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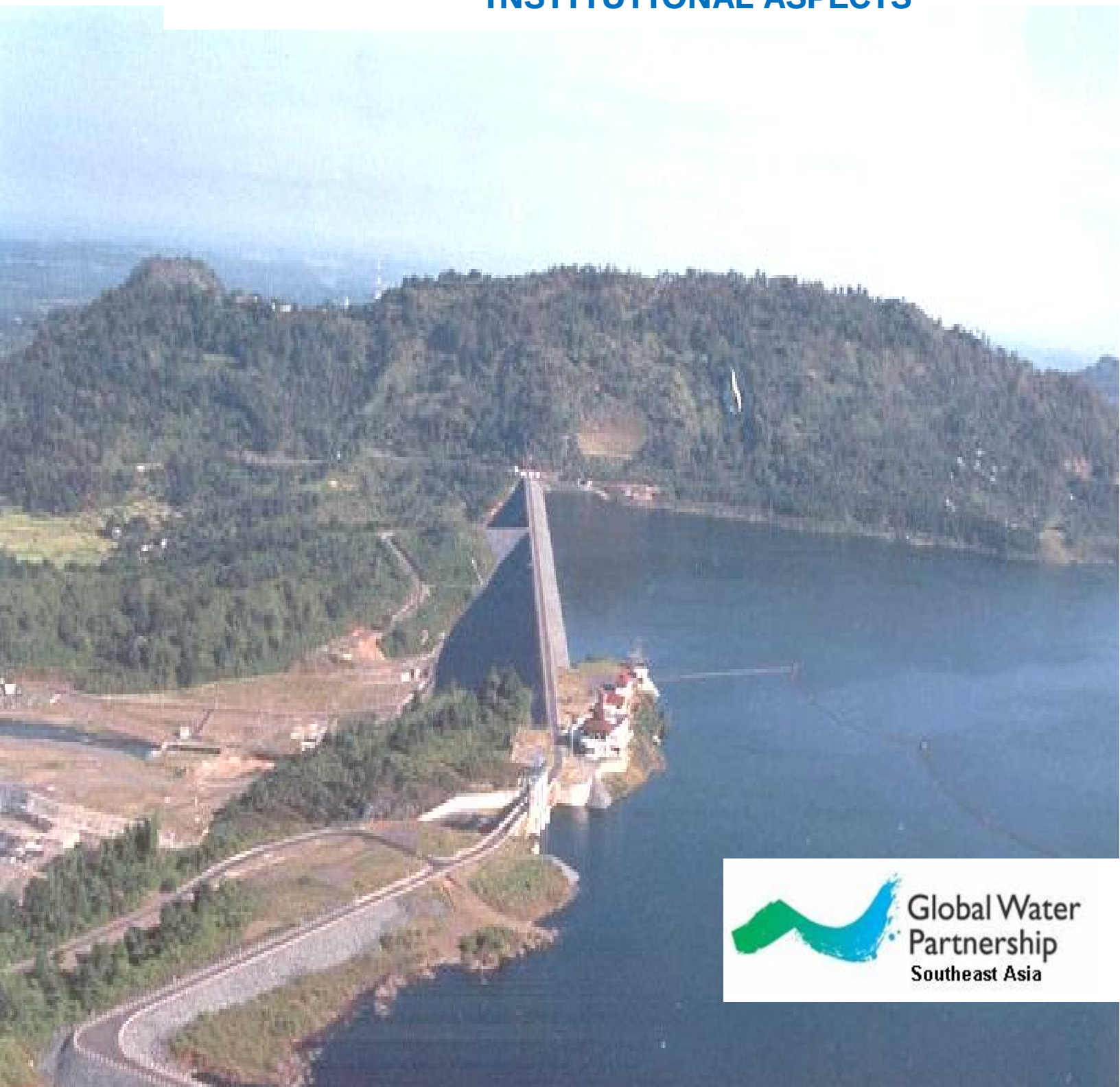
EVALUATION OF THE STATUS OF IWRM IMPLEMENTATION IN 2000-2010 - IN RESPECT TO POLICY, LEGAL AND INSTITUTIONAL ASPECTS



Global Water Partnership
Southeast Asia

EVALUATION OF THE STATUS OF IWRM IMPLEMENTATION IN SOUTHEAST ASIA 2000-2010 IN RESPECT TO POLICY, LEGAL AND INSTITUTIONAL ASPECTS

BANGKOK, THAILAND
21st September 2011

Global Water Partnership
Southeast Asia

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Consolidated Regional Report

1. BACKGROUND

As part of a joint initiative between the Global Water Partnership Technical Committee (GWP-TEC) , UNESCAP and other organizations, to develop a Southeast Asia Water Security Roadmap, the Global Water Partnership Southeast Asia (GWP-SEA) has commissioned this study to gather inputs for the preparation of the Roadmap. The study is based mainly on information collected by the GWP-SEA from its country networks, and comprises the following 3 main activities:

1. Data collection and report writing for each country (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippine, Singapore, Thailand and Vietnam) on the Policy, Legal and Institutional Aspects 2000 – 2010.

2. Country Stakeholders Dialogue Workshops to review and discuss the Country Report 2000 – 2010.

3. A Regional Workshop to discuss the final report on the "Evaluation of IWRM Implementation in Southeast Asia (2000 -2010) - in respect to Policy, Legal and Institutional Aspects" consisting of a compilation of the outputs from each Country Report.

This report is an overview of the status of IWRM implementation in Southeast Asia, from 2000 to 2010 with Respect to Policy, Legal and Institutional Aspects. It is a synthesis compilation and assessment of the key points from each of the country reports that were prepared by country experts appointed by GWP-SEA.

2. OVERVIEW OF SEA REGION

Southeast Asia is a sub-region of Asia, consisting of the countries that are geographically south of China, east of India, west of New Guinea and north of Australia. The region lies on the intersection of geological plates, with heavy seismic and volcanic activity. Southeast Asia consists of two geographic regions (see **Figure 2.1**):
[http://en.wikipedia.org/wiki/Southeast_Asia]

(a) Mainland Southeast Asia, also known as Indochina, comprises Cambodia, Laos, Myanmar, Thailand, Vietnam and Peninsular Malaysia, and

(b) Maritime Southeast Asia, which is analogous to the Malay Archipelago, comprises Brunei, East Malaysia, East Timor, Indonesia, the Philippines, Christmas Island and Singapore.

Table 2.1 shows the basic information on the political, population and economic statistics of Southeast Asia.

Figure 2.1 Map of Southeast Asia (Source: http://tiny.cc/yko5q)

Table 2.1 Basic Information on the Political, Population and Economic Statistics of Southeast Asia (Source: Wikipedia)

Country	Area (km^2) [30]	Population(2009) [31]	Density ($/km^2$)	GDP USD (2009)[32]	GDP per capita (2010)	Capital
Brunei	5,765	428,000	70	10,405,000,000	$31,238	Bandar Seri Begawan
Burma	676,578	50,020,000	74	34,262,000,000	$701	Naypyidaw
Cambodia	181,035	14,805,000	82	10,871,000,000	$813	Phnom Penh
East Timor	14,874	1,134,000	76	590,000,000	$588	Dili
Indonesia	1,904,569	240,271,522	126	539,377,000,000	$3,015	Jakarta
Laos	236,800	6,320,000	27	5,598,000,000	$984	Vientiane
Malaysia	329,847	28,318,000	83	192,955,000,000	$8,423	Kuala Lumpur
Philippines	300,000	91,983,000	307	160,991,000,000	$2,007	Manila
Singapore	697	5,076,700[33]	7,023	291,900,000,000	$62,100[34] (2010 est.)	Singapore
Thailand	513,120	67,764,000	132	312,605,000,000	$5,691	Bangkok
Vietnam	331,210	88,069,000	259 (2011)	104,600,000,000 (2011)	$1,168 (2011)	Hanoi

3. WATER RESOURCES POLICY

Table 3.1 gives a summary of the status of the formulation and implementation of water resources policy in the SEA countries and their IWRM commitments. Also, **Table 3.2** gives a selective summary of the status of the WR-related policies in 2000 and developments in 2000-2010 for the SEA countries, for national water resources policy and a few sectoral water policy developments.

It can be seen from the tables that before 2000 Indonesia, Philippines and Vietnam has some form of water policy guiding water management in the country. However, after 2000 most of the SEA countries have formulated a comprehensive national water resources policy based on IWRM principles, or have reviewed their pre-2000 water policies to be more comprehensive so as to incorporate IWRM principles.

A selective review of the progress in formulating and revising sectoral water-related policies during the last decade also indicated that there has been significant progress made. The following is a selective summary of the sectoral developments for each sector in the period 2000-2010:

1. Irrigation – Lao PDR
2. Water supply – Cambodia, Indonesia, Lao PDR, Malaysia, Philippines
3. Water Sanitation – Cambodia, Indonesia, Malaysia, Philippines
4. Floods – Lao PDR
5. River Basin – Philippines, Thailand
6. Watershed Management – Philippines, Lao PDR, Vietnam
7. Water Users Organisations – Cambodia, Philippines
8. Hydropower – Lao PDR
9. Drought – Lao PDR

Table 3.1 Status of the formulation and implementation of water resources policy in the SEA countries and their IWRM commitments

COUNTRY	WATER RESOURCES POLICY	GOVERNMENT COMMITMENTS/ AGREEMENTS
Cambodia	• A comprehensive NWRP was formulated in 2004 • Existence of several sectoral policies related to IWRM, such as National Policy on Water Supply and Sanitation(2003) • Draft of sub-decrees on River basin Organization and Water Licensing	• Integrating IWRM in the 5-Year Strategic Development Plan (2006-2010) • Integrating the IWRM in the National Strategic Development Plan (NSDP), 2009-2013 • Agreement(1995) on Cooperation for the Sustainable Development of Mekong River Basin
Indonesia	• National WRDM Policy approved by NWRC in 2011 • Water Resources Management Policy Reform carried out to enhance IWRM • Existence of several WRM policy, such	• Integrating WRM in National Development Plan • National Movement on Forest and Land Rehabilitation Program • National Partnership Movement for

	as irrigation, water supply and sanitation, water quality, river basin management, climate change mitigation and adaptation, national action plan on MDG's which are developed during the period 2000-2010.	Preservation of WR • The 2nd SEA Water Forum – the Bali Ministerial Declaration and Plan of Action
Lao PDR	• NWRP formulated in 2000. • Review of NWRP carried out in 2009 • Draft NWRP, Strategy and Action Plan (2011-2015) waiting for approval	• National Long-Term Development Structure of the 6th and 7th Party Congresses • Agreement on Cooperation for the Sustainable Development of Mekong River Basin
Malaysia	• No comprehensive policy on WR at National level • A draft overall comprehensive policy has been prepared, to be tabled at the National Water Resources Council in October 2011 • 8 new sectoral policies related to WRM was formulated during the period 2000-2010 : - National Climate Change Policy - National Mineral policy - Food Security Policy - National Solid Waste Mgt Policy - Third National Agricultural Policy - National Biodiversity Policy - National Urbanisation Policy - Green Technology Policy • National Water Vision formulated in 2000	• Integrating IWRM in the 5-year National Development Plans • National Outline Perspective Plan (2001-2010) • National Physical Plan • Agreement to a change in the Federal Constitution allowing Federal Government to take over responsibility for the management of water supply services in the states • Agreement to the establishment of Inter-Ministerial Dialogue in 2011
Myanmar	• No single comprehensive NWRP • Existence of several sectoral policies related to WRM, such as, agricultural sector, irrigation development, watershed conservation, environmental conservation and energy	• Inclusion of water resources projects in the National Development Plans
Philippines	• 1998 – Master Plan for Water Resources Management. • After 2000 - several sectoral policies formulated addressing issues related to WRM, such as: - Irrigation Sector - Water Supply and Sanitation - Flood Management - River Basin Sector - Forest/Uppershed	• Medium Term Dev Plan (2004-2010) • Adoption of Collaborative Approach to Watershed Mgt (2005) • Philippine Water Supply Sector Roadmap(2010) • IWRM Framework Plan • Philippine Development Plan, 2011-2016 • Addressing policy gaps
Singapore	• No comprehensive policy on WRM • There are several sectoral policies	• Water Agreements with Malaysia to supply raw water resources

	addressing issues related to WRM	• Very Strong political support • Government commitment in ensuring sustainable and resilient water supply
Thailand	• National Water Resources Committee, 1989 • Draft of National Water Law, 1994 • National Water Vision, July 2000 • National Water Policy, Oct 2000 • National Water Resources Strategic Plan, 2007	• Development of Management Plan for 25 Main River Basins up to 2005

Vietnam	• NWR Law, 1998
	• NWRC established in 2000
	• After 2000 - several policies formulated addressing issues related to WRM, such as:
	  • Water rights licensing 2003, 2004
	  • Exchange of water information 2003
	  • Water supply and sewerage, 2007
	  • Flood and disasters, 2007
	  • Environment flows 2008
	  • River basin management, 2008
		• Establishment of WRM system, separating WRM from water exploitation and utilization, 2002
		• National Water Resources Strategy up to2020. (formulated in 2006)
		• Agreement on Cooperation for the Sustainable Development of Mekong River Basin in 1995.

Table 3.2 Status of WR-related Policies in 2000 and Developments in 2000-2010 for the SEA countries

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	Cambodia - No NWR Policy Indonesia – NWR Policy available Laos - National Policy on Water and Water Resources, 2000 Malaysia – No NWR Policy, National Water Vision, 2000 & NWRC, 1998 Myanmar – No NWR Policy Philippines - NWRB, 1974, Water Code, 1976, National Water Crisis Act, 1995, Presidential Task Force on Water Resource Development and Management, 1996; Master Plan for Water Resources, 1998. Singapore – No NWR Policy Thailand - National Water Resources Committee, 1989, Draft of National Water Law, 1994, National Water Vision, July 2000, National Water Policy, Oct 2000	Cambodia - NWR Policy in 2004, and WRM Law 2007 (IWRM as a mean for water resources management) Indonesia – NWR Policy reform (1999-2004), NWR Council, 2009 & National WRDM Policy, 2011 Laos - Water Policy Review, 2009, Draft National Water Resources Strategy and Action Plan (2011-2015) Malaysia – NWR Policy, 2011 Myanmar - National Water Vision, 2003 Philippines - NWRB reconstituted, 2002, Committee on Water Resources, 2008, IWRM Plan Framework, 2006 Singapore – Single water management agency (PUB), 2001 Thailand - National Water Resources Strategic Plan, 2007 Vietnam - National Water Resources

	Vietnam - Law on Water Resources, 1998	Strategy up to 2020 (2006)
2. Irrigation	Philippines - National Irrigation Administration, 1963	Laos - NSEDP, 2006-2010 Vietnam – Policy on exemtion of irrigation fees, 2007 Indonesia: new regulation on Irrigation was issued in 2006.
3. Water Supply	Philippines – MWSS, 1971 & 1995, Committee on Water Conservation and Demand Management, 1995	Cambodia - Policy on Water Supply & Sanitation in 2003 Indonesia - National Action Plan on MDG ; regulation on water supply system was issued in 2005 Laos - NSEDP, 2006-2010 Malaysia - Water services restructuring, 2006 Philippines - Water Supply and Sanitation reform, 2004, Water Supply Sector Roadmap, 2010 Vietnam –Urban water Supply and Sanitation Reform,2007, National program for Rural Water Supply and Sanitation 2001-2010
4. Water Sanitation	Philippines – MWSS, 1971 & 1995	Cambodia - Policy on Water Supply & Sanitation in 2003 Indonesia - National Action Plan on MDG Malaysia - Water services restructuring, 2006 Philippines - Water Supply and Sanitation reform, 2004 Vietnam - Standardization of Environmental Sanitation, 2002
5. Flood Management		Indonesia- law on disaster management was enacted in 2007 Laos - Disaster Management Committee Vietnam - National Strategy on Disaster Prevention, 2007
6. River Basin Management	Philippines - Laguna Lake Development Authority, 1966	Indonesia - regulation on river basin management was issued in 2008 Philippines - River Basin Control Office, 2006 Thailand - Establishment of River Basin Committees in 25 River Basin, 2005 Vietnam– Eight RBOs established; RBM new decree issued, 2008

7. Watershed Management		Indonesia- regulation on watershed management was issued in 2008 Laos - Forestry Strategy, 2020 Philippines - Collaborative approach to water management, 2005
8. Water Quality	Philippines - Environment Code, 1977	Indonesia- regulation on water quality was issued in 2001 Laos - Environment Strategy, 2020 Philippines - Clean Water Act, 2004 Vietnam - National Strategy for Environment up to 2020 (2004), Environment fee on urban wastewater, 2003
9. Water Users Organisations	Philippines - Local Water Utilities Administration (LWUA), 1973	Cambodia - Farmer Water User Committees, 2006 Philippines – Restructuring of LWUA, 2008 Vietnam – Legal setting-up of WUA, 2004
10. Climate Change		Indonesia - Formation of National Council on Climate Change, 2008 Malaysia - National Climate Change Policy, 2010 Philippines - Climate Change Act, 2009, National Framework Strategy on Climate Change for 2010-2022 (2010) Vietnam - National Target Program on Climate Change Mitigation and Adaptation, 2008
11. Hydropower		Laos - NSEDP, 2006-2010 Vietnam – Law on Electricity, 2004; Release of Environment Flows in Hydropower Reservoirs, 2008
9. Drought		Laos - Disaster Management Committee
10. Fisheries	Philippines - Agricultural Fisheries Modernization Act, 1997	Vietnam: Law on Fishery and Aquaculture, 2003

a. CAMBODIA

i. WR-related Policy Developments

Cambodia has formulated a National Water Resources Policy in 2004. Water resources management is given high priority by the Government as it is a means to achieve national development goals. Under the mandate of the Ministry of Water Resources and Meteorology (MOWRAM), a number of policies on water management have been issued since 1999, when the ministry was formed. Notably, declaration 306 in 2006 which provides a framework for the development of Farmer Water User Committees (FWUC); the National Policy on Water Supply and Sanitation (both urban and rural sub-sector, 2003); National Water Resources Policy (2004); MOWRAM Strategy 2006-2010 and the Law on Water Resources Management (RGC, 2007).

In addition to the national water resources policy, there are several policies relevant to IWRM that have been developed. They are:

(a) National policy on water supply and sanitation (RGC, 2003) – Focus on water supply and sanitation facilities for people in rural and urban areas.

(b) The Drinking Water Quality Standard (MIME, 2004) – Focus on ensuring that drinking water will be safe in the future, that there are no health risks to the public, to serve as a basis for the design and planning of water supply treatment, and to provide a benchmark for assessing long-term trends in the performance of the water supply system.

(c) Within the period of 2000-2010, the national policy on water supply and sanitation policy has been revised in terms of the government agencies role to provide water supply and sanitation services to real remote and rural remote areas, where the private sector could not provide the demand for the services. (RGC, 2003)

Table 3.3 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Cambodia.

Table 3.3 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Cambodia

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	No NWR Policy (MOWRAM formed in 1999)	Comprehensive NWR Policy in 2004
2. Irrigation		
3. Water Supply		1. National Policy on Water Supply & Sanitation in 2003 2. Drinking water quality standard in 2004
4. Water Sanitation		National Policy on Water Supply & Sanitation in 2003
5. Water Users Organizations		Farmer Water User Committees, 2006

ii. Coverage and Status of Implementation

The NWR Policy coverage is mainly focus on:

(a) study for preparing short, medium and long term development plans for river basin;
(b) expansion of surface of water storage, channel capacities and drainage systems for supplying water to farmers and mitigation of flood;
(c) promotion of the integration approach in water resources development and management by considering all sources of water linkages, especially river basin and aquifers, which are under serious threat from human activities and competition for water;
(d) conservation of natural lakes and groundwater to provide flood retention and groundwater supply; and
(e) promotion of participation from all relevant stakeholders in the implementation of river basin development plans.

Progress has been made in formulating water-related policies and law in Cambodia, but poor enforcement, ambiguity and lack of coordination efforts are still fundamental challenges for achieving integrated water resource management.

iii. Government WRM-related commitments/agreements

The Government of Cambodia is committed to the following:

(a) Integrating IWRM in the 5-Year Strategic Development Plan (2006-2010)
(b) Agreement on Cooperation for the Sustainable Development of Mekong River Basin

b. INDONESIA

i. WR-related Policy Developments

Indonesia has an existing National Water Resources Policy before 2000. From 1999 to 2004 a process was undertaken to reform the NWR policy. The three major considerations that necessitate the policy reform are (a) the nature of water resources problems in Indonesia, (b) the continuous need for achieving food security and sustainable irrigation, and (c) overcoming institutional constraints. In April 1999, the Government of Indonesia formulated the “Letter of Sector policy and Policy reform matrix”. This was the start of major institutional reforms, including policy, legal, organizational and financing aspects, aimed at improving the overall water resources and irrigation sector performance in Indonesia.

The Water Resources Management Policy Reform is focus on the following sector problems:

(a) water allocation is under local scarcity due to growth of non-irrigation water demand;
(b) inadequate urban access to piped water supply;
(c) water pollution and adverse impacts of untreated municipal wastewater discharge, including industrial and mining effluent disposal;
(d) adverse impacts of watershed degradation such as increasing flood peaks causing economic damages, decreasing dry season flow and sedimentation damages to water infrastructure;

The policy amendment during the 2000-2010 period was on the following:

(a) enhance IWRM to achieve sustainable resource use
(b) manage water in all aspects - social, ecological and economic
(c) achieve a balance between conservation and water use
(d) decentralize water resources management
(e) assure the basic right of water for all people
(f) ensure future policy are formulated in a democratic way

The National Water Resources Council was formed in 2009. The Council issued the National WRDM Policy in 2011. **Table 3.4** summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Indonesia.

Table 3.4 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Indonesia

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	National Water Resources Policy	1. Major reform of NWR policy from 1999-2004 2. Establishment of NWR Council, 2009 3. NWRC issued the National WRDM Policy in 2011
2. Water Supply		National Action Plan on MDG
3. Water Sanitation		National Action Plan on MDG
4. Climate Change		Formation of National Council on Climate Change, 2008

ii. Coverage and Status of Implementation

The new policy issued during the 2000-2010 period covers the following areas:

(a) Enactment of a new Water Resource law
(b) National Action Plan on MDG's
(c) Implementation of IWRM
(d) Climate Variability and Climate Change Anticipation (Establishment of National Policy & Strategy)
(e) Water Resources Development program
(f) Water and Sanitation
(g) Rural Water supply and Sanitation Action
(h) Water for Food and Rural Development

iii. Government WRM-related commitments/agreements

The Government of Indonesia is committed to the following:

(a) Medium Term National Development Plan 2004-2009
(b) National Movement on Forest and Land Rehabilitation Program
(c) National Partnership Movement for Preservation of Water Resources
(d) The Second Southeast Asia Water Forum: "The Bali Ministerial Declaration and Plan of Action"

c. LAO PDR

i. WR-related Policy Developments

Laos has formulated a National Policy on Water and Water Resources in 2000. The policy emphasizes cross-sector issues and does not discuss single sub-sector issues, which were recommended to be covered in sub-sector water policies for which the policy shall provide guidance. A review of the Policy was carried out in 2009.

The focus of the review is to prepare a policy that can guide the Lao government and private sectors involved in the administration and development water resources in terms of achieving social fairness and a balance between economic outcomes and environmental protection. A draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015 have been developed. The Strategy and Action Plan is based on the nine major WR policy statements of 2009 and presents nine related programs which will be implemented to achieve the objectives of the Policy.

However, the Draft National Water Resources Policy, Strategy and Action Plan 2011 – 2015 (NWRPSAP) have not yet been officially approved by the Government. Distribution of the documents, especially the Water Resources Action Plan (NWRAP) through the National Integrated Water Resources Management Program (N-IWRM-P) and the five year provincial water resources and environment management plans, have been proceeding at some certain level.

Table 3.5 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Lao PDR.

Table 3.5 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Lao PDR

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	National Policy on Water and Water Resources, 2000	1. Review of Water Policy, 2009 2. Draft National Water Resources Strategy and Action Plan (2011-2015)
2. Irrigation		NSEDP, 2006-2010
3. Water Supply		NSEDP, 2006-2010
4. Flood Management		Disaster Management Committee
5. Watershed Management		Forestry Strategy, 2020
6. Water Quality		Environment Strategy, 2020
7. Hydropower		NSEDP, 2006-2010
8. Drought Management		Disaster Management Committee

ii. Coverage and Status of Implementation

The Lao National Water policy covers the following seven areas:

(a) Principles on water and water resources management;
(b) Water source development and management;
(c) Public involvement;
(d) Financial resources for water source development and management;
(e) Water allocation, quality management and use;
(f) Data and information management; and
(g) Capacity building and human resources development.

iii. Government WRM-related commitments/agreements

The Government of Laos is committed to the following:

(a) National Long-Term Development Structure of the 6th and 7th Party Congresses
(b) Agreement on Cooperation for the Sustainable Development of Mekong River Basin

d. MALAYSIA

i. WR-related Policy Developments

Malaysia has formed a National Water Resources Council(NWRC) and formulated a National Water Vision in 2000. However, no national water policy has been formulated up till 2000. A draft, comprehensive National Water Resources Policy was prepared in 2010 and was approved by the National Water Resources Council in October 2011. A major policy on the restructuring of the provision of water services for water supply and sewerage was implemented in 2006. Eight new sectoral policies related to WRM was formulated during the period 2000-2010. They are:

(a) National Climate Change Policy
(b) National Mineral policy
(c) Food Security Policy
(d) National Solid Waste Mgt Policy
(e) Third National Agricultural Policy
(f) National Biodiversity Policy
(g) National Urbanisation Policy
(h) Green Technology Policy

Table 3.6 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Malaysia.

Table 3.6 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Malaysia

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	1. No National Water Policy 2. National Water Vision, 2000 3. Formation of National Water Resources Council, 1998	1. NWR policy approved by NWRC in October 2011
2. Water Supply		Major restructuring of water services, 2006
3. Water Sanitation		Major restructuring of water services, 2006
4. Climate Change		National Climate Change Policy (2010)

ii. Coverage and Status of Implementation

The National Water Resource Policy covers the following four major thematic areas:

(a) Water Resources Security
(b) Water Resources Sustainability
(c) Partnerships
(d) Capacity Building

iii. Government WRM-related commitments / agreements

The Malaysian government has made a number of national commitments related to water resources management. The following is a list of some of the major commitments:

- National Outline Perspective Development Plan 3 (2001 – 2010) (OPP3)
- The 5- year National Development Plans
- National Physical Plan
- National Solid Waste Strategic Plan
- Policies endorsed by the National Water Resources Council (e.g. rainwater harvesting, urban stormwater drainage)
- Agreement by the states in 2005 to a change in the Federal Constitution, allowing water services to be in the concurrent list so as to allow the Federal government to take over responsibility for the management and provision of water supply services from the states.

The Malaysian government has also made a number of international commitments related to water resources management. The following is a list of some of the declarations/statements signed by the Prime Minister, Ministers, or Senior Government official in international and regional events:

- Dublin Principles (1992)
- First World Summit on Sustainable Development (1992) – Rio De Janeiro, Brazil
- Millennium Development Goals (2000)
- World Summit on Sustainable Development (WSSD) (2002) – Johannesburg, South Africa, where world leaders re-committed themselves to the Millennium Development goals and pledged to develop IWRM and water efficiency plans by 2005.
- First World Water Forum (1994) - Marrakech, Morocco, which produced the Marrakech Declaration, the World Water Vision for Life and Environment for the 21st Century
- Second World Water Forum (1998) – Hague, Netherlands, leading to the Declaration of the Hague on Water Security in the 21st Century
- Third Water Forum (2002) - Kyoto, Shiga and Osaka, Japan
- Fourth World Water Forum (2006) - Mexico City, Mexico
- Fifth World Water Forum (2010) - Istanbul, Turkey

e. MYANMAR

i. WR-related Policy Developments

Myanmar has no single comprehensive National Water Resources Policy. There are several sectoral water-related policies, such as agriculture, irrigation development, watershed conservation, energy and environmental conservation. In 2003 the Ministry of Agriculture and Irrigation formulated the National Water Vision for Myanmar, in cooperation with UNESCAP and FAO.

Table 3.7 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Myanmar.

Table 3.7 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Myanmar

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	None	Myanmar National Water Vision, 2003
2. Irrigation	Existing	
3. Watershed Management	Existing	
4. Water Quality	Existing	
5. Hydropower	Existing	
6. Fishery	Existing	

ii. Coverage and Status of Implementation

The 2003 National Water Vision provides a guide for integrated water resources management for all water sector activities, and at all levels of water resources management in the country.

iii. Government WRM-related commitments/agreements

The Government of Myanmar is committed to the following:

(a) Inclusion of water resources projects in the National Development Plans

f. PHILIPPINES

i. WR-related Policy Developments

The Philippines has an existing National Water Code since 1976. Before the year 2000, the water resources management framework in the Philippines consisted of the following elements:

(a) A basic water law (Water Code);
(b) A planning and coordination mechanism;
(c) Assessment and basin framework plans;
(d) A water use/waterworks regulatory system; and
(e) A water management agency - the National Water Resources Board (NWRB) that administers the Water Code.

The thrust to implement IWRM continued after 2000 with efforts put on correcting issues faced by the water sector. In 2002, the NWRB was reformed by changing its Board membership to comprise non water-users. However, attempts to strengthen the NWRB to create a water body, that could coordinate water concerns in the various government agencies with water mandates in order to effect a framework for integration have not been realized. The Climate Change Act was prepared in 2009 arising from events showing the realities of the impact of climate change. This was followed by the National Framework Strategy on Climate Change.

Table 3.8 summarises the status of a selection of the numerous WR-related policies in 2000 and developments in 2000-2010 for the Philippines.

Table 3.8 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Philippines

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	1. NWRB, 1974 2. Philippines Water Code, 1976 3. National Water Crisis Act, 1995 4. Presidential Task Force on Water Resource Development and Management, 1996	1. National Water Resources Board (NWRB) reconstituted, 2002 2. Establishment of Sub-committee on Water Resources, 2008 3. IWRM Plan Framework, 2006
2. Irrigation	National Irrigation Administration, 1963	
3. Water Supply	1. Metropolitan Waterworks and Sewerage System (MWSS), 1971 2. Reorganisation of MWSS, 1995 3. Committee on Water Conservation and Demand Management, 1995	1. Water Supply and Sanitation reform, 2004 2. Water Supply Sector Roadmap, 2010
4. Water Sanitation	Metropolitan Waterworks and Sewerage System, 1971	Water Supply and Sanitation reform, 2004
5. River Basin Management	Laguna Lake Development Authority, 1966	River Basin Control Office, 2006
6. Watershed Management		Collaborative approach to water management, 2005
7. Water Quality	Environment Code, 1977	Clean Water Act (2004)
8. Dam Construction		
9. Water Users Organisations	Local Water Utilities Administration (LWUA), 1973	LWUA moved from DPWH to DOH, 2008
10. Climate Change		1. Climate Change Act, 2009 2. National Framework Strategy on Climate Change for 2010-2022 (2010)
11. Fisheries	Agricultural Fisheries Modernization Act, 1997	

ii. Coverage and Status of Implementation

It can be seen that the Philippines has been implementing water management through a series of water management policies covering many water-related sectors even before 2000. The impetus for IWRM and reform for greater co-ordination continues even after 2000.

iii. Government WRM-related commitments/agreements

The Government of Philippines is committed to the following:

(a) Medium Term Development Plan (2004-2010)
(b) Adoption of Collaborative Approach to Watershed Management (2005)
(c) Philippine Water Supply Sector Roadmap (2010)
(d) Addressing policy gaps

g. SINGAPORE

i. WR-related Policy Developments

Singapore does not have any National Water Resources Policy. Before 2001, there are several sectoral policies related to water resources management and water management is under the purview of different agencies. However, the Public Utilities Board (PUB), Singapore's national water agency, was reconstituted in 2001 through the integration of the water supply, sewerage and drainage functions. The integration of the sectoral water management functions under a single agency in 2001 meant that the PUB is the sole agency responsible for managing the entire water cycle in Singapore.

Table 3.9 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Singapore.

Table 3.9 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Singapore

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	None	Integration of all water management functions (water supply, drainage and sewerage) under a single agency, PUB, in 2001

ii. Government WRM-related commitments / agreements

The Government of Singapore is committed to the following:

(a) Water Agreements with Malaysia on the treatment and use of raw water resources in Malaysia
(b) Very Strong political support for integrated water resources management
(c) Government commitment in ensuring the sustainability and resiliency of water supply

h. THAILAND

i. WR-related Policy Developments

Thailand has setup a National Water Resources Committee in 1989. A draft water law was also formulated in 1994 and a National Water Vision was formulated in July 2000. This was followed in October by a National Water Policy in October 2000. In order to implement IWRM effectively the whole of Thailand has been divided into 25 river basins and 25 River Basin Committees (RBC) has been formed in 2005. River basin plans has been formulated with stakeholder participation and are ongoing. In 2007 a National Water Resources Strategic Plan was also formulated.

Table 3.10 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Thailand.

Table 3.10 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Thailand

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	National Water Resources Committee, 1989 Draft of National Water Law, 1994 National Water Vision, July 2000 National Water Policy, Oct 2000	1. National Water Resources Strategic Plan, 2007
2. River Basin Management		Establishment of River Basin Committees in 25 River Basin, 2005

ii. Coverage and Status of Implementation

The coverage of Thailand's National Water Resources policy is shown in **Figure 3.1** below:

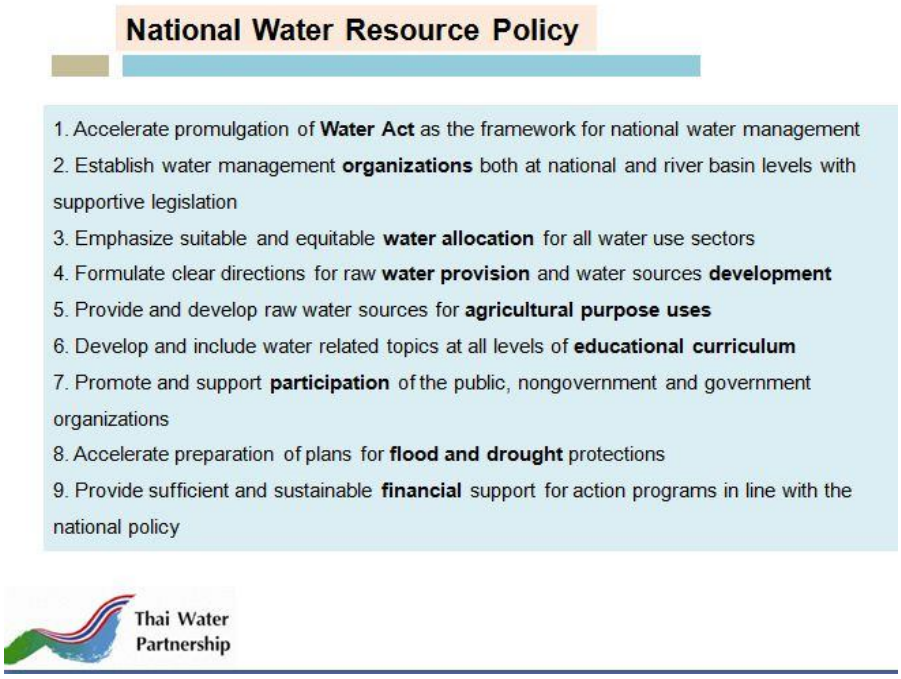

Figure 3.1 Key Elements of Thailand's National Water Resources Policy

iii. Government WRM-related commitments / agreements

The Government of Thailand is committed to the following:

(a) Development of Management Plan for the 25 Main River Basins that was setup in 2005
(b) Provide sufficient and sustainable financial support for action programs in line with the national policy
(c) Formulation of the National Water Resources Strategic Plan, 2007

i. Vietnam

i. WR-related Policy Developments

Vietnam has an enacted a National Law on Water Resources in 1998 that covers the basic functions of water resources management such as flood control and irrigation. However, after the law was issued there were several laws or ordinances related to water resources that have been enforced, such as Law on Environmental protection (2005), Law on Land (2003), Navigation Law, Law on fishery and aquaculture, Law on dike and flood control, Law on Electricity, etc. Therefore, the law on Water Resources has to be revised in order to ensure uniformity between all the laws. The practical enforcement and awareness of the law is still low and not realistic.

A National Water Resources Strategy for 2020 was formulated in 2006. The effectiveness of implementation of the strategy was discussed in the country paper for the following issues:

(a) Rights of water utilization
(b) Protection of water resources
(c) Investment policies in the water sector
(d) Water service financing policy
(e) Cooperation of international rivers

Table 3.11 summarises the status of WR-related policies in 2000 and developments in 2000-2010 for Vietnam.

Table 3.11 Status of WR-related Policies in 2000 and Developments in 2000-2010 for Vietnam

Water Sector	Status in 2000	Developments in 2000-2010
1. National WR Policy	Law on Water Resources, 1998	1. National Water Resources Strategy up to 2020 (2006)
2. Water Quality		National Strategy for Environment up to 2020 (2004)

ii. Coverage and Status of Implementation

The National Water Resources Strategy formulated in 2006 covers the following policy aspects:

(a) Water resources are an important key factor for socio-economic, sustainable development and for national defense and national security.
(b) Water resources belong to the entire people and are to be managed in a uniform manner by the State.
(c) Management of water resources should be implemented in an integrated and uniform manner on a river basin basis.
(d) Water resources must be developed, exploited and used in a sustainable, economically efficient, integrated and multi-purpose manner.
(e) Cooperation, sharing benefits, ensuring fairness and appropriateness in the exploitation, use, protection and development of water resources is necessary.

4. WATER LEGISLATION FRAMEWORK

Table 4.1 gives a summary of the status of the national water legislation framework in the SEA countries and the outstanding legal issues related to them. It can be seen that before 2000 only Vietnam has enacted a comprehensive National Water Resources Law in 1998. However, since 2000, Cambodia (2007), Indonesia (2004) and Laos (2001) has also enacted and implemented their own NWRL. As for the other SEA countries, work on enacting NWRL is ongoing and for Vietnam there is a need for a review of the 1998 NWRL.

a. CAMBODIA

i. Water Legislation Framework

A comprehensive Water Resources Management Law was enacted in 2007. The law aims to foster effective and sustainable management of the water resources in Cambodia. The following are some pertinent articles of the law:

- **Article 4**: Water resources shall be developed and managed following an Integrated Water Resources Management (IWRM) Approach;
- **Article 7**: Collaboration among and participation of RGC institutions, private investors, stakeholders, beneficiaries at all levels, Non-Governmental Organizations (NGOs) and International Organizations (IOs) shall be promoted, in activities related to the management, investment, exploitation, protection and development of water resources;
- **Article 9**: The MOWRAM shall be responsible for preparing a national water resources plan;
- **Article 19**: To ensure the effective and sustainable utilization and management of irrigation, the MOWRAM shall be responsible for the preparation and establishment of Farmers' Water User Community (FWUC);
- **Article 24**: MOWRAM, together with the other concerned institutions and local authorities, shall designate any flood prone area as a flood protection area and shall prepare plan on flood protection and control measures to ensure the safety, life of people, animals and property.

Also, there were new sectoral laws that were enacted during 2000-2010. They included the following:

- Land Law, 2001
- Forestry Law, 2002
- Fishery Law, 2002
- Inland Water Navigation Law, 2010

There exist a number of royal decrees, sub-decrees and other legal documents related to water management, such as the sub-decrees on River Basin Management.

ii. Outstanding Legislative Issues

There are several legal documents that are still in the drafting stage, such as the sub-decree on river basin management and the sub-decree on water licensing.

Table 4.1 Summary of Status of National Water Legislation Framework for SEA Countries

COUNTRY	WRM LAW	OUTSTANDING LEGAL ISSUES
Cambodia	• A comprehensive WRM Law was enacted in 2007 • New sectoral laws were enacted during 2000-2010: - Land Law, 2001 - Forestry Law, 2002 - Fishery Law, 2002 - Inland Water Navigation Law, 2010 • Existence of royal decrees, sub-decrees and other legal documents, such as sub-decrees on River Basin Management.	• Several legal documents are still in the drafting stage, such as the sub-decree on River Basin management and sub-decree on water licensing.
Indonesia	• Comprehensive Water Resources Law was enacted in 2004 • New or revised water regulations were formulated for the following sectors during the period of 2000-2010: - Irrigation, - water supply, - river basin management, - water quality, - groundwater, - dam construction	• New water regulations are still needed, such as for the management of swamps, management of rivers, management of lakes, management of upper watershed and land use, sanitation, and flood management.
Lao PDR	• Law on Water and Water Resources, 1996 was implemented in 2001	• Incomplete policies and secondary legislation • Need to address gaps and areas of law which are not clearly defined, such as: - Prioritisation of water resource allocation - Specification of the use of water resources -
Malaysia	• No comprehensive law on WR at national level • Only 4 out of 13 states have enacted comprehensive WRM laws, allowing for the setting up of State Water Management Bodies • New National laws enacted during 2000-2010: - Water Services Industry Act (2006)	• Draft National Water Resources Law is still KIV • Need for states to gazette hill land under the Land Conservation Act • Need to amend Water Services Industry Act (2006) to standardize water tariff
Myanmar	• No specific comprehensive WRM Law • Most existing laws were enacted before 2000 • Conservation of WR and River	• Need to develop legislation for extraction of ground water • Development of laws and guidelines on EIA, SIA, sharing of water rights and water management responsibilities,

	Law enacted in 2006	management of trans-boundary rivers and international waterways • Lack of Enforcement of legislation
Philippines	• No comprehensive national WRM law based on IWRM principles • 3 laws legislated between 2000-2010 addressed sectoral issues: - Wildlife Resources and Conservation Act(2001) - Clean Water Act (2004) - Climate Change Act (2009)	• Survey among Philippines Water Partnership members indicated that "to some little extent" IWRM principles are being implemented through the sectoral laws. However, there is a need for a comprehensive national WRM law that is based on IWRM principles.
Singapore	• No comprehensive law on WRM	• No outstanding legal issues
Thailand	• No comprehensive National Water Resources Law (NWRL)	• Enactment of a draft NWRL was put on hold since 1997 due to political conditions after promulgation of new constitution in 1997. • Work to review the draft NWRL is ongoing.
Vietnam	• Comprehensive Law on WRM enacted in 1998 • Several laws related to WRM address sectoral issues, such as, Law on Environment (2005) • Law on Land (2003) • Law on Forestry (2004) • Law on Fisheries (2003) • Law on Navigation (2004) • Law on Dike-Flood control (2006) • Law on Biodiversity (2008)	• WR law is being revised. • Water-related laws and regulations remained overlaps and gaps. • Need to improve mechanisms for law enforcement

b. INDONESIA

i. Water Legislation Framework

A comprehensive water resources management law was enacted in 2004. The law is a framework document, with details to be elaborated in a series of regulations. The following is an overview of the law:

- **Management focus:** The new act is no longer primarily focused on the construction (development) of water infrastructure and irrigation networks, but on the provision of conditions for sensible, sustainable water resources management and irrigation networks.
- **Integration/river basin approach:** The new act aims to integrate all aspects of water management - surface water and groundwater - with regards to quantity and quality, with the river basin as the focus of the approach.
- **Participation:** The new act encourages openness and stakeholder participation. Social organizations and citizens can participate in all aspects of water development and management – policy preparation, design, construction, operation, maintenance, and monitoring of water quality.
- **Good governance:** The new act seeks to incorporate principles such as effectiveness, efficiency and transparency.
- **Water as a social and economic good:** The new act acknowledges water has both social and economic functions and values. A new emphasis on economics recognizes surface and groundwater as a scarce commodity, needing investment that (at least in principle) must be repaid. Although the government remains responsible for the allocation of water among sectors, the new act opens the door to possible new roles for the private sector.

Following the enactment of the comprehensive water law, water-related regulations were enacted or revised for the following sectors:

(a) Irrigation,
(b) water supply,
(c) river basin management,
(d) water quality,
(e) groundwater,
(f) dam construction

ii. Outstanding Legislative Issues

The following is a list of some of the water regulations that are still needed:

(a) management of swamps,
(b) management of rivers,
(c) management of lakes,
(d) upper watershed and land use management,
(e) sanitation management,
(f) flood management.

c. LAO PDR

i. Water Legislation Framework

The Law on Water and Water Resources (LWWR) was approved in 1996. However, it was only implemented in 2001 when the "Prime Minister's Decree on Implementation of the Law on Water and Water Resources" was issued. The LWWR was formulated based on IWRM principles. It specified in more detail items such as, the ownership of water resources, national and river planning, monitoring and assessment of water resources, water resource allocation according to integrated river basin plans, a specialized funding mechanism, public consultation requirements and watershed protection.

ii. Outstanding Legislative Issues

During the implementation of the LWWR it was realised that there are issues related to incomplete policies and secondary legislation, as well as gaps and areas of the law which needs clarifications. Also, there is a need to specify the priority in water resources allocation and the use of the water resources.

d. MALAYSIA

i. Water Legislation Framework

There is no comprehensive national water resources law in Malaysia. However, four of the thirteen states have enacted comprehensive Water Resources Management laws, allowing for the setting up of State Water Management Bodies. There was a major restructuring of the water services industry in 2006, covering the area of water supply and sewerage, arising from the enactment of the Water Services Industry Act (2006).

ii. Outstanding Legislative Issues

A draft National Water Resources Law was prepared in 2011 as part of a National Water Resources Study which included the preparation of a National Water Resources Policy that was approved by the National Water Resources Council in October 2011. The draft law is KIV at the moment and will provide the basis for follow-up stakeholder discussions on the formulation of a water resources law to support the approved National Water Resources Policy. There is also a need for states to gazette hill land under the Land Conservation Act and the need to amend the Water Services Industry Act (2006) to standardize the water tariff.

e. MYANMAR

i. Water Legislation Framework

There is currently no specific national water resources law. A law on water pollution was enacted in 1860. Most of the existing laws and legislations related to the water sectors were enacted before the year 2000. The law on the Conservation of Water Resources and River Law was enacted in 2006.

ii. Outstanding Legislative Issues

There is a need to develop an appropriate legislation for the extraction of groundwater. Also, there is a need to improve enforcement of the laws. There is also a need to develop laws and guidelines covering the following areas:

(a) EIA, SIA

(b) Sharing of water rights and water management responsibilities
(c) Management of trans-boundary rivers and international waterways

f. PHILIPPINES

i. Water Legislation Framework

There is no comprehensive national water resources management law based on IWRM principles. However, many water-related laws have been enacted over the years before 2000 and also a few have been enacted from 2000-2010 to cover a number of water sectors and also to address water management issues. They are listed in **Table 4.2** below. **Table 4.3** shows the water-related laws and the water sectors that they cover.

ii. Outstanding Legislative Issues

A survey among the Philippines Water Partnership members, for the following IWRM best management practice items, highlighted that to "some little extent" the Philippines is implementing some aspects of IWRM through the various sectorial laws.

(a) National, provincial and local water laws and policies determine how stakeholders play their respective roles in the development and management of water resources.
(b) Basin organizations put up by law have a strong mandate
(c) Laws and water policies spell out rules, responsibility and accountability of public and private sectors
(d) Water management framework should be part of an existing national administrative system
(e) Basin and national water policy management plans should be harmonized.

Table 4.2 Major Water-related Laws in the Philippines

Before Year 2000	After Year 2000
1963 Creation of National Irrigation Administration RA 3601	2001Wildlife Resources and Conservation Act RA 9147
1966 Creation of Laguna Lake Development Authority (LLDA) RA 4850,	2004 The Clean Water Act RA 9275
1971 Creation of Metropolitan Waterworks and Sewerage System RA 6234	2009 Climate Change Act RA 9729
1987 The Philippine Constitution	2007 Repeal of the Electric Power Industry Reform Law. RA 9136
1991 The Local Government Code (LGC) RA 7160	
1995 The National Water Crisis Act (NWCA) RA 8041	
1997 Agriculture and Fishery Modernization Act (AFMA)	
2001 Electric Power Industry Reform Law (EPIRA) RA 9136.	

Table 4.3 Water-related laws and the water sectors covered

Legislated Laws	Irrigation	Fishery	Water Supply & Sanitation	Flood Mgt.	River Basin	Upper Watershed	Water Users	Decentrali-zation
1963, RA 3601 Creation of NIA	✓*		✓		✓		✓	
1966, RA 4850 Creation of LLDA	✓	✓	✓	✓	✓	✓	✓	✓
1971, RA 6234 Creation of MWSS			✓				✓	✓
1990, RA 7160 Local Government Code	✓	✓	✓	✓		✓		✓*
1995 RA 8041 National Water Crisis Act	✓	✓	✓	✓	✓	✓	✓	✓
1997 RA 8435 AFMA	✓	✓				✓		✓
2001 RA 9147 Wildlife Resources and Conservation Act	✓	✓	✓	✓	✓	✓*	✓	✓
2004, RA 9275 Clean Water Act	✓	✓	✓	✓	✓	✓	✓	✓
2009 RA 9279 Climate Change Act	✓	✓	✓	✓	✓	✓	✓	✓

g. SINGAPORE

i. Water Legislation Framework

There is no comprehensive water resources management law in Singapore. Water resources management and supply in Singapore is managed administratively by a single agency, the Public Utilities Board (PUB). PUB is responsible for stormwater drainage, sewerage and water catchment management. It aims to meet water supply demands through its 4-tap or water sources – Singapore's catchment water, imported catchment water (Malaysia), NeWater (treated sewage water) and desalinated seawater.

ii. Outstanding Legislative Issues

There are no outstanding legal issues related to water management in Singapore. The main concern of PUB is on how to get the public to "Conserve, Value and Enjoy" the limited water resources of Singapore through its 3-Pronged (3P) strategy to manage water demand as illustrated in **Figure 4.1** below.

Figure 4.1 Singapore's 3-Pronged Strategy to Manage Water Demand

h. THAILAND

i. Water Legislation Framework

There is no comprehensive national water resources management law in Thailand. A draft water law was prepared under the pre-1997 constitution. With the promulgation of the new constitution in 1997 there is decentralization and devolution of powers for the management of natural resources to the Tambon or district levels. Thus, for almost a decade, the draft water law has been discussed as the basis for institutional reforms for river basin development. However, due to the turbulent political conditions in the country the draft law has not been enacted yet.

ii. Outstanding Legislative Issues

The draft National Water Resources Law is now in "discussion and review" stage. This follows from the criticism the draft water law received from academics and environmental NGOs relating to the water pricing, communal rights, and access to water resources. The critics stated that the law would have negative impact towards the poor and livelihoods of disadvantaged groups. In response to the critics, the term 'water as state property' in an earlier draft has been changed to 'water as a common right of the people' in a later draft. The issue is still ambiguous, and how formal water rights for water users should be arranged in the proposed law is still not clear. Thus, in early 2001, the National Water Resources Bureau has proposed a set of procedures to facilitate the passing of the draft law. Following the procedures, a number of working groups has been set up to work on reviewing and amending the Draft National Water Resources Act, distributing information about it in order to gain public support.

i. VIETNAM

i. Water Legislation Framework

A comprehensive National Water Resources Law (NWRL), based on some aspects of IWRM, was enacted in 1998. The Law reflected the national priority and reality in the 1990s, i.e. flood control and irrigation. Several water-related laws or ordinances were issued after the NWRL, such as the Law on Environmental protection (2005), Law on Land (2003), Navigation Law, Law on fishery and aquaculture, Law on dike and flood control, Law on Electricity. There is thus a need for the NWRL to be revised in order for it to be streamlined with the other laws.

ii. Outstanding Legislative Issues

Generally, there is still lack of awareness of the NWRL and the enforcement is still not very effective. The following are some outstanding legislative issues:

(a) Laws in Vietnam are contemporary laws, which give broad scope and flexibility to further formulation of regulations. In the Law on Water Resources, the provisional powers and mandates have been described and endorsed; however, such provisions still have to be put into practice through the regulation systems to be made by the Government. The issuing of complete regulation systems took time, during which the enforcement is somewhat optional.

(b) Regulations on the water sector are dispersed and scattered in a complex system of legal documents issued by different state agencies. Among these laws and regulations there remained overlaps and gaps which required coordinating mechanisms for effective management.

(c) While policies have been discussed and drafted carefully in laws, there were poor mechanisms for enforcement and operational powers. As a result, although regulations are enacted, implementation is weak.

(d) The successful implementation of the regulatory system requires major reforms and changes in the administrative systems with participatory approach. The current institutional arrangements for water resources management reflect a vertically oriented and fragmented sector approach.

5. INSTITUTIONAL FRAMEWORK

Table 5.1 gives a summary of the outstanding water resources management institutional issues in the SEA Countries. It shows that almost all countries, except for Singapore, still suffer from the lack of effective co-ordination within and between water-related agencies. Another major institutional issue among all the countries is the lack of technical capacity to support effective implementation of IWRM.

a. CAMBODIA

The Mekong River Commission (MRC) plays an important role in supporting Cambodia in managing its water resources. It provides institutional support for studying, researching and coordinating the common action and activities relating to the Mekong river which flows through the heart of the country. The Tonle Sap lake is an integral part of the Mekong river basin system. The Cambodia National Mekong Committee (CNMC) and the Cambodian Water Partnership (CamboWP), and other water-related ministries - MOWRAM, MAFF, MOE, MRD, MPWT, MOH, MEF, PPWSA, TSA and PDOWRAM have their different roles and responsibilities for managing, using and conserving the water resources.

The outstanding institutional issue is to strengthen the MRC so that it can be effective in executing its roles in supporting studies, researches and coordinating common actions and activities related to the Mekong river. There is also a need to establish a national IWRM-based institutional framework for water resources management for the country.

b. INDONESIA

There are 12 sectoral ministries and state ministries that have responsibility for water resources management in the country. They are all represented in the National Water Resources Council that was setup in 2008. Also, in view of the importance of climate change impacts there is also established a National Council on Climate Change chaired by the President.

The outstanding institutional issues are:

1. Regulatory functions and service provision functions of water resources are still intermingle.
2. Law enforcement is not functional; the frameworks for water resources management have not yet been legalized.
3. Most human resources in the water resources sector, especially those in the field, are not professionals.
4. Conflicts of interest among stakeholders, sectors, administration authority and geographical area, e.g. downstream versus upstream interests.
5. Strong sectoral and local interests in water resources and other sectors related to water
6. Lack of participation and inputs from stakeholders in the process of formulation of the framework for water resources management.

Table 5.1 Summary of Outstanding Water Resources Management Institutional Issues in SEA Countries

COUNTRY	OUTSTANDING INSTITUTIONAL ISSUES
Cambodia	• Strengthen the Mekong River Commission (MRC) so that it be effective in its supportive role of carrying out studies, researches and coordinating common actions and activities relating to the Mekong River. • Need to establish a National IWRM-based institutional framework for water resources management.
Indonesia	• Regulatory functions and service provision functions of water resources are still intermingle. • Law enforcement is not functional; the frameworks for water resources management have not yet been legalized. • Most human resources in the water resources sector, especially those in the field, are not professionals. • Conflicts of interest among stakeholders, sectors, administration authority and geographical area, e.g. downstream versus upstream interests. • Strong sectoral and local interests in water resources and other sectors related to water • Lack of participation and inputs from stakeholders in the process of formulation of the framework for water resources management.
Lao PDR	• Sectoral approach in WRM involving a number of Ministries and agencies leading to coordination problems; • Unclear separation of mandate between the Water Resources Coordination Committee (WRCC) and the Lao National Mekong Committee (LNMC); • Committees set up are not provided with the legal powers and capacity to carry out their work.
Malaysia	• No dedicated federal department of water resources to provide the complete scope of technical support to implement IWRM, especially with the constitutional separation of federal and state jurisdictions for the management of water resources. • The National Water Resources Council has no legal mandate since there is no national water resources law. • There is a need for urgent and effective IWRM capacity building.
Myanmar	• Weak coordination and collaboration within and between water-related agencies. • No single authority responsible for controlling the implementation of water resources development works. • Low education level and awareness among workforce in institutions related to WRM
Philippines	• Inadequate institutional, technical and financial capacities • Inadequate and undefined mechanisms for coordination • Unresolved issues for restructuring Central Level Water Authority
Singapore	• No institutional issues since water resources management and services management under the responsibility of one agency, that is, Public Utility Board (PUB) Singapore
Thailand	• An institutional framework at the national level that is provided with legal powers to implement effective coordination among all water-related sectors. • At the basin level there is a need for effective coordination among the different agencies and also to ensure adequate participation of stakeholders.
Vietnam	• Ineffective coordination between water sector institutions • Major challenge in IWRM capacity building to ensure effective implementation of IWRM • Need to ensure effective implementation of river basin management

c. LAO PDR

There are two agencies in Laos responsible for coordinating water resources in the country. They are the "Water Resources Coordination Committee (WRCC)" and the "Lao National Mekong Committee (LNMC)". The WRCC mandate is focus on national water resource management while the LNMC deals with international aspects of managing water resources of the Mekong River. The Lao Government has commenced a rearrangement of the water resource management organizations in 2006 and 2007 by establishing the "Water Resources and Environment Administration (WREA)". The WREA has been created within the Office of the Prime Minister and absorbs the responsibilities of the Science Technology and Environment Agency, the WRCC Secretariat and the LNMC Secretariat. In addition, the Department of Meteorology and Hydrology (DMH) has been transferred from the Ministry of Agriculture and Forestry.

Thus, for water resources management in Laos the apex body is the WREA that was established in May 2007 and is headed by a Minister under the Prime Minister's Office. Within the WREA the departments having the greatest focus on water resources management are the DWR, the Department of Meteorology and Hydrology and the Lao National Mekong Secretariat. These institutional arrangements are relatively new and the DWR and other WREA institutions are in the process of developing their full capacity. Nevertheless, they represent an important and positive development for effective water resource management.

The outstanding institutional issues are:

(a) Sectoral approach in WRM involving a number of Ministries and agencies leading to coordination problems;
(b) Unclear separation of mandate between the Water Resources Coordination Committee (WRCC) and the Lao National Mekong Committee (LNMC);
(c) Committees set up are not provided with the legal powers and capacity to carry out their work.

d. MALAYSIA

Malaysia is a federation of states, where the constitution gives the legal rights to water resources and land to the states. Arising from the water sector reforms in 2006 there is a separation of institutional responsibilities for the management of water resources and the water service sectors. For the water services sectors of water supply and sewerage there is federal co-ordination of services in each state, back by a legal framework, whereas there is no such institutional mechanism for water resources management.

The outstanding institutional issues are as follows:

(a) No dedicated federal department of water resources to provide the complete scope of technical support to implement IWRM, especially with the constitutional separation of federal and state jurisdictions for the management of water resources.
(b) The National Water Resources Council has no legal mandate since there is no national water resources law.
(c) There is a need for urgent and effective IWRM capacity building.

e. MYANMAR

The main institutional problems related to water resources management and use in Myanmar are related to the weakness of coordination and lack of collaboration between agencies within the sector and with those of other sectors. There is also inadequate communication and coordination between the national agencies and authorities. Thus, the following are the outstanding institutional issues:

(a) Weak coordination and collaboration within and between water-related agencies.
(b) No single authority responsible for controlling the implementation of water resources development works.
(c) Low education level and awareness among workforce in institutions related to WRM

f. PHILIPPINES

There are three separate initiatives for IWRM integration in the Philippines. They arise from the following:

(a) National level with the NWRB and NEDA sub-committee on water
(b) Mezzo-level with river basin organizations
(c) Local governments with community watershed organizations

The vertical integration takes two routes. They are:

(a) River basin organizations under RBCO with NEDA sub-committee on water to the NWRB
(b) Watersheds outside river basins that are integrated through local government units to the Regional Development Councils to RBCO to NWRB through NEDA sub-committee on water

The horizontal integration is as follows:

(a) National agencies with NEDA sub-committee on water
(b) 20 river basin organizations with RBCO
(c) RBOs and RDCs
(d) Islands consortium
(e) Provinces integrating watershed organizations

The outstanding institutional issues are as follows:

(a) Inadequate institutional, technical and financial capacities
(b) Inadequate and undefined mechanisms for coordination
(c) Unresolved issues for restructuring Central Level Water Authority

g. SINGAPORE

There are no institutional issues in Singapore since water resources and water services management are under the responsibility of a single agency, the Public Utilities Board (PUB).

h. THAILAND

The institutional structure for IWRM in Thailand comprises of ministries and agencies responsible for policy, planning, and implementation at the national level and local agencies responsible for local operations. There are also national and sector committees established for policy decisions. The National Water Resources Committee (NWRC) and the 25 River Basin Committees (RBCs) are the key decision makers, as they are the institutional mechanism for stakeholder consultation. The Ministry of Natural Resource and Environment (MONRE), especially the Department of Water Resources (DWR), is the lead agency responsible for providing the technical support for water resources planning and coordination in Thailand.

The outstanding institutional issues are as follows:

(a) An institutional framework at the national level that is provided with legal powers to implement effective coordination among all water-related sectors.
(b) At the basin level there is a need for effective coordination among the different agencies and also to ensure adequate participation of stakeholders.

i. VIETNAM

The function of water resources management was preliminarily created in 1994, and then legalized in 1998 when the Law on Water Resources was adopted, with line responsibility then assigned to the Ministry of Agriculture and Rural Development. Four years later, in 2002, the Ministry of Natural Resources and Environment (MONRE) was established; and the water resources management functions were moved to the new ministry. By doing so, the governance system has separated the functions of natural resources and environment management from those management functions related to the exploitation and utilization of natural resources. That was a critical step, consistent with international water institutional practices towards effective IWRM.

However, due to irrational organizational framework, overlaps and gaps in the assignment and decentralization of state management responsibilities, the setting up of full water resources management functions and transfer of responsibilities took another six or seven years before they were fully completed. Thus, the current water resources management institutional system consists mainly of three levels. They are

(a) At national level: Department of Water Resources Management of MONRE
(b) At provincial level: Water Resources Management Section of the Provincial Department of Natural Resources and Environment – an institutional branch of the provincial authority - the Provincial People's Committee.
(c) At local levels, water officials and communities are active in the implementation. In fact mass organizations such as Women, Youth and Farmer organizations are quite active in implementing rural water supply and sanitation programs and in PIM projects.

The outstanding institutional issues are as follows:

(a) Ineffective coordination between water sector institutions
(b) Major challenge in IWRM capacity building to ensure effective implementation of IWRM
(c) Need to ensure effective implementation of river basin management

6. ISSUES AND CRITICAL CHALLENGES

Table 6.1 gives a summary of the threats to water security and the critical areas for investments and governance changes in the SEA countries. A review of the threats indicates that uncontrolled developments of catchments and river basin, water pollution and flood risks are common threats for most SEA countries. Also, the lack of co-ordination among water-related agencies and institutional technical capacity to implement IWRM is also a major concern.

As for the water sectors and areas requiring investments and governance improvement, it can be seen that water supply, water pollution control, irrigation, flood mitigation, hydropower and watershed management sectors are highlighted as priority areas in most SEA countries. Also, investment in IWRM capacity building and in institutional development to support IWRM implementation is also a common area that has been identified for investment.

a. CAMBODIA

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. <u>Burning Issues</u>

1. Urbanization and changed lifestyles, results in higher demand for water and electricity, and higher waste production.
2. Less investment from government agencies in IWRM because it is a relatively new concept for Cambodia;
3. Limited capacity and knowledge of sector stakeholders, including government officers on IWRM;
4. Need to establish a national IWRM-based governance framework.

B. <u>Challenges</u>

1. Implementation of the new water law, which is a framework for administrative decrees to be promulgated in the future.
2. Other important legal documents are still in the drafting stage, such as the sub-decree on river basin management and the sub-decree on water licensing.
3. Knowledge sharing and capacity building among the sector stakeholders, especially local authorities and farmers are very limited since there is no direct capacity building programs or projects for this sector.
4. There is a need to strengthen the management of agricultural lands, headwater areas and aquatic habitats by the provision of some legal or administrative process.
5. Development of tourism in the natural resources areas is limited due to technical and financial capacity of the responsible ministries and lack of interests by the private sector.
6. Effective coordination among respective water-related agencies is still not functioning well.
7. There is a lack of commitment for the adoption and implementation of IWRM from the government agencies.

Table 6.1
Summary of Threats to Water Security and Critical Areas for Investments and Governance Changes in SEA Countries

COUNTRY	THREATS TO WATER SECURITY	CRITICAL AREAS FOR INVESTMENT & GOVERNANCE CHANGES
Cambodia	• Urbanization of society resulting in higher demand for water and increased water pollution. • Less investment from Government Agencies in IWRM implementation • Limited capacity in institutions and sector stakeholders in implementing IWRM	• Water Resources Development • Irrigation • Hydropower • Fishery • Navigation • Ecosystem
Indonesia	• Water pollution • Adverse impacts of watershed degradation • Adverse impacts of untreated municipal wastewater discharge, including industrial and mining effluent disposal • Increasing water demands from the municipal and industrial water sectors	• Water resources development • Irrigation • Water supply • Flood control & management • Navigation • Hydropower
Lao PDR	• Depleting natural resources including water resources • Encroachment in water catchment areas, including forest due to development • Enforcement problems from existing laws	• Development of hydropower • Irrigation Infrastructure • Urban and Rural Water Supply
Malaysia	• Water pollution • Water for agriculture (to ensure food security) • Encroachment into water catchment areas • Impacts of climate change & need to adopt its impacts	• Irrigation management to increase water use efficiency • Pollution management • Adaptation and mitigation of climate change impacts • Green Technology for water (alternative sources, etc) • Capacity building, education and awareness program
Myanmar	• Low irrigation efficiency (40%) resulting in wastage in water resources • Increasing water demand for irrigation sector • Pollution and degradation of watershed areas • Solid waste from urban and rural communities	• Extension services, research and training programs • Water supply infrastructural and treatment plants • Waste water treatment facilities • Education and awareness programs
Philippines	• Lack of attention to and appreciation of water as an ecosystem product and service or the lack of integration of natural systems in all sectors • Decentralized and local water governance without guidance and support • Local Plans are not water sensitive, • Lack of link between flood management	• Ecosystem education and awareness in use the use of ecosystem tools. • Watershed management ✓ Flood management and DSS tools as an integral part of for river basin and

	plans and water resources plans • Non-use of the technology of detaining rainwater for use and to mitigate downstream flooding and coastal water degradation • Watershed degradation	watershed management ✓ Creation of alliances among local government units for watershed management. • Rainwater catchment systems
Singapore	• Increasing demands for water • Dependent on Malaysia for its water resources	• Development of alternative source of water, e.g. NEWater • Adaptation to sea level rise
Thailand	• Flood risks • Increasing water demand especially in the North Central and Eastern region, which exceeded water storage capacities. • Uncoordinated institutional framework	• Water resources development works including additional storage capacities • Negative impacts from upstream development of water resources
Vietnam	• Weak system of water resources management • Preliminary adaptation to climate change • Negative impacts from upstream development of water resources	• Sewerage, pollution and sanitary management • Mitigation of impacts from water resources development • Adaptation to climate change

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Urbanization of society resulting in higher demand for water and increased water pollution.
(b) Less investment from Government Agencies in IWRM implementation
(c) Limited capacity in institutions and sector stakeholders in implementing IWRM

Also, the critical areas for investment and governance changes are as follows:

(a) Water Resources Development
(b) Irrigation
(c) Hydropower
(d) Fishery
(e) Navigation
(f) Ecosystem

b. INDONESIA

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. <u>Burning Issues</u>

1. The most serious threats to water security is bad management, which is reflected in the existence of a big gap between the objectives of the programs and plans and their realization in the fields after their implementation in the last 10 years.
2. Based on a Water Balance study in 2009, it was found that Java and Bali are already water-deficit islands, since the amount of naturally available water has been exceeded by the amount of water demanded by almost all sectors in economy, such as agriculture, industry, settlements and others.
3. The Nusa Tenggara islands are considered in critical condition. Even though the amount of water available in the islands is still larger than the water demand the difference in amount is very small.
4. The water sectors that demand change in governance are as follows: Water resources, Irrigation, Water Supply, Flood control and management, Navigation and Hydropower.

B. <u>Challenges</u>

1. Need a comprehensive natural resources law
2. Need Community Based Integrated Catchments Management
3. Need to implement principles of integrated river basin management
4. Need for consistent implementation of government policies on food security program
5. Need for more sustainable, transparent and equitable inter and intra-sector water allocation and management through a water use rights system, conjunctive use of groundwater, prioritized rehabilitation of river infrastructure and irrigation schemes, and prioritized fund for operation and maintenance of existing irrigation schemes.
6. Need for effective partnership arrangement between central and local governments to give very high priority to increasing the potable water supply to the low income communities that are not adequately served.
7. Need for consistent policy on disaster mitigation management and implement measures to mitigate the societal and economic impact of disasters.
8. Need to implement comprehensive measures to mitigate flood hazard.

9. Need for consistent policy on river transportation and to strengthen existing institution responsible for river transportation.
10. Need to develop an integrated land-water transportation system.

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Water pollution
(b) Adverse impacts of watershed degradation
(c) Adverse impacts of untreated municipal wastewater discharge, including industrial and mining effluent disposal
(d) Increasing water demands from the municipal and industrial water sectors.

Also, the critical areas for investment and governance changes are as follows:

(a) Water resources development
(b) Irrigation
(c) Water supply
(d) Flood control & management
(e) Navigation
(f) Hydropower

c. LAO PDR

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. <u>Burning Issues</u>

1. Threats to natural resources and environment caused by increased socio-economic development and the lack of capacity to manage and maintain the natural resources and environment.
2. For water resources management the specific issues are related to inter-agency coordination, project design and implementation.
3. There are also issues related to small mining development or traditional mining practices of local people, since there is no legal framework for enforcement.
4. The increased development of tree plantations in many parts of the country, such as teak, rubber, paper pulp and others are the main cause of natural forest encroachment, change of land use and soil erosion. These results in the reduction of the diversity of local species and sedimentation of streams and rivers.

B. <u>Challenges</u>

1. Enforcement of legislation is quite limited due to the lack of subsidiary regulations, rules, guidelines and procedures for implementation of the enforcement.
2. Lack of capacity of both national and local institutions to deal with the adverse impacts on water resources and the natural environment arising from the high socio-economic growth rate.

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Depleting natural resources including water resources
(b) Encroachment in water catchment areas, including forest due to development
(c) Enforcement problems from existing laws

Also, the critical areas for investment and governance changes are as follows:

(a) Development of hydropower
(b) Irrigation Infrastructure
(c) Urban and Rural Water Supply

d. MALAYSIA

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. <u>Burning Issues</u>

1. Water pollution (including pollution from livestock)
2. Water for agricultural (to ensure food security)
3. Incompatible land use (encroachment into water catchment areas)
4. Poor water governance and water management (need to ensure sustainable water yield at water intake points)
5. Water for environment (protection of water ecosystem)
6. Impacts of climate change and the need to adapt to its impacts

B. <u>Challenges</u>

1. Irrigation management (to increase water use efficiency through use of water tariff)
2. Pollution management
3. Institutional and legal framework to support water resources management and enforcement
4. Adaptation and mitigation of climate change impacts
5. Green technology for water (alternative sources of water, etc)
6. Investment in capacity building, education and awareness programs
7. Water resources management
8. Irrigation management
9. Sanitation (for the states of Sabah and Sarawak)
10. Flood control and management
11. Navigation
12. Hydropower
13. Water pollution (domestic wastewater, sullage water and non-point sources such as storm water).
14. Environment (protection of water ecosystem)

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Water pollution
(b) Water for agriculture (to ensure food security)
(c) Encroachment into water catchment areas
(d) Impacts of climate change & need to adopt its impacts

Also, the critical areas for investment and governance changes are as follows:

(a) Irrigation management to increase water use efficiency
(b) Pollution management
(c) Adaptation and mitigation of climate change impacts
(d) Green Technology for water (alternative sources, etc.)
(e) Capacity building, education and awareness program

e. MYANMAR

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. Burning Issues

1. Water loss due to bad management, leakage and illegal water tapping.
2. Pollution and degradation of watershed areas.
3. Solid waste generated by urban and rural communities.
4. Impact caused by implementation of infrastructure projects, safety and stability of structure is required.
5. Formation of institutions and assignment of responsibility for water resources and river basin management.
6. Laws, regulations and legislations for water resources management.
7. Pollution control and monitoring.
8. Public participation and awareness programs.
9. Water related health.

B. Challenges

1. Need investment plan for sustainability of watershed areas for main river basins, including extension services, research and training programs.
2. Need investment for data collection and additional works to mitigate against the impacts of climate change.
3. Need to conduct awareness programs and educational programs to increase water use efficiency and to enhance water management activities.
4. Need to extend the water supply metering system and to rehabilitate the water reticulation system in the urban areas.
5. Need to invest in water treatment plants and wastewater treatment facilities to control river water quality.
6. Need to ensure Water for livelihood – (a) water supply and sanitation for people, (b) rainfall and irrigation water for food, (c) water for functions of ecosystems.
7. Need to ensure Water as a resource – maintain surface & groundwater and biodiversity
8. Need to ensure Water for development – Increase investment in the water sector.

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Low irrigation efficiency (40%) resulting in wastage in water resources
(b) Increasing water demand for irrigation sector
(c) Pollution and degradation of watershed areas
(d) Solid waste from urban and rural communities

Also, the critical areas for investment and governance changes are as follows:

(a) Extension services, research and training programs
(b) Water supply infrastructural and treatment plants
(c) Waste water treatment facilities
(d) Education and awareness programs

f. PHILIPPINES

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. Burning Issues

1. Inadequate and/or undefined mechanisms for coordination.
2. Unresolved issues for restructuring central level water authority. Need for capacity to provide the required leadership and support for IWRM implementation.
3. Water sector policies do not have mechanisms for coordination with other sectors (no lateral nodes for integration, except for the Clean Water Act)
4. Lack of recognition and encouragement for existing efforts at other water resources management levels

B. Challenges

1. Inadequate studies and decision-support systems
2. Inadequate engagement of the education sector for research and outreach
3. Inadequate public awareness programs
4. Inadequate understanding of the depth of issues of water resources, particularly at the ecosystems level (natural systems integration)

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Lack of attention to managing water as a product and the water ecosystem services
(b) Decentralized and local water governance
(c) Lack of link between flood management plans and water resources plans
(d) Local Plans are not water sensitive
(e) Watershed degradation

Also, the critical areas for investment and governance changes are as follows:

(a) Irrigation
(b) Floods
(c) Watershed management

g. SINGAPORE

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. Burning Issues

1. Increasing demands for water
2. Dependent on the water resources of Malaysia

B. Challenges

1. Manage weather uncertainties and adaptation to climate change to ensure water sustainability
2. Develop water master plan to meet water needs for the next 50 years
3. Continuous investment in R&D, technology and innovation to increase water-use efficiency and reduce costs

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Increasing demands for water
(b) Dependent on Malaysia for its water resources

Also, the critical areas for investment and governance changes are as follows:

(a) Development of alternative source of water, e.g. NEWater
(b) Adaptation to sea level rise

h. THAILAND

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. Burning Issues

1. Ensure sustainable water resource through watershed protection. Appropriate actions are urgently needed for all the basins.
2. Major land use changes, land conversion, soil and water quality problems. There are big changes in land conversion in most of the upper parts of the watershed areas.
3. Huge loss in forests areas. It is reported that about 33 % of forest cover has been lost during the past 40 years.
4. Ineffective management and protection of wetlands areas have affected local livelihoods.

B. Challenges

1. Land allocation and distribution is the most controversial and difficult issue in land policy. Land reform policy has been delayed for many years. The policy processes and outcome is a result of political and socio-economic negotiation of various social groups.
2. Land and water legislation are fragmented, dispersed and sectored.
3. Conflicts among various stake-holders: different perceptions and practices caused by structures and measures imposed by policies implementation. There is a need for multi-stakeholders processes and conflict management.
4. River Basin Committees (RBC) have been established but the technical and financial supports are insufficient to help them make effective decisions.
5. Flood disasters cause severe damages and loss to products, assets, and lives.
6. Climate change adds another level of uncertainty to the decision-making and will make the conditions more severe.

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Flood risks
(b) Increasing water demand especially in the North Central and Eastern region, which exceeded water storage capacities.
(c) Uncoordinated institutional framework

Also, the critical areas for investment and governance changes are as follows:

(a) Water resources development works including additional storage capacities
(b) Negative impacts from upstream development of water resources

i. VIETNAM

i. Burning Issues and Challenges

The burning issues and challenges identified by the country expert are as follows:

A. Burning Issues

1. Need to strengthen water resources management: Currently, the implementation mechanism is poor and the management capacity is lacking. There is also a need to overcome the fragmentation in the water sectors.
2. Need for sustainable development of water resources: Vietnam has long experiences of water resources development. However, due the increased population and water demands has affected the ecological sustainability of rivers and aquifers since they are not seriously taken into account in project implementation.
3. Need for effective protection of river basin water resources: The concept of water as an integral part of an ecosystem was not mentioned in the 1998 WR law but many water legal documents issued during the past decade have recognized it, and it has been included in the Amended WR.

4. Need for effective and efficient uses of water resources: There is a need for the implementation of "Users pay principles". Sewerage and water pollution treatment need to apply the principle of "Polluters pay". The sanitation sector needs more sector coordination at the national level.
5. Need for improvement of water public information and communication: Civil society have contributed positively to water policy formulation and training, dialogs.
6. Need to enlarge stakeholder participation: National legislation has specified key players and their roles. However, the institutional mechanism to support their roles are not clearly specified.

B. Challenges

1. There is an urgent need to review and update river basin plans and strengthen river basin management. In context of climate change, special plans need to be prepared for new agricultural technique and protection against various forms of water-related disasters, including extreme drought and severe flooding.
2. As a downstream country of the Mekong River, Vietnam has great concerns of negative impacts from the upstream development in the Mekong River. The MRC is a great contribution for regional cooperation and should be strengthened in the context of regional integration.
3. State budget would continue to meet most capital investment and O&M for water supply and discharge/drainage works. However, funds should be secured from loan and equity source for sewerage, pollution treatment and sanitation management projects. There should also be more support given for remote and poor areas.
4. To address the impacts of climate change the focus should be on developing the community's resilience and apply the no-regret investment approach.

ii. Threats to Water Security and Critical Water Sectors

In summary, the most serious threats to water security are as follows:

(a) Decreasing investment in WRD
(b) Negative impacts from upstream development of water resources

Also, the critical areas for investment and governance changes are as follows:

(a) Sewerage development
(b) Pollution and sanitary management

7. COMPILATION OF COUNTRY EXPERT'S RECOMMENDATIONS

The following is a compilation of each country's expert recommendations on the way forward to advance the IWRM vision for their respective countries.

a. CAMBODIA

1. Climate change adaptation and its legal base needs to be put in place and strongly enforced.
2. Extension of the MRC regional cooperation framework needs to increase among each country, with financial and technical support of donors.
3. Extension of the implementation of IWRM pilot projects at the local river basin level should be carried out in a more effective way.
4. Appropriate natural resources management, including participatory water resources management and land use planning tools, should be implemented among the sector agencies.
5. Increased professional dialogues and networking at the national level (CamboWP), Mekong Basin level and the international level (APWF, GWP, and others) about the IWRM concept.
6. IWRM steering committee needs to develop and be effective, from the national to the local level.
7. Ensure the sustainability of hydropower development through identifying sub-basins with high ecological value to be protected, and those where hydropower can be developed with limited social and environmental impacts.

b. INDONESIA

1. To ensure the draft National Policy on Water Resources Management (2011-2030) which has been prepared will get the required endorsement of the President. The policy was formulated in accordance with the Water Resources Law No. 7/2004 which mandated that a National Water Resources Council be setup to develop the Policy for subsequent endorsement by Presidential Decree.
2. To ensure the proposed National Policy on Water Resources Management is comprehensive, as almost all water resources management problems and challenges need to be addressed by it. It also provides policies and strategies for each of problems and challenges.
3. The target of achievements of the strategies and the starting point of implementation of the strategy are explicitly and quantitatively defined. The arrangement is quite good, since the stakeholders and communities could easily monitor the implementation of policy with more accurate information.
4. The Policy needs to be equipped with an implementation plan, monitoring and evaluation measures and remedial measures. This is important since the Policy covers a 30 year period and need to be revised every 5 years.
5. Need to include impacts of climate change as the draft Policy only addressed two major challenges – the Millenium Development Goals and Development of Science and Technology and Cultures related to Water.
6. Need to monitor progress of the National Roadmap for Implementation of IWRM that was prepared covering the topic of (a) enabling environment, (b) institutional framework and (c) management instruments.

c. LAO PDR

1. To achieve the objectives of water security and sustainability there is a need for new policies, legal instruments and institutional framework to support them.
2. The development objective of the Mekong Integrated Water Resources Management Project (M-IWRMP) is to support implementation of IWRM in the Lower Mekong Basin (LMB) through improving the integration of water resources management from the regional level to the community level, taking into consideration downstream impacts and benefits.
3. In order to achieve the above development objective there is a need to:

   (a) Provide implementation tools for integrated water resource and natural disaster risk management, mainly floods and droughts in the LMB countries;

   (b) Improve the institutional capacity for integrated water resources management in selected countries, including strengthening of the hydro-met systems; and

   (c) improve river basin, floodplain management and aquatic resources management

d. MALAYSIA

1. The need to formulate a comprehensive National Water Resources (NWR) Policy (draft has been prepared)
2. The need to formulate National Water Resources Act (draft has been prepared)
3. Proposed Institutional Arrangement to support implementation of the above NWR Policy and Legislation.
4. Capacity Building to support implementation of the above NWR Policy and Legislation.
5. Carry out Research & Development to support IWRM implementation in the country

e. MYANMAR

1. An IWRM plan should be formulated to guide the coordination of development activities.
2. Institutional reforms to facilitate IWRM and implementation of River Basin Management, such as the formation of the Myanmar Water Resources Committee (MWRC) in 2005.
3. Encourage and support capacity building of Community Based Organizations (CBOs), local communities and Non- Government Organizations (NGOs) to develop skills for monitoring and managing resources.
4. Review and adjust laws, rules, regulations and procedures to support enactment of a unified water resources law so as to promote a more effective legal framework for coordination and management of water resources.
5. Strengthen the protection of highland catchments and other critical areas within a river's ecosystem including wetlands.
6. Conduct and promote awareness programs and education campaigns to disseminate local knowledge as effective tools for integrated water resources management.
7. Use of communication media/channels such as demonstration projects, forums, workshops, seminars, specialist groups, publication and training programs.
8. Education programs involving school and other educational establishments such as Mobile Education Unit, institutions and research centers.
9. Develop national water quality standard and wastewater effluent standard and also identify specific responsibilities of focal agencies for monitoring and control.

f. PHILIPPINES

1. Provision for a specific sector mechanism for IWRM coordination,
2. Give attention to watersheds or catchments below 1,000 km2 which is the area for river basin classification and provide coordinating guidelines for areas outside the 20 major river basins.
3. Establish a guideline for LGUs in the integration of water management in its administrative system.
4. Provide quality information and scientific decision support systems for policy formulation.
5. Gaps at the national level coordination may be addressed by high level directives
6. Work towards the economic regulation of water
7. Increase awareness, appreciation and education towards ecosystem services
8. Development and operationalization of the concept of WRM units as nodes of integration.
9. Knowledge sharing platforms including collegial learning among the 20 organized river basin management units in the country and other water management bodies
10. Need for specific guidelines for vertical and horizontal integration at river basins/ watersheds levels.

g. SINGAPORE

1. Singapore takes a holistic approach in water management and put in place a long-term water supply strategy to ensure water for all. Today, water demand is about 1.73 million cubic metres a day. This is expected to double in the next 50 years, with about 70% of the demand coming from the non-domestic sector, and domestic consumption making up the other 30%.
2. By 2020, Singapore will increase its NEWater capacity to meet 40% of the nation's water demand. Desalination capacity will also be expanded to meet 25% of water demand. Through water conservation efforts, the daily per capita consumption of water will be cut from 154 litres to 147 litres.
3. Through diversifying the nation's water supply with NEWater and desalinated water, and by controlling water demand, Singapore will be better prepared to mitigate the uncertainties of climate change.

h. THAILAND

1. There is a need for the existing policy's instruments to be reviewed and amended.
2. Policy research should be undertaken so that the framework for water policy processes is unified.
3. The legislative framework should incorporate indigenous customary law and traditional environmental management procedures.
4. Provision of technical assistance for environmental practitioners in the 'hot spot' areas should be prioritized and implemented.

i. VIETNAM

1. In the IWRM process, getting the water laws policies and strategies formulated are only the preliminary steps to support effective IWRM implementation. They are the enabling and supporting environment.
2. The real test is in the implementation, in which Vietnam is facing major challenges. There is a need for strong political will and continuing efforts of all stakeholders.

8. FINDINGS AND RECOMMENDATIONS

a. FINDINGS

The following is a summary of the findings from the review of the country reports:

A. Water Resources Policy

1. All the 9 SEA countries have specific policies related to WRM sectors, such as, irrigation, water supply and sanitation, river basin management, water quality, etc.
2. Before 2000 Indonesia, Philippines and Vietnam has some form of water policy guiding water management in the country.
3. However, after 2000 most of the SEA countries have formulated a comprehensive national water resources policy based on IWRM principles, or have reviewed their pre-2000 water policies to be more comprehensive so as to incorporate IWRM principles.
4. Only 5 countries so far have developed and adopted a comprehensive water resources policy at the national level (Cambodia, Indonesia, Lao PDR, Vietnam and Philippines). Malaysia has just developed a comprehensive national water resources policy which is waiting for formal endorsement by the Government.
5. A selective review of the progress in formulating and revising sectoral water-related policies during the last decade also indicated that there has been significant progress made in most of the priority water sectors, such as water supply, water pollution control, irrigation, flood mitigation, hydropower and watershed management.
6. There are still several policy gaps that need to be addressed through review of existing policies.

B. Water Legislation Framework

1. All countries have specific laws related the WRM sectors.
2. Before 2000 only Vietnam has enacted a comprehensive National Water Resources Law in 1998.
3. However, since 2000, Cambodia (2007), Indonesia (2004) and Laos (2001) has also enacted and implemented their own NWRL.
4. As for the other SEA countries, work on enacting NWRL is ongoing and for Vietnam there is a need for a review of the 1998 NWRL.
5. Countries that have enacted WRM Laws are having problems in enforcing the laws due to problems such as lack of resources in institutions and lack of political will at both local and national level.

C. Institutional Framework

1. All the Governments in the SEA countries have committed to addressing water-related issues in the form of incorporating elements and components of WRM in their National Development Plans.
2. However, almost all the SEA countries, except for Singapore, still suffer from the lack of effective co-ordination within and between water-related agencies.
3. All countries reported that management of water resources are carried out in a fragmented way through a number of Ministries related to water management and development, except for Singapore.
4. Countries practicing the sectoral approach in managing water resources reported having problems in cooperation, coordination and collaboration among agencies and sectors.

5. SEA countries have put continuous efforts to manage water resources with river basin approach. Experiences on river basin management and river basin organization needed to be exchanged and learned throughout the region and the world.
6. There are also increasing concern over the lack of investments from Governments and donor organizations on WRM and WRD.
7. Also, a major institutional issue among all the countries is the lack of technical capacity to support effective implementation of IWRM.
8. There are good lessons to be learnt from Singapore's experience in managing water demand in the aspect of public participation and water use efficiency.

D. Issues and Critical Challenges

1. A review of the threats indicates that uncontrolled developments of catchments and river basin, water pollution and flood risks are common threats for most SEA countries.
2. Also, the lack of co-ordination among water-related agencies and institutional technical capacity to implement IWRM is also a major concern.
3. As for the water sectors and areas requiring investments and governance improvement, it was found that water supply, water pollution control, irrigation, flood mitigation, hydropower and watershed management sectors are highlighted as priority areas in most SEA countries.
4. Also, investment in IWRM capacity building and in institutional development to support IWRM implementation is also a common area that has been identified for investment.

b. RECOMMENDATIONS

1. The burning issues identified in the respective country reports and highlighted in this report should be highlighted regularly to the respective Government and other relevant Authorities. They should be well supported by facts and data.
2. The CWP of Member Countries should take initiative to prepare Position Papers on the burning issues related to WRM and propose workable solutions for their Government's consideration.
3. There is a need to develop an information database, containing top-level IWRM-related information that can keep track of all major issues related to water bodies, water resources and their use, together with information on the policy, legal and institutional frameworks in the country. This "top-level" information database is different from the operational database used by line agencies to implement and monitor their project work. It will be use to support IWRM decision-making by making top-level information on policies, laws, institutions and water management issues easily accessible by top-level decision makers.
4. The formulation of a comprehensive National Water Resources Policy (NWRP) should be made a priority by those Member Countries that currently do not have such a policy to provide a clear direction for water resources governance.
5. Those Member Countries that have formulated a NWRP some years back should relook and review such policies to ensure that they are current and can take into account future scenarios and new challenges, taking into account water issues that will be impacted by climate change.
6. Member Countries are also required to enact a comprehensive Water Resource Law (WRL) so as to give legal mandate and power to the relevant institutions to plan and implement water resources programs in line with the requirements of the WRP.

7. There is a need to ensure WRL adopt a holistic approach to effective governance of water resources by taking into consideration various aspects related to IWRM.
8. The institutional arrangement for WRM in Member Countries should be guided by WRP and WRL, with the law providing executive authority to the assigned institutions in carrying out the responsibilities to meet the objectives of WRP.
9. More effort should be carried out to strengthen human resources in institutions through capacity building to ensure successful implementation of WRP.
10. There is a need to identify options for the formation of formal and informal sharing of information and collaborative partnership platforms.
11. Existing awareness programmes need to be strengthened to suit the goals of water resources security and sustainability.
12. More efforts are required to be carried out in promoting community involvement and stakeholders participation in realizing IWRM.
13. There is a need to further strengthen regional cooperation framework among Country Water Partnerships.
14. The findings from this study can be used as the basis for funding request to ADB and other regional funding agencies for financial and technical support to GWP-SEA and its regional capacity building partner, such as AguaJaring (SEA), to develop IWRM capacity building programs to address the serious capacity building needs of Member Countries.

Question & Answer

Vietnam

When was the policy and law on Water Resources developed in Vietnam? Is it under the jurisdiction of the Ministry of Natural Resources and Environment? How is the Ministry going to manage getting the various sectors to understand the Water Resources Policy? What is the prediction on rice production as Vietnam is a source of rice for the SEA region? Are there any changes in the irrigation policy?

In 1998, the Vietnam government revised and developed many by-law documents, which has to be adopted by all Ministries. These by-laws are also going through revisions. Vietnam is affected by climate change and sea-level rise, structural and non-structural measures were implemented. Irrigation still plays an important role and has high water demand. Food security is a key problem and affects social security. Vietnam produces rice for world consumption and is in a transition mode. There is now a change in water demand and attention is now given to the ecology.

Thailand

How effective is the River Basin Organisation (RBO) in Thailand? The Water Resource Law was drafted in 1994, when will it be enacted? What are the main challenges that prevent it from being enacted?

The RBOs have enhanced capacity after 6 years to deal with problems in the river basins. 3 RBOs are fully functional in implementing IRBM. The WR Law has not been enacted due to lack of political will and there are many conflicting issues that need to be dealt with which the government does not want to deal with now.

Singapore

What is the significant policy or law that was applied in managing water demand in Singapore? What were the changes in institutional arrangements and policy when Public Utility Board(PUB) was formed? Is there any Water Resources policy and law? How does the Singapore International Water Week (SIWW)connected to IWRM?

In 2001, PUB was formed to put everything related to water resources, water supply and waste water management under one roof – IWRM in Singapore. PUB is under the Ministry of Environment and Water Resources. PUB has very strong political support. Technically, Newater is a simple matter but to get the public to accept Newater, the government had to market it well. Singapore has identified the water sector as the key growth sector, and it will help to create jobs and increase the GDP. A lot of money is invested in technology development and the SIWW is a platform where people get together to discuss policies, solutions and create business opportunities. There is no Water Resources Law, basically the two Actsin managing water in Singapore are the Sewerage and Drainage Act and the Public Utilities Act. PUB is still in the process of combining the two Acts.

Philippines

Is there a National Water Resource Law in Philippine? How does Philippine coordinate water productionand forest production? What is the view on Decision Support System (DSS) and how does it help?

The Philippine Water Code is a model law, approved by the National Water Resources Council. The Forest Management Bureau is responsible for protective forest and production forest. There is no policy which states what percentage is for protective forest and what percentage is for production forest. In the study conducted, concerns came up how much the percentage of forest should be dedicated to protection of river catchment. DSS is needed to look at local knowledge besides looking at the scientific basis. Based on the 1980 Water Resources Master Plan Study Report prepared by JICA, the National Water Resources Board allocates water permits. Information from the Study needs updating to include climate change effects. The agency has no capacity to monitor over-extraction of water.

Myanmar

What is foreseen as the most difficult challenges to move forward IWRM in Myanmar? How does the political system affect implementation? Is there a single policy on water resources or a few separate policies connected to water resources?

Poor public participation due to lack of education at the grass root level is one of the challenges in moving forward IWRM implementation in Myanmar. IWRM is a government policy and is being promoted. Trainings are being held and there is some progress. The government understands what needs to be done in terms of environmental sustainability. The government has recently changed its ministries to take care of environmental issues. The policies are separated into several water sectors and has not been formulated under one single comprehensive water resources policy.

Malaysia

What is the expected timeline in the implementation of the Malaysian National Water Resource Policy and Law? Is there IRBM planning in Malaysia?

There will be roadshows to all the 13 States in Malaysia to brief stakeholders on the draft National Water Resources Policy. The National Water Resources Council (NWRC) will be sitting on 6 October 2011, which is chaired by the Deputy Prime Minister. The members of the Council consist of all the Chiefs of States and Secretary Generals of relevant Ministries. The Department of Irrigation and Drainage (DID), Malaysia is positive that the NWRC will accept and adopt the National Water Resources Policy. After that the policy will be tabled to the Cabinet for endorsement and implementation. Malaysia has achieved significant progress in implementing IRBM. However the IRBM model is not in the true sense of a River Basin Organisation (RB0). Three states have formed state authority that has powers to enforce and collect fees, and it takes care of river basins within the state. There are still problems in financial and human resources which need to be addressed.

Lao PDR

How do you get all the institutions responsible for water in Lao PDR to talk together? Has Lao achieved 100% water supply to all its population? What is the achievementafter the establishment of the Water Law? Is there hydropower development in Lao PDR?

There are eight organisations managing water resources and there are many stakeholders. Lao PDR government has established the Ministry of Natural Resources and Environment to manage water resources. The population has access to clean drinking water. There are many demands on water from different sectors; drinking water, irrigation and environment. The government is currently reviewing the Water Law and is expected to complete in 2013. Hydropower development is still at the study stage, to be follow up with implementation depending on project justification and availability of funds.

Indonesia

How successful is RBOs in Indonesia? What was the role of the public in shaping the National Water Resources Development and Management (WRDM) Policy? How does Spatial Planning fit with River Basin Planning? What is the role of RBO: Administrative or Authoritative?

There are two types of RBO – Strategic and Transboundary.

The RBO is a government enterprise, it collects fees and gets revenue from service fees. Operation& Maintenance is carried out by the private sector. Indonesia is looking at new laws to improve on spatial planning.

Cambodia

What is the stakeholder and community involvement in Cambodia?

At basin level, trainings, dialogues and workshops are conducted to raise awareness among the community. The community participates and form part of the committee on river basin.

Agenda

BANGKOK, THAILAND
21st September 2011

Time	Item	Remarks
09.00 – 09.15	Opening	Opening remarks : • GWP-SEA Chair • Dr. Mercy Dikito Wachtmeister
09.15-10.30	Country presentation: Vietnam, Thailand, Singapore, Philippines	
10.30-11.00	Taking pictures, Morning break	
11.00-12.30	Country presentation : Myanmar, Malaysia, Lao PDR, Indonesia, Cambodia	
12.30-13.30	Lunch	
13.30-15.30	General discussion	
15.30-16.00	Afternoon break	
16.00-16.30	Conclusions and Recommendation	
6.30 –	Closing	

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