

Sustainable Sub-Watershed Resources Management through Participatory Process of Networks and Partners in All Sectors

1. Water management of Thailand is typically regulated and directed using a top-down approach. Over the years, water management has focused on “water sourcing” which entailed investment in huge infrastructure projects and primarily required engineering know-how, whereas fair and equitable “water allocation” through participatory process of all sectors in the society has been ineffective. Water management of the public sector has been overseen by a host of responsible agencies. However, due to overlapping tasks and mandates of these agencies, past water management has not been coherent and well integrated. As a result, support to enhance awareness of water management roles among user groups have been modest and inefficient over the years. Moreover, enforcement of regulations has not been carried out by considering local contexts and issues of water usage at the level of watershed area. For water management structure of the public sector, refer to the main paper’s annex (NHA 4/Main 5/Annex 1).

Definition

2. “Watershed” refers to an area which encompasses natural waterways that collect and channel water into a river. The size of each watershed area varies depending on its geographical terrain and the zoning objectives in water management.¹

3. “Sub-watershed” refers to a watershed that meets the following management criteria:

(1) Suitable size and area: A suitable size and area varies depending on local issues and self-management capacity of local community through a network-based approach. A sub- watershed has a size of a small area within a designated main watershed (25 watersheds). The size of a sub- watershed ranges between 10-50 sq.km. For example, the Kud Kha Keam watershed is a sub- watershed of the middle Mun River watershed (10 sq.km.), the RataPhumi Canal watershed is a sub- watershed of the Phumii watershed (106.88 sq.km.), and the Mae Kom-Mae Parn watershed is a sub- watershed of the Wang River watershed.

(2) Water management built on local wisdom and indigenous knowledge: This is taken to include “giving offerings to headwater spirits” ceremony; “extending life of river” ceremony; construction of “check dams” or weirs (“fai nai luang” or “fai maew”); and development and management of wetlands and catchment areas, and establishment of the so called “monkey cheek”, used as storage of natural water for a time.

(3) Participation of communities and networks in water resources management: means communities and networks have a say in water utilization, water usage in the agriculture sector, water usage in the household, and water usage in a way as to maintain a well-balanced ecosystem so as to ensure secure food sources for communities. It also means communities and networks recognize the value of water, adopt economical water usage, respect nature (soil, water, forest, air), and maintain ecosystem’s balance.

Water management situation in Thailand

(1) Recurrent flood and drought

4. Thailand faces a high risk from severe water resource disasters, that is, flood and drought, as a result of unsuitable and inflexible water management. Over the past decade, total areas affected by flood disasters were as high as 879,310 rais, most of them in the central and northeastern regions.² Moreover, flooding was also caused by channeling of water into low-lying areas and catchment areas to mitigate flooding problems in Bangkok’s inner city. Mostly, catchment areas are in agricultural zones, such as Chai Nat, Singburi, Ang Thong, Phra Nakhon Si Ayutthaya, Suphan Buri, and Pathum Thani provinces as well as lower north areas and the Yom and Nan River watershed areas. Consequently, riparian homes in these areas were inundated by swollen and overflowing rivers. Recurrent drought affected 59,926,411 rais of land, mostly located in the northeast, followed by the north and central regions respectively.³ Drought problems are attributed to improper water management planning.

Year	Freq.	Affected areas				Damage				
		Province	District	Sub-district	Village	Death	Distressed (households)	Number of people	Farming areas (rai)	Cost of damage (baht)
2006	6	58	520	3,432	22,771	446	6,050,674	1,673,822	6,560,541	9,627,418,620
2008	6	65	719	4,813	38,448	113	7,921,127	2,031,943	6,690,655	7,601,796,302
2010	N/A	41	585	3,972	32,423	255	2,035,417	7,142,249	7,684,368	Not yet

*										assessed
*during 10 Oct – 29 Nov										

(2) Quality of water for consumption

5. Water quality problems in Thailand are caused by encroachment of rivers and canals, by polluted water, solid waste, and household sewage released into rivers and canals, and extensive but uncontrolled industrial and agricultural expansion. Moreover, large amounts of fertilizers and chemicals are used but disposal of chemicals is inefficient. Inappropriate technologies are also utilized to facilitate expansion of industrial sectors. As a result, a large number of industrial plants do not have a quality, standard waste disposal system for treatment of industrial waste before releasing into natural waterways. A case in point is the Tha Chin River which is about 320 km. long, surrounded with high-density industrial zones, and contaminated with waste discharged from various sources, including riverside communities, industrial, and agricultural wastes (pig farm and aquaculture pond), which accounted for 30%, 33% and 47% of the total amount respectively. All untreated waste water is discharged into waterways and flows to the estuary near Muang district of Samut Sakhon province. Several canal tributaries became drainage areas of waste water. As for the 122 km. long Bangpakong River (Prachin Buri River and Nakhon Nayok River), which is a source of water for domestic uses and consumption as well as agricultural and industrial uses, it is affected by salt water encroachment. Sometimes the entire river was affected by these problems and salt water might encroach into the area of the Prachin Buri River. Most waste in the Bangpakong River consists of organic waste discharged from communities, industries, pig farms, and aquaculture.

(3) Water allocation: the concept and implementation problems

Water allocation approach of the National Water Resources Board

6. Based on the findings from public hearings of various sectors in 2009, the National Water Resources Board recommended that water allocation policy be reviewed, and **overall water allocation ratios** were prescribed as follows: for agriculture 70%, domestic uses and consumption 8%, industrial sector 6%, and water required for maintaining the ecosystem and water transport 16%. In the process, the **watershed committee deliberated on allocation ratios**, forwarded its recommendation to the

National Water Resources Board, and **prescribed support measures** to enhance effectiveness in implementation, such as zoning classification, deterring expansion of monocrop farming, and expediting the Eco City project.

7. With the foregoing approach, present water allocation practices still lack clarity and has the potential to cause conflicts. For example, in the case of the lower Pa Sak River watershed, the Nong Sang power plant project uses water at a rate of 53,200 cu.m./day for generation of electricity. When comparing this requirement to the overall balance of water uses in the Pa Sak River watershed, where a main objective was to distribute water to agricultural areas totaling 4,334.87 million cu.m. per year, water shortage in the watershed area was estimated at 701.97 million cu.m. per year. This conflict led to the filing of a complaint at the administrative court by representatives of local communities. As for the Prachin Buri – Bangpakong watershed, a water production plant called Nam Sai 304 Co.,Ltd. used raw water from the Prachin Buri River. The company submitted a request letter to the Prachin Buri watershed committee for permission to pump water from the Prachin Buri River during June – September for a period of four months. During the period, the amount of runoff flowing into the Prachin Burin River averaged 4,770.2 million cu.m., and the company requested to pump 7.2 million cu.m. The request has not yet been approved by the committee. The problem here is demand for commercial uses would conflict with demand for other uses. As for the Mae Klong River watershed, in 1992 the Metropolitan Waterworks Authority (MWA) formulated water procurement and production plans that would supply 8 million cu.m. per day until 2017 to meet the demand of around 15.5 million population in Bangkok, Nonthaburi, and Samut Prakan provinces. To produce this amount of water supply, water must be drawn from raw water sources in the Chao Phaya River (5 million cu.m.) and the Mae Klong River (3 million cu.m.), totaling 8 million cu.m. per day.⁴ These three cases shed light on problems and conflicts which stemmed from confusion and ambiguity of the water allocation approach, which is regarded a key problem in present water management.

Water resources management issues

(1) Issues concerning water resources management plan and policy: Such plan and policy are still incoherent and cannot be implemented to produce concrete outcomes. They indicate only the vision of the national water policy, but strategies were not

formulated, and management plans at national and watershed level were not executed efficiently.⁵

(2) Issues concerning structure of the organizations managing water resources: The structure of water management organizations is characterized by inequality and overlapping work. Execution and cooperation have been poorly coordinated and inefficient. Numerous government agencies under various ministries are responsible for resolving water resource problems. Some ministries do not regard these as their main missions, and some agencies are mandated to perform many kinds of tasks and pursue several objectives.

(3) Issues concerning water resource laws

8. The Water Resource Act is a document that elaborates state policy most clearly. It is a draft law prepared by the Ministry of Natural Resources and Environment which was approved in principle by the cabinet and reviewed by the Council of State in 2007. However, it has not been endorsed by the parliament. In the meantime, the Department of Water Resources has been reviewing and amending the water bill for further deliberation by the cabinet.

9. This water resource bill focuses on the creation of an organization, that is, the National Water Resource Board, whose mandate is currently only stipulated in the Prime Minister's Office regulation.

10. (Example) An important chapter is Chapter 2 Rights to Water

Section 8 in this bill stipulates that water belongs to the general public. Individuals have the right to use water as deemed necessary and appropriate, but it does not elaborate what the word "appropriate" means. But Section 45 on Water Allocation does say that use of water from public water resources is categorized into three types as follows:

1) Type 1 water usage includes uses of water from public water resources for sustenance of life, domestic uses and consumption, farming or subsistence livestock, household industries, and uses of water in small amounts as set forth in the ministerial regulations.

2) Type 2 water usage includes uses of water from public water resources for farming or commercial livestock, industries, tourism, power generation, production of water supply, and other enterprises as set forth in ministerial regulations.

3) Type 3 water usage includes uses of water from public water resources by large enterprises that consume a large amount of water or that may cause impacts on other river watershed areas or affect a vast area, as set forth in ministerial regulations. (Source: Issue-Based Reform Assembly Committee)

(4) State agencies lack the information required for sub-watershed ecosystem management (kind/type of information or data)

1) Information is scattered among several agencies and information is often conflicting.

2) Information is varied and not systematically categorized and harmonized under the same standard making it difficult to use.

3) Lack of linkage and connection of complete, updated information

4) Lack of expert personnel

5) Lack of data system center and a body of knowledge on national water resources

6) Problem of lack of integration and participation in management by the stakeholders, both in the public and private sectors, by local administrative organizations, and by the relevant civic sector.⁷

Key data available to and used by various agencies	Key data available to and used by communities and networks
1. Hydrological data	1. Local ecological data
2. Data used for weather forecasting	2. Data on Needs for water
3. etc.	3. etc.

(5) Lack of common rules, regulation, and collaborative agreements in the work

11. A study conducted on the water resource bill suggests that the bill focuses only on water management rules under crisis situation. However, prescription of rights to water without specifying which group has priority of use could not solve problems, as seen in the case in Rayong province. Moreover, this bill also overlooks how important

water is to an ecosystem. In other words, it provides no assurance of water use in a way that maintains an ecosystem, such as pushing saline water out, water management for flora and fauna, as well as for sustenance of wetlands and wild flora and fauna species.⁸

Guideline for efficient water management of sub-watershed ecological areas (presently still not acceptable in terms of management mechanism, policy and legislation)

12. Water management approach used by civic sector networks can be traced back to traditional water management based on using the prevailing structure of relations within the community. Such approach emphasized integrated management of sub-watershed ecological areas. The approach is based on a negotiation process among the local groups which have support in the community. The organizational structure is informal. Under this approach, water allocation and rights of user groups to access water resources are determined by a negotiation process based on social relationships that recognize the rights of the user groups on a collective basis, rather than an individual basis.

Examples of formulation of health statute pertaining to watershed base

(1) Northern region – Wang Watershed Statute, Lampang province (local wisdom/innovation)

13. The Wang River watershed, which covers an area of 10,791 sq.km., is a small river watershed and covers the shortest distance of the Chao Phraya River. The 460 km.-long river originates from the Phi Pun Nam mountain range near Doi Luang peak in Ban Pa Hung, Phan district, Chiang Rai province.

14. Development of the 1st Wang Watershed Statute, B.E. 2554 (2011): The development of this statute involved participation by all concerned sectors in Lampang province, including civic, civil society, public, political, and local administrative organization sectors as well as universities and schools in Wang Watershed area within Lampang province. Objectively, the statute was designed as a tool for setting rules and regulatory frameworks for communities, relevant state agencies, and partners so that they would be used as measures for conservation and rehabilitation of natural resources and environment in the Wang Watershed areas in Lampang. They cover upstream areas in Phan district of Chiang Rai province, mid-stream areas in Lampang province, and downstream areas in Tak province. The statute consists of seven chapters – Chapter 1: Philosophy and Concept of the Wang Watershed Statute; Chapter 2: Basis of Conservation, Rehabilitation, and Fertility of Upstream Forest Areas; Chapter 3: Education and Capacity Building of Watershed Residents; Chapter 4: Community Rights and Coexistence of Watershed Residents; Chapter 5: Social Aspects and Lifestyles of

Watershed Residents; Chapter 6: Participatory Management of the statute; and Chapter 7: Wang Watershed Statute Office.

(2) Northeastern region – Mun River watershed

15. The Mun River watershed, which covers an area of 69,701 sq.km., is located in Ubon Ratchathani province. Typically, houses perch on hilltops and nestle in valleys that look like ripples, and small paddy fields are divided by earthen ridges row after row. This area enjoys sufficient water supply but lacks suitable knowledge on water management. So, villagers pulled together to tackle water management issues affecting their farming. Their **water management approach** called for water storage in every low-lying paddy field, then almost all households pump water into the fields. However, the **problem** is the resulting higher cost. To **solve** this problem, a new system was laid out and the grounds were raised higher and dykes were built to reserve more amount of water on those higher grounds over the paddy fields. Then water pipes were laid underground to channel water down into paddy fields. This practice, so-called “**leaked monkey cheek**,” helped reduce water pumping cost. The cost of water pumping technique that pumps water from low-lying grounds was compared to this latter practice which cost less. The pipe-laying cost is cheaper than the water pumping cost. In addition, a new planting system that distinguishes between plants that need a lot of water and plants that require less hydration was also introduced so that cultivation of plants is in accord with available water supply and characteristics of farmland terrain.

(3) Southern region – Phumii Watershed Statute in Songkhla province

16. The Phumi Watershed in Songkhla province covers an area of 420 sq.km. A **Phumi Watershed Statute, First issue, B.E. 2553 (2010)** was arranged with participation by all pertinent sectors in Songkhla, including the people sector, civil society, state agencies, politicians, local administrative organizations as well as universities and schools in Phumi Watershed areas. The statute was designed as a tool for setting rules and regulatory frameworks for the communities, relevant state agencies, and partners to use as measures for conservation and rehabilitation of natural resources in low-lying areas. The statute consists of seven chapters – Chapter 1: Philosophy and Concept of the Wang Watershed Statute; Chapter 2: Basis of Conservation, Rehabilitation, and Fertility of Upstream Forest Areas; Chapter 3: Education and Capacity Building of Watershed Residents; Chapter 4: Community Rights and Coexistence of Watershed Residents; Chapter 5: Social Aspects and Lifestyles of Watershed Residents; Chapter 6: Participatory Management of the statute; and Chapter 7: Wang Watershed Statute Office.

Issues for consideration by the National Health Assembly

It is requested that the National Health Assembly consider the document Health Assembly 4/ Draft Resolution 5.

References:

- ¹ Prime Minister's Office Regulation Re: National Water Management in 2003
- ² Research and Development to Combat Desertification and Early Warning Institute, Land Development Department, 2006
- ³ Office of Land Use Administration and Development, Land Development Department, 2006
- ⁴ Phu Jad Karn magazine, 1992
- ⁵ Department of Water Resources
- ⁶ Department of Water Resources
- ⁷ Department of Water Resources
- ⁸ Issue-Based Reform Assembly Committee