthy lake for Tonle Sap Lake into education system of Cambodia.</p>	<p>TSA,</p>	<p>1,700</p>																																						
<p>Output 4.2: Awareness monitoring tools & healthy lake indicators tools are designed and implemented.</p>		<p>3,000</p>																																						
<p>Activity 4.2.1: Develop communities awareness on applying monitoring tools and healthy lake indicators tools developed by MRC.</p>	<p>TSA,</p>	<p>1,000</p>																																						

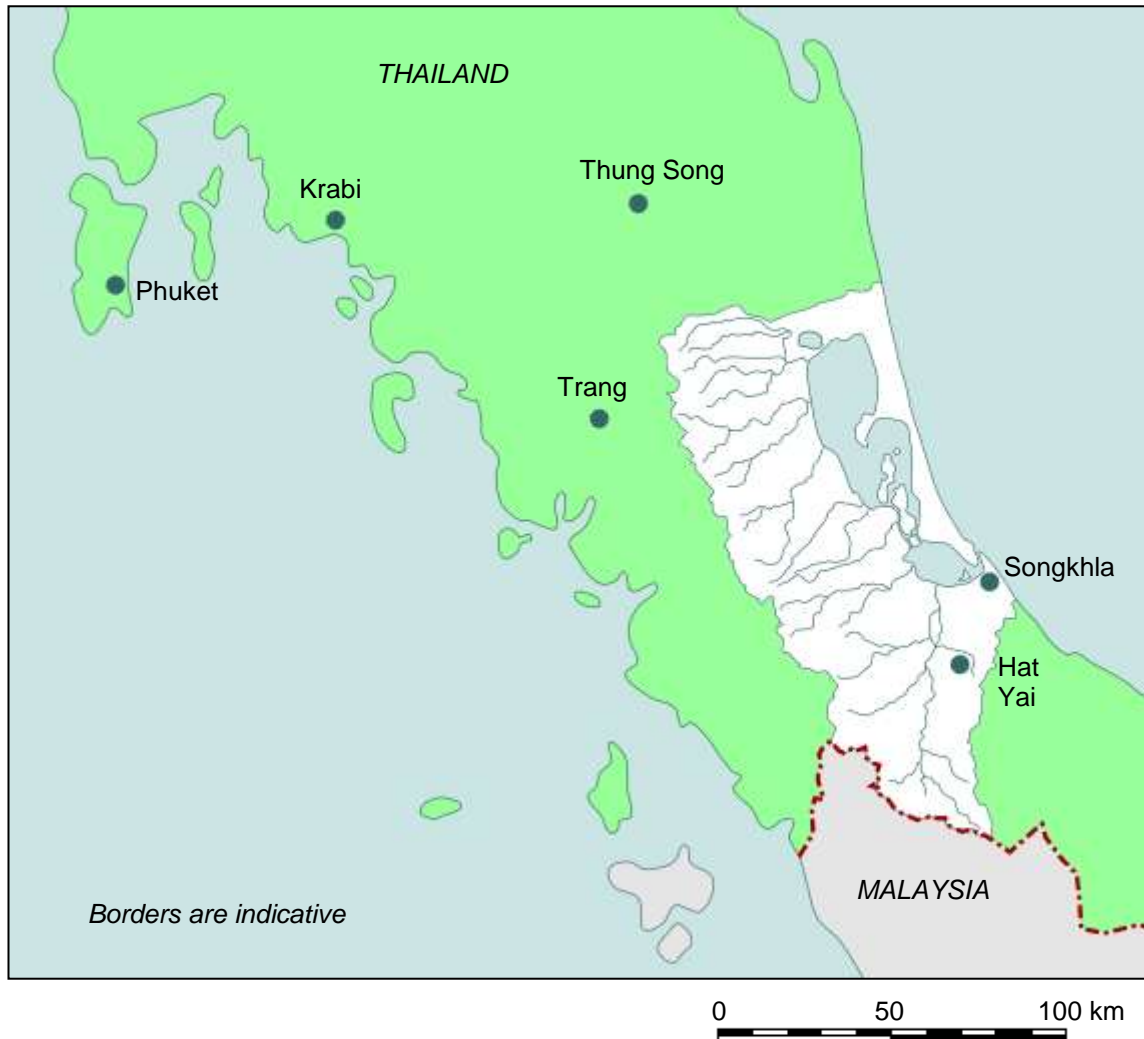
Activity 4.2.2: Strengthen the implementation of monitoring tools and healthy lake indicators tolls.	TSA,	2,000																																						
Contingency		0																																						

Annex 4: Songkhla Basin at a glance

Basin population (2010):	1.6 million
Basin area:	8,495 km ²
Lake area:	1,040 km ²

The basin reaches across Nakhon Si Thammarat, Phattalung and Songkhla provinces.

Figure 3: Songkhla Basin



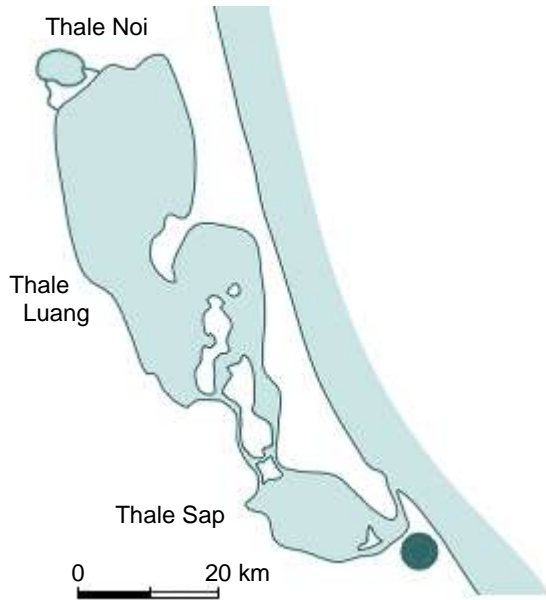
Chronology

- 1975: National Environment Board
- 1985: Songkhla Lake Basin Development Plan (NESDB and NEB)
- 1993: Songkhla Lake Basin Development Committee
- 1996: National Water Resources Committee
- 1999: EmSong (Environmental Management of Songkhla Lake) study (OEPP)
- 2002: Songkhla Lake Basin Development Committee
- 2003: Ministry of Natural Resources and Environment
- 2006: Songkhla Lake Basin master plan (ONEPP)

2011: Revised Songkhla Lake Basin master plan (ONEP)

Features

Figure 4: The 3 lakes of Songkhla

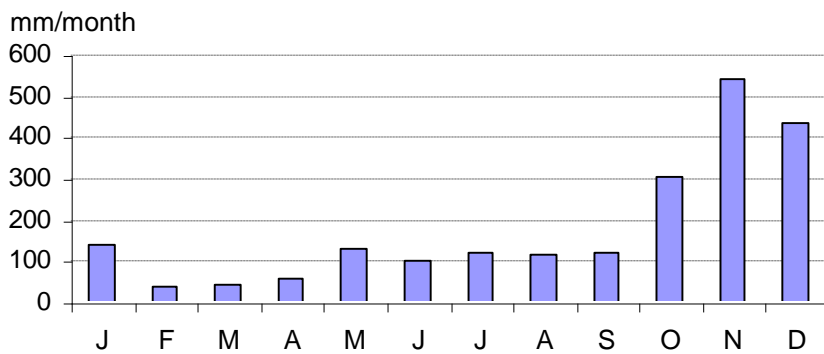


The lake is Thailand's largest natural lake. It has been shaped by natural accretion between a row of islands to form the spit that separates it from the sea.

The lake is indeed a series of three connected lakes. From north to south, these are Thale Noi (28 km²); Thale Luang (783 km²); and Thale Sap (176 km²). The latter is connected to the sea by a narrow inlet. Thale Noi is fresh and Thale Sap is brackish (with salinities about half of ocean level), while the salinity of Thale Luang is seasonal, in the range between 0 and 20 PPT. The average water depth of the system is around 1.4 m, varying between some 1.2 m in the dry season and 2.2 m in the wet season. The inlet channel has depths up to around 6 m.

The rainfall (at Songkhla) is 2,150 mm/year with a pronounced seasonal variation (although less than elsewhere in Thailand, as the area is exposed to both monsoons), as illustrated below. The rainfall is quite unevenly distributed within the basin. It is high (above 2,000 mm/year) along the coast, and even higher (2,000-2,400 mm/year) along the eastern (mountainous) border of the basin, and less (below 2,000) in between.

Figure 5: Monthly rainfall, Songkhla

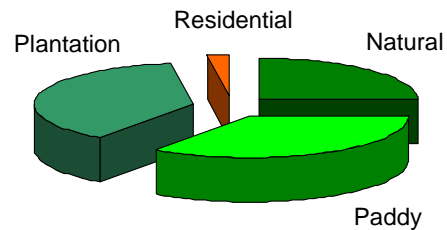


Data: 1951-70

Source: International Lake Environment Committee, www.ilec.or.jp

Table 2: Land use in Songkhla Basin

	Percent
Natural landscape	24.7
Undisturbed	15.5
Disturbed	7
Swamp, mangrove	2.2
Agricultural land	73
Paddy field (rice)	35.3
Rubber plantation	37.7
Residential area	2.3
Total	100



Source: International Lake Environment Committee, www.ilec.or.jp

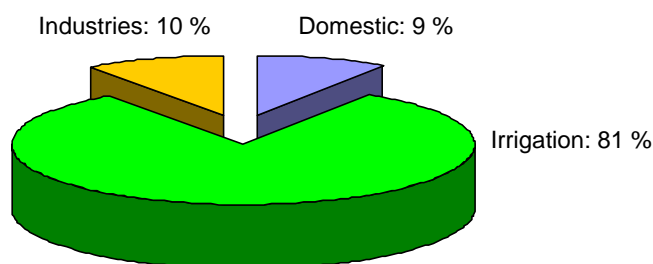
Table 3: Conservation areas and other particular habitats partly or wholly within the basin

National parks	Khao Pu – Khao Ya National Park, 694 km ² , Nakhon Si Thammarat, Trang and Phattalung provinces. Khao Nam Khang National Park, 212 km ² , Songkhla Province
Wildlife sanctuaries	Toan Nga-Chang Wildlife Sanctuary, 182 km ² , Songkhla and Satun provinces Khao Ban Tad Wildlife Sanctuary, 1,270 km ² , Phattalung, Trang, Songkhla and Nakhon Si Thammarat provinces
Non-hunting areas	Thale Noi Non-hunting Area, 457 km ² , Phattalung, Songkhla and Nakhon Si Thammarat provinces Thalesab Songkhla Non-hunting Area, 365 km ² , Songkhla Province
Forest parks	Chai Buri Old Town Forest Park, 3 km ² , Phattalung Province Kuan Khao Wang Forest Park, 3 km ² , Songkhla Province
Wetlands and peat swamp forest	Phru Khuan Khi Sian wetlands, a Ramsar area within the Thale Noi Non-hunting Area Kuan Kee Sian Peat Swamp Forest, 5 km ² Kuan Khreng Peat Swamp Forest, 137 km ² , Phattalung, Songkhla and Nakhon Si Thammarat provinces
Mangrove forest	In Songkhla Province: 47 km ² (2000) (declining) In Phattalung Province: 31 km ² (2000) (declining)
... and the lake itself!	

Water utilization

Off-stream water uses is dominated by irrigation, as well as domestic and industrial uses, see figure below.

Figure 6: Water uses in the basin



Source: International Lake Environment Committee, www.ilec.or.jp

In-stream water uses include a rich fisheries and aquaculture in the lake, as well as preservation of the various unique habitats and the related tourism and recreation.

Thale Luang has a small (and threatened) population of *Irrawaddy (freshwater) dolphins*.

Bird's nest harvesting is a particular resource-based livelihood.

Management framework

Ministry of Natural Resources and Environment (MoNRE) is in charge of water resources and the environment. Ministry of Agriculture and Cooperatives represents the dominant off-stream water demand.

Other ministries with tasks related to water resources in the basin include Ministry of Energy; Ministry of Industry; Ministry of Public Health; Ministry of Social Development and Human Security; and Ministry of Tourism and Sports.

Each ministry has a department in each province.

There are two formal Songkhla basin committees:

- The ***Songkhla Lake Basin Development Committee (SLBDC)*** was formed in 1993 as an inter-agency coordination body. It is appointed by the government and re-appointed by any new government (causing occasional interruptions in its work). By March 2009, it was chaired by the Minister of Natural Resources and Environment, with members representing 4 other ministries; NESDB and the Budget Bureau; 3 provincial governors; 10 experts and local academics; 6 community representatives; Office of Natural Resources and Environmental Policy and Planning (ONEP) (as secretary); and 2 representatives from de-central agencies (as deputy secretaries); totalling 28 members.⁶

The SLBDC has responsibilities as follows:

- 1) Policy formulation for conservation and restoration of natural resource and environment in the basin.
 - 2) Proposing annual budgets for implementing the SLB master plan, and submit to the Cabinet for consideration.
 - 3) Overseeing, investigating and monitoring activities relating to conservation and restoration of natural resource and environment in the basin; including related activities conducted by other local government agencies.
 - 4) Appointing sub-committees as appropriate.
 - 5) Other activities related to conservation and restoration of natural resource and environment in the basin, as assigned by the Cabinet.
- The ***Songkhla Lake Basin Committee (SLBC)*** was formed in 2007 as a coordinating body for water resources management. Like other basin committees in Thailand, it refers to the National Water Resources Committee and has secretariat support from Department of Water Resources. By August 2008, its membership included 2 provincial governors (Phattalung and Songkhla) (rotating chairmen); 16 representatives from de-central government bodies; 9 water user representatives from agriculture, industry and tourism; and 7 experts; totalling 34 members.

The two committees work well together, sharing knowledge and information, and sorting out between them any potential overlaps.

Their work is affected by infrequent meetings; imperfect inter-agency dialogue; and limited abilities to promote and implement their various recommendations.

⁶ By August 2011, the SLBDC is awaiting re-appointment by the new national government

There is also

- A **Songkhla Basin Council**, a non-statutory board providing informal guidance and coordination. It operates as a semi-formalised network, assembling (more or less) the members of the two formal bodies, including NGOs and some (but not all) government representatives. It is headed by an elected chairperson. Secretariat services are provided by Prince of Songkla University. This board has no legal basis (and no budget) and meets infrequently. Still, it is recognized by the people and the government.

Prince of Songkla University, founded in 1968, is an important knowledge partner, not only conducting research and thematic studies of the lake and its basin, but also playing an active role in its environmental management and resource-based development planning.

Concerns

Due to its extraordinary environment and its broad range of traditional resource-based livelihoods, the basin has for some time been in the crossroads between development and conservation.

Concerns include

- Water pollution and water quality;
- Habitat degradation (of forests, of the lake itself, its wetlands, and the mangroves) (related to intensified land use); and
- Coastal erosion (affected by structural development).

Siltation in the lake is a long-term concern, given that it is a natural trap for sediments from inland as well as from the sea.

General challenges to IWRM implementation in Thailand include (apart from budgeting and legal framework):⁷

- Sector fragmentation;
- Lack of proper management modalities;
- Inadequate knowledge base; and
- Inadequate stakeholder participation.

Opportunities

In a not too distant future, some pressure may be taken off the resource-based livelihoods and income generation, with the growth of light industries and, particularly, the service sector, including tourism and education.

Opportunities include

- Activation of inter-sector synergies in an IWRM perspective;
- Consolidated community involvement;
- Sustainability and improved revenues from resource-based livelihoods in general (continued consolidation and diversification, micro-credit, and support to marketing);
- Fisheries management; monitoring/surveillance; resource conservation; fishing gear and technology; fishing unloading services; and support to marketing; including good practices and education;
- Efficiency improvements in water utilization, supported by awareness, good practices, suitable technology and gentle regulation; and
- Continued sustainable tourism development, supported by diversification and quality development.

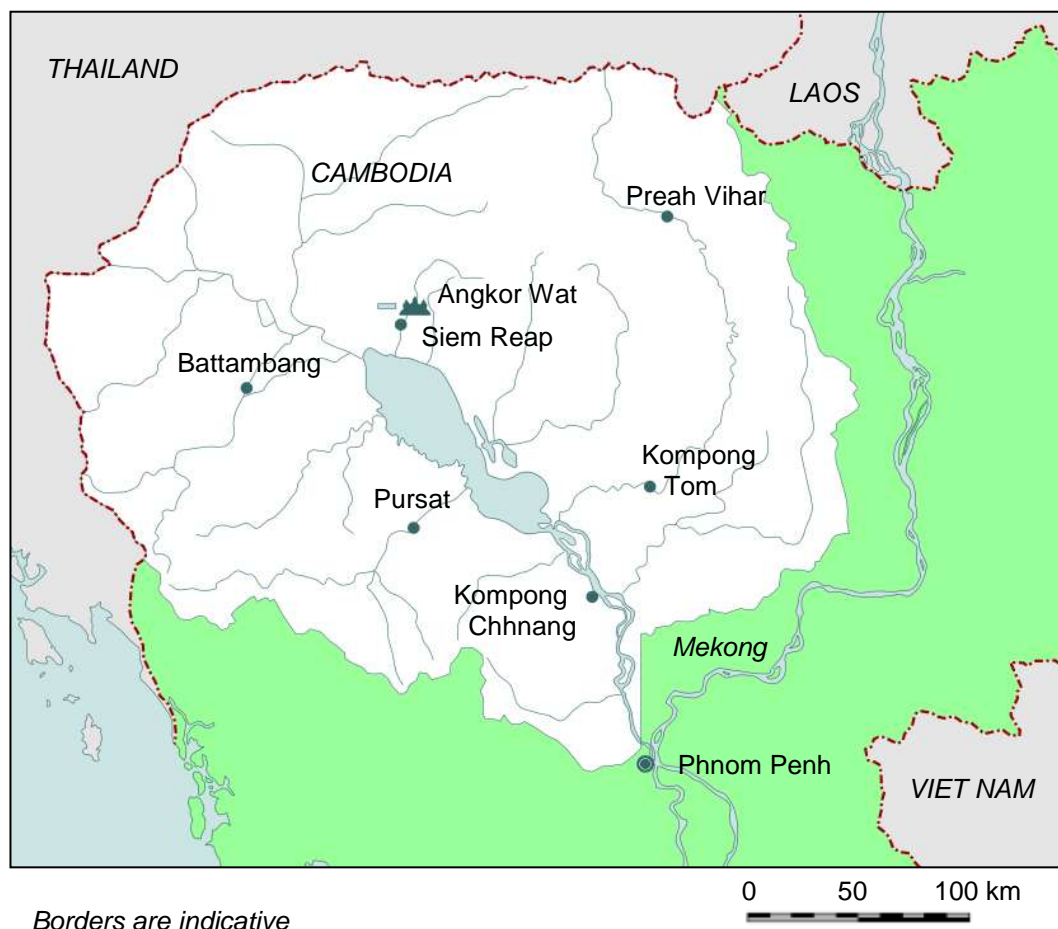
⁷ Surapol Pattanee (March 2008)

Annex 5: Tonle Sap Basin at a glance

Basin population (2008):	4.9 million
Basin area, total:	86,000 km ²
in Cambodia	81,800 km ² (95 percent)
...in Thailand	4,200 km ² (5 percent)
Lake area:	2,700 km ² (dry season)
	14,900 km ² (recorded maximum, 2000)

The basin reaches across several provinces, clockwise from north: Oddar Meanchey, Siem Reap, Kampong Thom, Preah Vihar, Phnom Penh, Kampong Chhnang, Pursat, Battambang, Pailin, and Banteay Meanchey; and parts of Chanthaburi and Sa Kaeo Provinces in Thailand.

Figure 7: Tonle Sap Basin (Cambodian part only)



Chronology

- 1997: Tonle Sap Lake designated as a UNESCO biosphere
- Jun 06: IWRM strategy and roadmap in Cambodia (MOWRAM)
- Feb 07: Joint Strategy for Agriculture and Water 2006-2010 (MAFF and MOWRAM)
- May 07: Law on Water Resources Management
- Oct 07: Tonle Sap Basin Authority (replaced in 2009 by today's Tonle Sap Authority)
- Apr 10: Strategy for agriculture and water 2010-13 (MAFF and MOWRAM)

Social features

Social features are summarized in the table below.

Table 4: Social indicators in the Tonle Sap Basin

People below the consumption poverty line	2009	31 percent of population
School/education attendance	2008	67 percent of people aged 6-24
Illiteracy	2008	19 percent of people aged 15-60
Access to safe water	2008	42 percent of households
Households using toilets	2008	24 percent of households
Access to electricity	2008	17 percent of households
Farming households		72 percent of households
... farmers with land holdings below 1 ha	2008	32 percent of farming households
... landless farmers	2008	10 percent of farming households
Total production revenue	2008	1,800 million USD
Revenue from agriculture	2008	1,260 million USD
... including revenue from agriculture	2008	1,260 million USD
... of which, revenue from rice cultivation	2008	695 million USD
Revenue from fisheries	2008	175 million USD

Source: CNMC (July 2011)

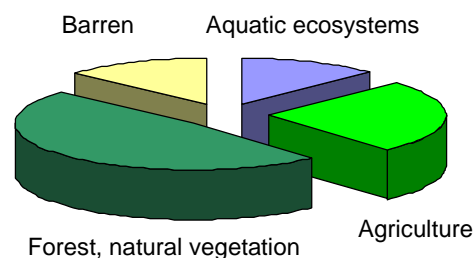
Land use

The land use is summarized in the table below.

Table 5: Land use in Tonle Sap Basin

	percent
Aquatic ecosystems	12.7
Agricultural land	25.6
... including land concessions	11.0
Forest, natural vegetation	48.5
... including seasonally flooded areas	14.9
Barren land	13.3
... including mining concessions	5.9
Urban area	0.1
Total	100

Source: CNMC (July 2011)



In 1997, a part of the Tonle Sap Basin was designated as a UNESCO Biosphere Reserve. Its status was confirmed by royal decree in 2001. The reserve has its own secretariat⁸, which is involved in

- Conservation of landscapes, ecosystems and biodiversity;
- Economic, social, environmental and cultural development; and
- Support to demonstration projects, environmental education and training, research and monitoring.

The reserve covers the lake itself and its surrounding flooded forests. It has a core zone (708 km²), a buffer zone (5,108 km²) and a transition zone (8,997 km²). The boundary is largely delineated by National Roads 5 and 6 (see figure below). Built over the last two decades, these elevated, all-year

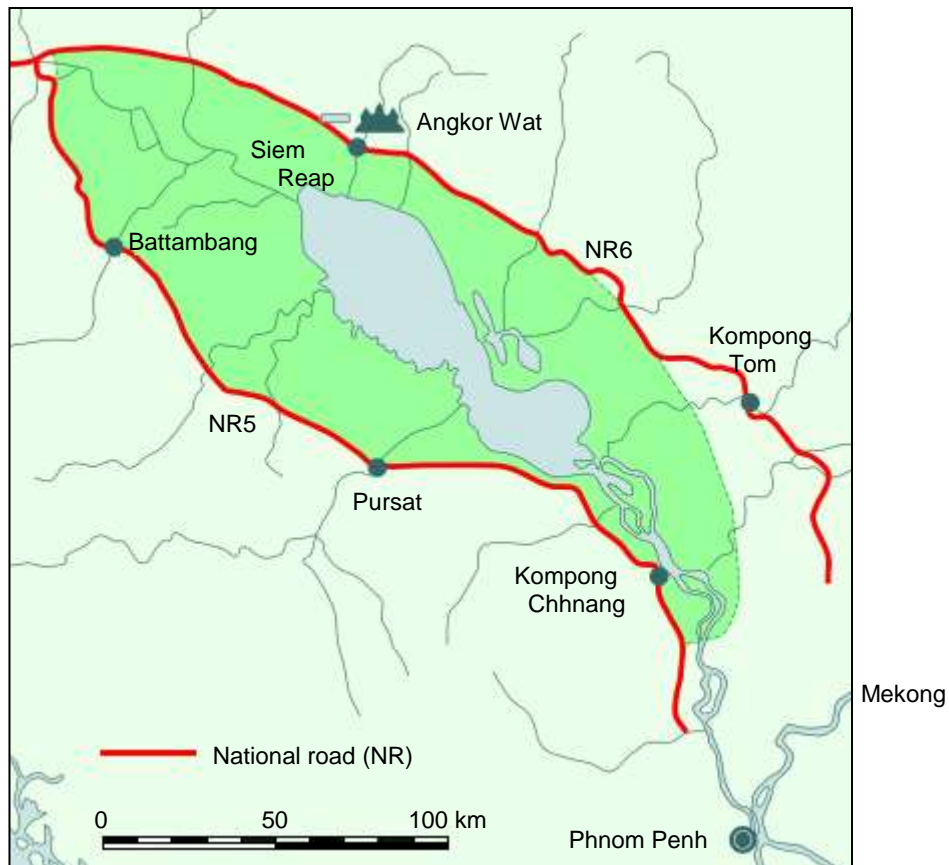
⁸ Please refer to the Tonle Sap Biosphere Reserve website: <http://www.tsbr-ed.org/>

roads connect the provincial towns around the lake, while at the same time, inevitably, intercepting parts of the active flood plain.

Figure 8: National Road 5 under construction (March 2003)



Figure 9: The Tonle Sap Biosphere Reserve



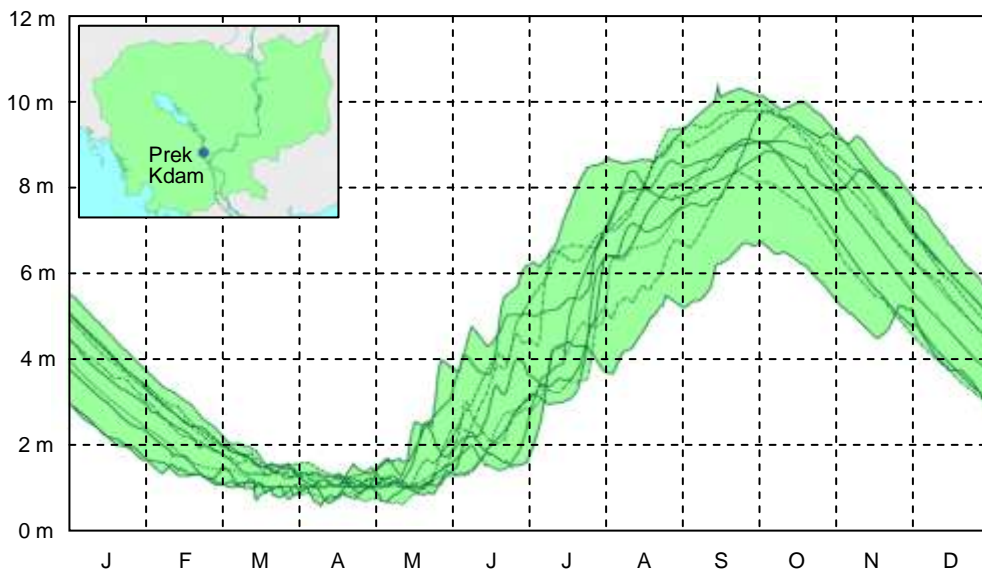
Hydrological regime

The lake is connected to the Mekong by the Tonle Sap River, which reverses its flow seasonally, reflecting the water level variation. In the process, the Tonle Sap basin stores some 20% of the Mekong floodwaters. 62% of the inflows to the Tonle Sap basin come from the Mekong, and some 38% of the inflow from its own drainage basin.

This is illustrated in the following figures.

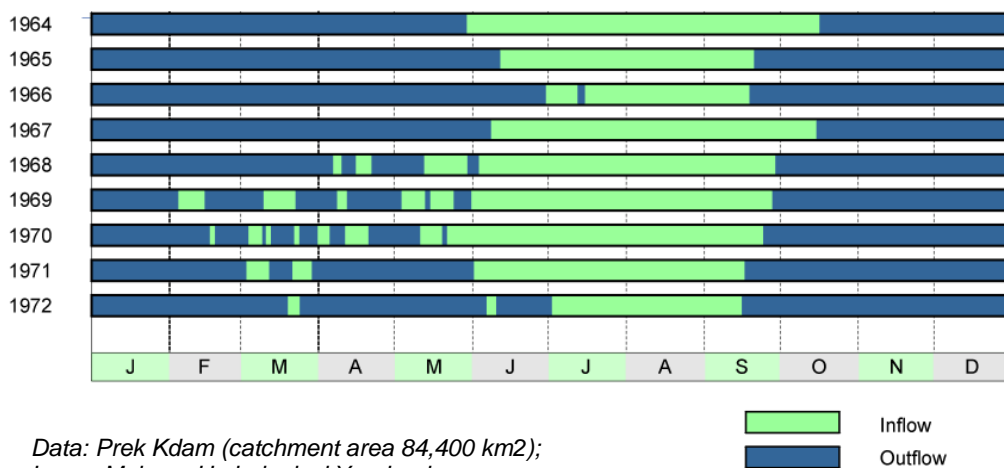
The flow pattern is of regional significance. It moderates the peak flow (and flooding) and augments the dry season flow in the downstream parts of the Mekong, hereby moderating the intrusion of saline seawater into the Mekong Delta, with its intensive cultivation.

Figure 10: Seasonal water level variation in Tonle Sap⁹



Data: Prek Kdam 1995-2004 (10 years), MOWRAM and MRC.
Zero level = 0.08 m above mean sea level

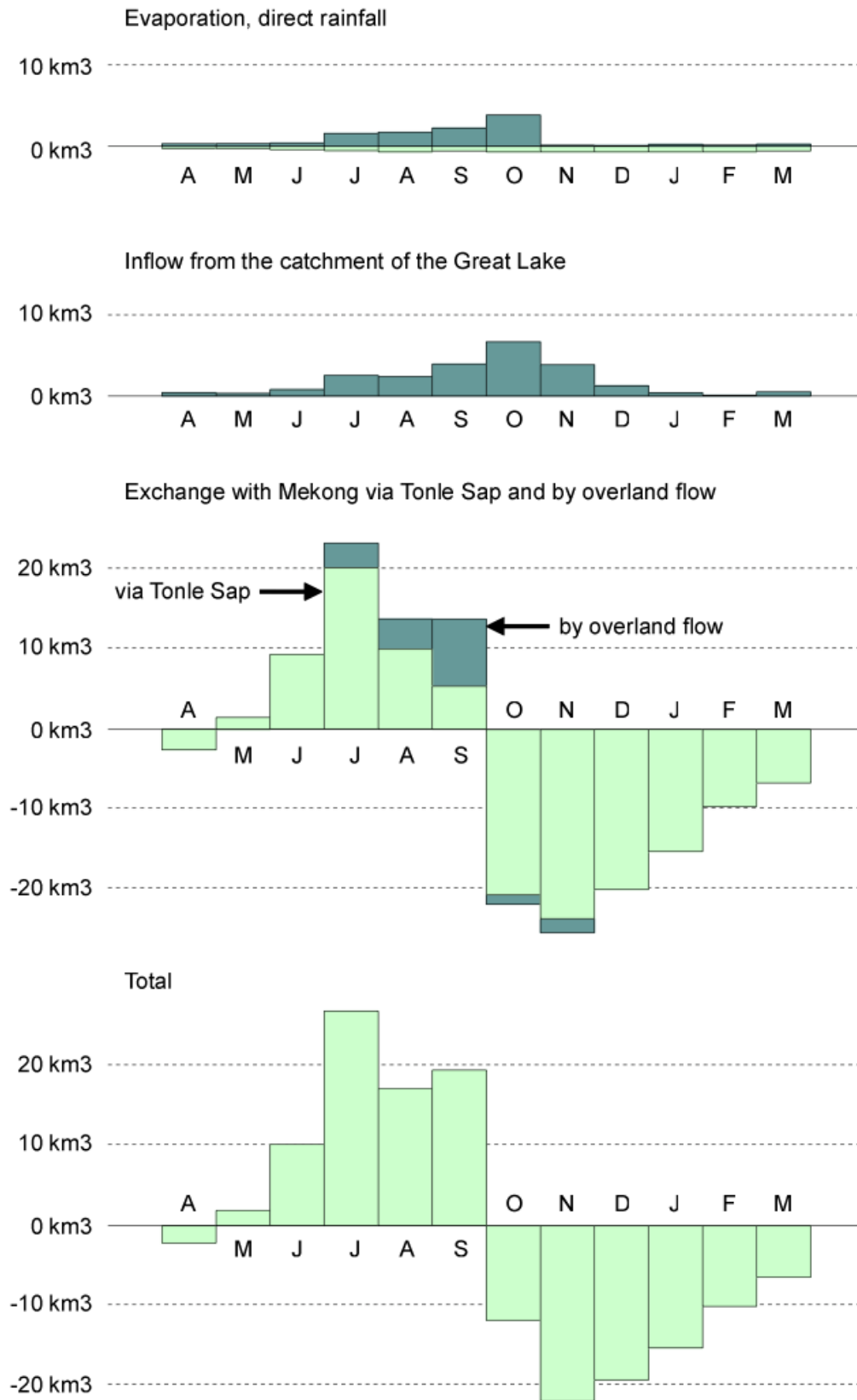
Figure 11: Tonle Sap inflow and outflow



Data: Prek Kdam (catchment area 84,400 km²);
Lower Mekong Hydrological Yearbooks

⁹ Figure from MOWRAM (December 2006): North West Irrigation Sector Project: River basin and water use studies, Package 2, Boribo and Dauntri Sub-basins. Final report, Volume 1: Methodology and general findings, prepared for Ministry of Water Resources and Meteorology by PRD Water & Environment in association with DHI Water & Environment

Figure 12: Water balance for Tonle Sap Lake



Data: MOWRAM, for the year 2000 (which had the highest inundation on record)

Other features

Visitors to the Angkor area can (apart from the unique temples) admire the impressive ancient hydraulic structures.

Boeng Barai (the Western Barai reservoir) is one example. Built in the Angkor era, this reservoir is still in use. It is located 2 km west of Angkor Wat. It is rectangular, and like many of the contemporary Khmer monuments and structures, it is oriented strictly north-south and east-west. It measures 8 km from east to west, and 2 km from north to south. The source of water in ancient times is unknown (possibly it was largely rainfed). Today, it is fed by a diversion from Stueng Siem Reap and irrigates an area of some 13,000 ha.

The Chinese envoy Zhou Daguan visited Angkor in 1296-97. He authored *'The customs of Cambodia'*, which is the only first-hand account of the Khmer empire at its height of power. Among many other observations, he noted that *'... in this country, it rains half the year; the other half has no rain at all. From the fourth to the ninth moon there is rain every afternoon, and the level of the Great Lake may rise seven to eight fathoms. Large trees go under the water, with only the tops showing. People living at the water-side leave for the hills. However, from the tenth moon to the third moon of the following year, not a drop of rain falls; the Great Lake is navigable only for the smallest craft, and the depth of the water is only three to five feet. The hills are then forsaken'. ... 'Crocodiles there are, large as boats, which have four feet and are exactly like dragons, with no horns however'.*

Figure 13: Stone carving from Bayon, around year 1200



Water utilization

Cultivation is mainly rainfed, with 6% of the cultivated area under full irrigation. The current rice production is around 3 million t/year (or some 1.9 t/ha/year), 91% of which is produced in the wet season. There are 647 irrigation schemes. The status of 52% is unknown, a few are fully functional, some are partly operational and some are completely out of order.¹⁰

The estimated fish yield of the Tonle Sap Lake and river is estimated as high as 139-190 kg/ha/year.¹¹ Different, but consistently very high estimates have been reported of the proportion of the population that depends wholly or partly on fisheries for their livelihoods, not to speak of their protein intake.

¹⁰ CNMC (July 2011), quoting MAFF and MOWRAM statistics from 2009

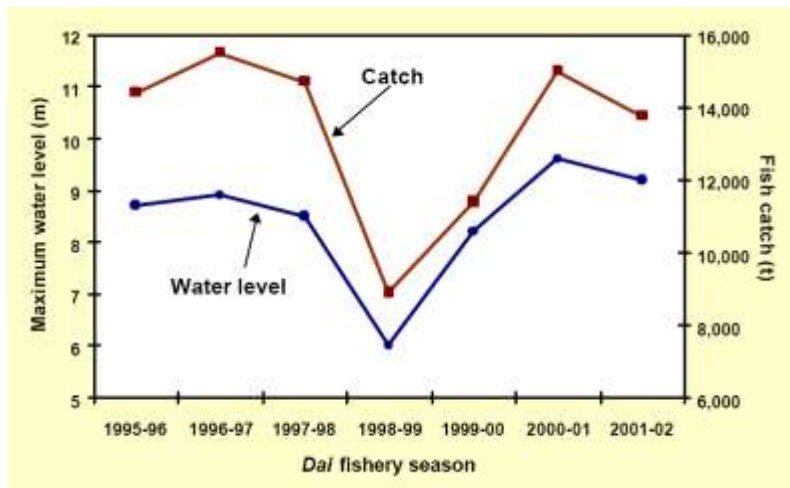
¹¹ van Zalinge and others (2001)

Figure 14: Dai fisheries in Tonle Sap¹²



The fish yield depends on the floodplain area that is inundated in the wet season, which in turn depends on the annual maximum flood height (see figure below). The recorded catch varies between around 12,000 and around 79,000 t/year with an average of around 44,000 t/year (1980-2009)¹³. This accounts for 40-70% of the protein intake of Cambodia's population.

Figure 15: Flood height and fish yield in Tonle Sap



The figure shows the relationship between maximum flood level of the season and catch of the dai (bag-net) fishery in Tonle Sap River. It originates from van Zalinge and others (February 2003)

Livestock must not be overlooked in the water balance. In parts of the Tonle Sap Basin, livestock can consume about as much water as domestic uses and can contribute significantly to the household income.

Management framework

Tonle Sap Authority (TSA) was formed in June 2009¹⁴, replacing the Tonle Sap Basin Authority that was formed in 2007. It is placed under the government and is chaired by the Minister of Water Resources, a vice-chairperson, a permanent vice-chairperson and a secretary general. Its board has 31 members, representing various ministries and government institutions.

¹² A dai is a fish trap built on the river during low stage

¹³ CNMC (July 2011)

¹⁴ Royal Decree NS/RKT/0609/705 on Establishment of Tonle Sap Authority (June 29, 2009)

The TSA operates in the area delineated by National Roads 5 and 6 (see Figure 9). This area is 17 percent of the drainage basin area, and 18 percent of the Cambodian part of the drainage basin area. TSA has four departments, covering

- Natural resources;
- Exploitation control and conservation;
- Legislation and extension; and
- Administration, planning and cooperation.

It also has a library and a laboratory.

The authority is involved in

- Water resources development, including policy formulation, planning, inter-agency coordination, monitoring and data management;
- Environmental conservation;
- Liaison with NGOs and civil society;
- Facilitation or implementation of specific development initiatives in the basin; and
- Related dispute resolution.

The Tonle Sap Biosphere Reserve Secretariat (TSBRS) was established along with the reserve itself, by royal decree in 2001. Today, it is placed under CNMC. The secretariat is involved in conservation, development and logistics related to natural resources and livelihoods within the reserve.

There are close interfaces between the tasks of TSA and TSBRS, but coordination is smooth, because they share the same chairperson (the Minister of Water Resources and Meteorology).

Being a part of the Lower Mekong Basin, the area is included in MRC's operation, covering for examples fisheries, flood management and basin development planning¹⁵. Over the years, MRC has produced a comprehensive knowledge base, covering socio-economics, geography, hydrology, and development needs and opportunities.

Concerns

There are two over-ruling water-related challenges in the national perspective¹⁶:

- Better access to safe water, sanitation and electricity, including rural areas; and
- Better revenue generation in agricultural production systems and related value chains.

While a governance framework is pretty much in place in support of these challenges, there are some visible constraints to '*development and management of water, land and related resources*':¹⁷

- Inter-sector streamlining and inter-agency dialogue take place at the bottom (commune) level and the top (national planning) level of public administration, but to a less extent in between.
- There is an open-ended need of human resources development (including, but not limited to the '*end users*' in the farmers water user committees (FWUCs)).
- The knowledge base for decision-making (about states, causes, effects, and management options) is less than ideal in many ways.
- There is a clear scope for strengthened land management of agricultural lands, headwater areas, and aquatic habitats.

¹⁵ The area is named Sub-area 9C in MRC's basin development planning

¹⁶ Entire section quoted from CNMC (April 11)

¹⁷ Wording from GWP's definition of IWRM

Figure 16: Rural water supply, Battambang Province



In the best of all worlds, segregated sector-based developments will eventually converge; but this will take time, if left to itself, and the opportunity costs will be substantial - whereas the added costs of an integrated approach can be negligible.

Opportunities

Examples of water-related opportunities are listed below ¹⁸:

- Support to increased income for traditional small-scale farmers (which will form a large part of the population for years to come), including cultivation technology, crop diversification, access to markets, and development of markets;
- Support to sustainable livelihood development in general and rural livelihoods in particular, applying a value chain perspective, for example by development of agricultural extension services and agro-industry processing (possibly export-oriented);
- Continued irrigation system rehabilitation and development, and expansion of small-scale and medium-scale water storage capacity;
- Improved land use and land management;
- Support to water user associations;
- Continued hydropower and micro-hydropower development;
- Continued tourism development (in support of rural livelihoods outside the agricultural sector);
- Coordinated groundwater management, covering quantity and quality;
- Monitoring and licensing of surface water withdrawals, groundwater withdrawals, sewage discharges and sand extraction;
- Flood, drought and pest preparedness, warning systems and disaster relief;
- Poor soils improvement/management (often a precondition for crop diversification);
- Management of protected areas, national parks and critical upper watersheds; and
- Broad human resources development.

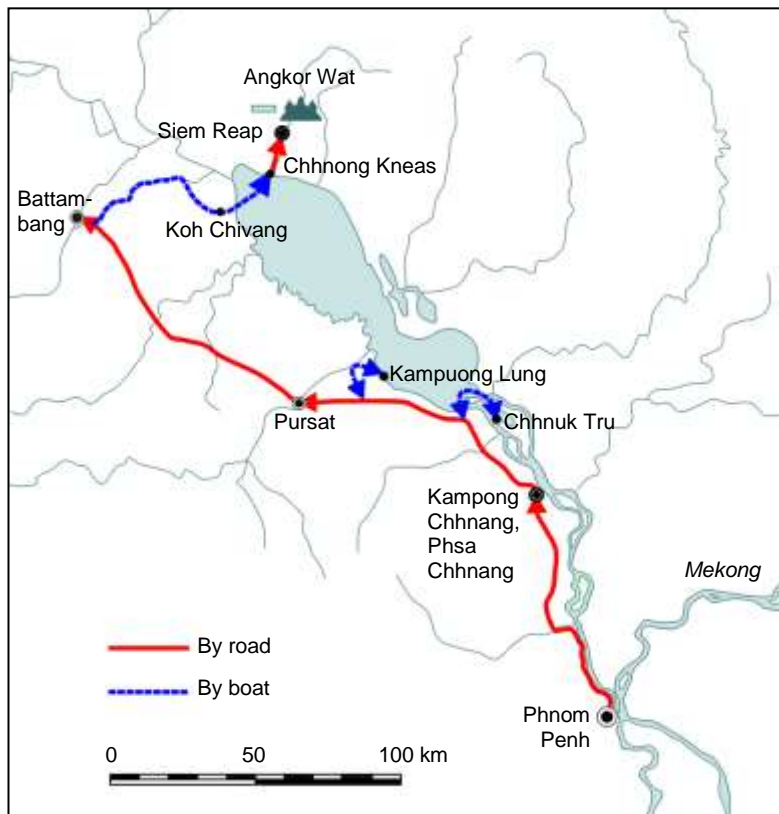
¹⁸ Watt Botkosal (June 2011)

Annex 6: Study visit to Tonle Sap

1-4 November 2011

Participation

The study visit had participation by MRCS (MIWRMP), CNMC and TNMC. The Cambodian delegation included representatives from MAFF, MOE and TSA. The Thai delegation included representatives from Department of Water Resources; Provincial Department of Water Resources (Songkhla); Songkhla Lake Basin Committee; and Songkhla Lake Development Committee.



Programme

After an introductory meeting at CNMC, the participants went by car, boats and tuk-tuks to visit 4 provinces and 5 communes around the lake (3 of which in seasonally flooded areas). Discussions were held with more than 50 commune and village representatives. The scope and framework for the proposed collaboration between the NMCs were discussed at a concluding seminar in Siem Reap.



Observations

At the time of the visit, the water level was higher than usual for the time of the year. The higher the annual flood, the better for fisheries, but floods above a certain level affect cultivation negatively. The seasonal flood in 2011 was 2 m above normal and had affected areas that are not flooded in average years. Other parts are flooded in average years and are more resilient, including the characteristic floating villages.



The participants learned about aspects such as

- Governance modalities are quite different in Tonle Sap and Songkhla - including planning, implementation and public participation. The Tonle Sap area has several water user communities, farmers communities, and fisheries communities. Many of these are in need of strengthening. Chhnong Kneas has a tourism association. In Cambodia, the communes conduct their own development planning; but most communes have sparse human and financial resources for this task, not to speak of implementation.
- Access to secondary and tertiary education is difficult, for logistical and cultural reasons.
- Fisheries regulation (by fishing lots allocated by the government to major operators and local communities). Since 2000, Koh Chivang commune has had its own fishing lot, 'No. 3', (90,000 ha), which has significantly improved its income.
- Mass tourism and ecotourism, and bird sanctuaries: Chhnong Kneas commune (near Siem Reap and Angkor Wat) receives up to 1,000-1,500 tourists per day. There is a scope for even more (and better organized) tourism, but there are concerns about related environmental degradation.
- The unique inundated forests, which are threatened by cultivation in certain areas.
- Disasters, disaster management and disaster resilience. The floating villages are well adapted, but this year's flood had been unusually widespread and destructive – affecting paddy lands and infrastructure, including rice mills.
- The operation of NGOs was quite visible. They seemed to work well with government agencies and local communities.
- Quality of life; safe water; sanitation & hygiene; environmental management: There were serious problems in some of the communes visited, especially solid waste wastewater disposal, and drinking water. Waterborne diseases are common. Some '*water purification stations*' (for supply of drinking water) have been implemented on a pilot scale, the early experience is inconclusive. The problems appeared less (and the water quality better) in the parts near the open parts of the lake (and away from the river mouths). Water hyacinths were widespread.
- Many floating houses seemed to be short-lived.

Matters for further joint consideration

The Tonle Sap and Songkhla lakes share important aims and concerns, such as restoration and conservation of natural resources, in support of adequate and sustainable livelihoods. Specific joint interests include for example:

- Basin-level and lake governance modalities, and the roles of various organizations.
- Fisheries management: Conservation zoning, communities' fishing ports, mesh sizes of fishing nets, communities' rules & regulation, and enforcement of regulation.
- Other resource-based livelihoods, including forestry, cultivation, fish (and crocodile) breeding, and livestock.
- Tourism: There are many lessons and good experience to be learned from both sides.
- Sanitation and solid waste management: Given the increasing population, problems tend to get worse. Communities must be more alert to help themselves, and not just only wait for the government's help.
- Disaster management: Both lakes suffer from severe floods. Climate change implications must be better understood.
- Alternative energy (biogas, etc). (Solar cells were used in many places).
- Public awareness can be supported in various ways that can involve collaboration between the two lakes.



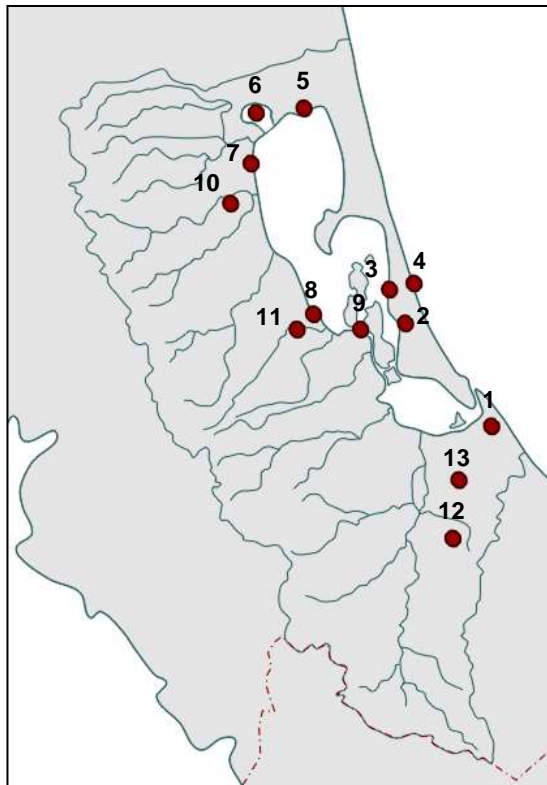
Annex 7: Study visit to Songkhla Lake

23-27 January 2011

Participation

The study visit was organized by TNMC with participation by MRCS (MIWRMP), CNMC and TNMC. The Cambodian delegation, headed by HE Watt Botkosol, included representatives from MAFF, MOE, MOP, MOT, MOWRAM and TSA. The Thai delegation, headed by Khun Pakawan Chufamane, included representatives from Department of Water Resources (national and regional) (MONRE); Songkhla Lake Basin Committee; Songkhla Lake Development Committee; and Prince of Songkla University.

Programme



- 1: Songkhla: Welcome and introduction; Tang Kuan Hill and Phra Chedi Pagoda
- 2: Tambon Ta-Hin; meeting with community council; the One Tambon One Product scheme
- 3: Ku Kut non-hunting area and waterfowl sanctuary
- 4: West coast; shore erosion
- 5: RID pumping station
- 6: Thale Noi elevated causeway; boat trip
- 7: Thung Ta-Sapao Wetlands Management Project
- 8: Turtle Sanctuary at Haad Kai-Tao Beach
- 9: Tambon Koh Mak: Fishery community and SLB Women's Network
- 10: Phattalung
- 11: HM The Queen's Project, Bang Kaew
- 12: Hat Yai: Concluding seminar at Prince of Songkla University and dialogue meeting at Regional Water Resources Office
- 13: Hat Yai Water Reclamation Plant

0 50 100 km

Proceedings

23 January 2012

Songkhla: Introductory meeting. Welcome address by Khun Surachai Chawalarat, Dty. Governor of Songkhla Province. Briefing by dr. Chatchai about the geography, socio-economics and management framework of Songkhla Lake Basin.

24 January 2012:

Songkhla: Visit to Tang Kuan Hill and Phra Chedi Pagoda, with a view of the mouth area of the lake, Songkhla deep-sea port, and intense cage fisheries.

Tambon Ta-Hin: This tambon has 1,100 households, 4,000 people, and 235 registered fishing boats. The community council is an autonomous body established by the people and endorsed by Ministry of Labour and Social Welfare. The council is active in livelihoods development, including the One-Tambon-One-Product scheme (with sugar palm products), ecotourism (with

home stays), and fisheries, and operates a community fund. The area is flood-prone, with 720 houses destroyed during a heavy storm in 2010. The council undertakes disaster vulnerability mapping and preparedness, with an inventory of people and cars, radio links to each village, and a 10-days stock of emergency supplies. On 1 January 2012 it was able to cancel a false tsunami alarm. Together with two adjacent tambons, the council advocates successfully against illegal fisheries. Fish stocks are replenished once in a while from government hatcheries. Discussion about fishery technology and divergences of interests between farmers and fishers, for example within salinity control and other regulation.

Figure 17: Tambon Ta-Hin



Visit to Ku Kut non-hunting area and waterfowl sanctuary. The lake system receives treated sewage from Hat Yai, and from various sources in the drainage basin, including agricultural run-off, fish farms, and some pig farms (Songkhla Town disposes its treated sewage to the sea). The over-all water quality is fair and improving.

Visit to the west coast; shore erosion has occurred in recent years, presumably related to expansion of port facilities at Songkhla.

Visit to the RID pumping station, which supplies water from the lake for irrigation, allowing for 3 crops per year in the command area. The system was developed in 1967-79. The salinity in the lake system is monitored at a network of stations, and the pumping (and the related inflow of saline water from the sea to the lake system) is adjusted to preserve a salinity below 1.5 PPT in the upper parts of the lake area.

Drive along the 14.5 km Thale Noi elevated causeway, built around year 2000 after a lengthy public debate (since around 1978). The link has clear socio-economic benefits but potential environmental implications, if intersecting the wetlands area between Thale Noi and Thale Luang. In consequence, it was decided to choose an elevated causeway instead of a road embankment - increasing the costs from 20 to 700 million baht, and requiring the project to be shifted from the Accelerated Rural Development Department to the Highways Department.

Ban Thale Noi: There are around 200 fishing boats, landing around 200 baht per boat per day (fish catch is counted in baht, not in kg). A community-based fish conservation zone (of 100 ha) in the lake was attempted in 2005-07, but was abandoned due to conflicting interests. Tourism lags behind in this area, with a scope for strengthening.

25 January 2012: Boat trip to Thale Noi and the northernmost part of Thale Luang. The seasonal water level variation is around one m.

Figure 18: Thale Noi and the elevated causeway



Figure 19: View from Thale Noi



Visit to the 7 km² Thung Ta-Sapao Wetlands Management Project, launched in 1995 by Dept. of Accelerated Rural Development and Dept. of Marine and Coastal Resources. Livelihoods development is a major objective, aiming to retain people in the area. Organic farming is promoted, based on local wisdom, with biomass replacing inorganic fertilizers, and the use of pesticides minimalized. Today, 600 households earn around 30 million baht per year cultivating high-quality chilli for export to Malaysia and Singapore. (The variety is called 'super-hot' - it is in fact not extremely hot, but highly appreciated by the market). A water user group has been formed, headed by a chairperson and with two members from each of the 6 villages. It operates with support from Dept. of Water Resources. A water service fee (covering treatment and distribution costs) can be charged if so agreed.

Visit to the Turtle Sanctuary at Haad Kai-Tao Beach, nursing mangrove terrapins (Tao Kra-Aan) for subsequent release. A tree planting ceremony was held.

Visit to Tambon Koh Mak: Fishery community and SLB Women's Network. The network covers different groups with a variety of activities: Self-sustaining saving and microcredit (without government contributions, but with an interest-free loan from Siam Cement), latex trading, disaster preparedness, fisheries (including stock replenishment, fish drying and marketing support), and environmental restoration. Fish conservation zones have been successfully introduced on a voluntary basis. The good practices are now emulated elsewhere and by the authorities. Discussion about the roles and collaboration between the government and civil society.

26 January 2012: Visit to HM The Queen's Project, Bang Kaew District, Pattalung Province. The project was initiated in 2000 during a visit by HM The Queen as one among several similar projects elsewhere, established in support of sustainable livelihoods in highlands, lowlands and forests, respectively. With 62 employees, the project covers an area of 40 ha and operates in a collaboration with the Provincial Rice Research Centre. Development and demonstration activities, and related training, are conducted for a wide range of livelihoods, including traditional red rice (Khao Sang-Yod) from Pattalung, organic farming, fruits and vegetables from elsewhere, chicken ducks, milking goats, frogs, turtles, mushrooms. Pesticides and inorganic fertilizers are not used. Surplus products are sold to hospitals, government offices and wholesalers, generating a modest income (of 45,000 baht per month, as compared with operating expenses of around 800,000-1,000,000 baht per month). Ecotourism and agricultural tourism are promoted, with around 4 groups of visitors per day on the average.

Figure 20: Mushroom 'do-it-yourself' cultivation kits



Hat Yai: Concluding seminar at Faculty of Environmental Management, Prince of Songkla University. Discussion about the scope and approach of the planned transboundary project (see Chapter 9 'Next steps').

27 January 2012: Dialogue meeting at the Regional Water Resources Office (under MONRE, covering the southernmost provinces in Thailand). Presentation by HE Watt Botkosal about '*The Mekong and the Tonle Sap; water-related issues and challenges*'. Discussion about fisheries regulation in the two countries, and the scope for tourism development.

Visit to Hat Yai Water Reclamation Plant. The plant covers an area of 2,040 rai (324 ha) of constructed wetlands. It serves the town of Hat Yai. The capacity is 138,000 m³/day, of which 69,000 m³/day is actually used. Sewage is pre-treated in septic tanks at households, clinics, factories, etc., and is then pumped (around 13 km) to the reclamation plant, where it is screened and processed in large shallow basins. The plant was built around 1980. Land acquisition and the main sewage pipe cost around 1,000 million baht, and the plant itself around 800 million baht. Operation costs are low - around 500,000 baht per year. The effluent quality is good.

Annex 8: Detail Joint Single Project Implementation Plan with Milestones by Activities and Budget distribution by quarters.

OUTCOMES/ OUTPUTS/ ACTIVITIES.	Implemented Institutions	Agreed Budget	2013				2014				2015																												
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4																									
M-IWRMP Overall objective: Good resource governance in support of prosperous and healthy Songkhla and Tonle Sap Lakes, for the benefit of sustainable livelihoods, and serving as an example for inspiration elsewhere		400,000	2,600	2,600	22,800	2,600	2,600	16,700	10,700	2,600	30,700	3,000	23,600	28,900	7,600	10,700	25,350	11,800	4,600	19,250	6,100	2,600	32,050	4,800	5,000	20,250	5,600	10,900	26,950	4,000	2,000	17,050	5,000	3,700	7,650	3,000	3,300	11,350	
Outcome 1 : Programme management		246,000	2,600	2,600	21,700	2,600	2,600	16,200	6,100	2,600	16,200	2,600	2,600	16,200	2,600	2,600	18,950	2,600	2,600	15,450	6,100	2,600	15,450	2,600	2,600	15,450	2,000	2,000	17,250	2,000	2,000	14,250	5,000	2,000	5,850	2,000	1,300	6,150	
Output 1.1 : Enhance public communication and involvement of public agencies and other working partners		74,000	0	0	8,700	0	0	5,200	3,500	0	5,200	0	0	5,200	0	0	7,950	0	0	4,450	3,500	0	4,450	0	0	4,450	0	0	6,850	0	0	3,850	3,000	0	3,850	0	0	3,850	
Activity 1.1.1: Enhance public relation activities and involve public agencies and working partners in meetings and workshops	TSA, SLBC, Thai PBS & Other medias, DWR	26,000		2,700		2,700		2,700		2,700			1,950		1,950		1,950		1,950		1,950		1,950		1,950		1,950		1,850		1,850		1,850		1,850		1,850		1,850
Milestones: 1.1.1.1 Establish web links with relevant websites (Q3/2013) 1.1.1.2 Compile medias and relevant information network (Q4/2013,2014, 2015)																																							

1.2.1.1 Recruit technical assistant & project secretary (Q1/2013) 1.2.1.2 Office equipment procurement (Q2/2014) 1.2.1.3 Quarterly report (every quarter 2013,2014,2015)																																													
Activity 1.2.2: Conduct the project monitoring and evaluation	TSA,	30,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500				
Milestones: 1.2.2.1 Collect data and Quarterly report (every quarter 2013,2014,2015) 1.2.2.2 Mid-term review and project evaluation report (annually 2013,2014,2015)																																													
Outcome 2: IWRM-based governance strengthened and consolidated, in collaboration among agencies, water users and other stakeholders, and with appropriate knowledge-sharing among management levels and among sectors		94,200	0	0	1,100	0	0	500	4,600	0	14,500	0	19,000	6,300	5,000	3,700	6,400	7,200	0	1,800	0	13,100	0	2,000	1,800	0	0	1,800	0	0	0	0	1,800	0	0	0	1,800	0	0	0	0	1,800			
Output 2.1 : Visionary governance		16,500	0	0	0	0	0	0	0	0	6,500	0	5,000	0	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Activity 2.1.1: Conduct a literature study of good practices in Thailand and Cambodia and elsewhere	TSA, SLBC, PSU	6,500									6,500																																		
Milestones: 2.1.1.1 Review and compile the existing report/document such as fishery, tourism, water pollution and Hydro-meteorology operation and																																													

<p>Activity 2.3.2: Analyze links within the basin-level planning: 'Vertical' (among the planning levels), and 'horizontal' (between sectors)</p>	<p>TSA, SLBC, NESDB, Central & Local Agencies (to be determined)</p>	<p>4,500</p> <p>4,500</p>
<p>Milestones: 2.3.2.1 TOR developed & local expert recruited (Q4/2013) 2.3.2.2 Draft report completed (Q4/2013 - to be continued in Activity 2.3.4)</p>		
<p>Activity 2.3.3: Conduct consultation meetings (within the two basin organizations, with resource persons, and others) about observations regarding needs, barriers and opportunities in both countries.</p>	<p>TSA, SLBC</p>	<p>4,600</p> <p>4,600</p>
<p>Milestones: 2.3.3.1 Review the existing report/document (Q1/2014) 2.3.3.2 Working paper (Q1/2014)</p>		
<p>Activity 2.3.4: Prepare analysis (of the results from Activities 2.3.2 & 2.3.3) and make recommendations</p>	<p>TSA, SLBC, DWR</p>	<p>2,000</p> <p>2,000</p>
<p>Milestones: 2.3.4.1 Final report (continued from Activity 2.3.2) (Q4/2014)</p>		

Activity 2.3.5: Conduct training workshop on the Basic Knowledge for Basin Level Planning	TSA,	3,500		3,500																																	
Milestones: 2.3.5.1 agenda developed (Q2/2014) 2.3.5.2 Visit report (Q2/2014)																																					
Activity 2.3.6 Training for TSA/CNMC/MOWRAM in planning Atlas and 3D digital map development for Tonle Sap Lake (to be provided by ITC).	TSA,	12,000		12,000																																	
Milestones: 2.3.6.1 Concept note from ITC and agenda developed (Q4/2013) 2.3.6.2 Report and proposed budget to develop 3D digital map for Tonle Sap Lake (Q4/2013)																																					
Output 2.4: Pilot Implementation		28,200	0	0	1,100	0	0	500	0	0	3,000	0	0	1,800	0	3,700	1,800	3,700	0	1,800	0	0	1,800	0	0	1,800	0	0	1,800	0	0	1,800	0	0	1,800	0	1,800
Activity 2.4.1: Prepare a concept note for pilot implementation in SLB (Study to identify suitable issues for pilot implementation ; Roundtable meeting of experts to screen and map the agenda, concerns and preferences, by sectors, in SLB ; Prepare draft concept notes for pilot implementation activities ; Support & facilitate pilot implementation activities)	TSA, SLBC, Local Agencies, Local Communities	1,600		1,100		500																															
Milestones: 2.4.1.1 Identify suitable issues for pilot implementation (Q1/2013)																																					

Activity 3.1.7: Conduct interview with communities in selected areas on their concerns, threats and opportunities on resources-base livelihoods in Tonle Sap lake future.	TSA,	2,000		2,000																											
Milestones: 3.1.7.1 Review the existing data/information and develop questionnaires (Q4/2013) 3.1.7.2 data and report (Q4/2013)																															
Activity 3.1.8: Review, Analyse and synthesize trends with key indicators for Tonle Sap Lake focusing on fishery, tourism, water pollution and Hydro-meteorology operation and management in Basin in the context of IWRM.	TSA,	3,400		3,400																											
Milestones: 3.1.8.1 Identify the key indication for fishery, tourism, water pollution and Hydro-meteorology operation and management in Basin in the context of IWRM (Q4/2013) 3.1.8.2 Working paper (Q4/2013)																															
Output 3.2: The values of SLB and TSL demonstrated and appreciated		16,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Activity 3.2.1: Conduct a literature study on cause-effect relationship behind concerns, threats and opportunities	TSA, SLBC, PSU	2,200		2,200																											
Milestones: 3.2.1.1 Review and compile the existing report (Q4/2014)																															

3.2.1.2 Working report (Q4/2014)		
Activity 3.2.2: Conduct consultations with resource persons in local communities, and from universities and development organizations involved in wetlands management	TSA, SLBC, Local (five) Universities, Local communities, Local Agencies	3,600
Milestones: 3.2.2.1 Review and compile the existing report/document (Q1/2015) 3.2.2.1 Working report (Q1/2015)		3,600
Activity 3.2.3: Present case studies at a seminar, and otherwise dissemination as appropriate	TSA, SLBC	1,000
Milestones: 3.2.3.1 Identify appropriate seminar (if any) (Q4/2014) 3.2.3.2 Seminar (or disseminated) paper (Q1/2015)		1,000
Activity 3.2.4: Compile and disseminate a synthesis report of the above case study	TSA, SLBC	2,000
Milestones: 3.2.4.1 Synthesized paper on Value of SLB or equivalent (Q1/2015)		2,000
Activity 3.2.5: Review and synthesize working papers base on which develop political recommendation for integrated management of the Tonle Sap Lake.	TSA,	3,500

<p>Milestones: 3.2.5.1 Working paper (Q3/2014)</p>																													
<p>Activity 3.2.6: Consolidate the outline report inline with political recommendations for lake management interventions to be aligned with national and local planning initiatives.</p>	<p>TSA, SLBC, PSU, DWR</p>	<p>4,500</p>																											
<p>Milestones: 3.2.6.1 Review the existing report/document (Q1/2015) 3.2.6.1 Working paper (Q1/2015)</p>																													
<p>Outcome 4: Healthy lakes - Understanding built and awareness raised among agencies and residents about why and how to achieve and preserve a healthy state of the environment. Social marketing initiatives identified and implemented on a pilot basis</p>		<p>17,000</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	
<p>Output 4.1: Improved public awareness on quality of the lakes an their surrounding areas to support the healthy state of the environment and social marketing</p>		<p>14,000</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	
<p>Activity 4.1.1: Conduct a literature review on the healthy lake issues to integrate into the national policy</p>	<p>TSA, SLBC, PSU</p>	<p>4,400</p>																											
<p>Milestones: 4.1.1.1 Review and compile the existing report/document (Q1/2015) 4.1.1.2 Working report (Q1/2015)</p>																													

Total Budget Allocated to PCMU/M-IWRMP Account		11,300
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Activity 1.2.1: Managerial and administrative procedures strengthened is referred to,- Staffs hiring; - Purchasing the consumable for running and sites implementation activities; - Equipment (Internet, communication, laptop, scanner, printer);- Stationaries;