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Status of Institutional Reforms for Integrated Water Resources Management in Asia: Indications from Policy Reviews in Five Countries

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International Water Management Institute

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Contents

Abstract

Case studies were conducted in five selected Asian countries on their water policy reform initiatives. Of the five countries, China stands out as the country that has derived the most from on-going global efforts in promoting water sector institutional reforms and the concept of integrated water resources management (IWRM). China has emerged as the leader in adapting these concepts to suit the context of the country. Advanced stages of water development in many parts of the country and increased water shortages due to rapid economic development have prompted China to forge ahead in the search for institutional solutions to make the water sector more productive, and the management of water resources more sustainable. In the other selected countries, efforts to replicate the models of developed countries without much adaptation and due reference to their stages of development have generally failed.

The dominance of irrigation within the water sector and the informality of the economy related to water in these countries seem to make the application of prescribed IWRM principles rather unfeasible. The lesson to be drawn from policy reviews of the five countries is that effective water institutions are not static systems, but are adaptive and dynamic institutional developments compatible with the local context, particularly with the structure of the overall economy of the country and its water sector.

INTRODUCTION

This paper is based on a study of Asia's water sector institutions[1]. The main objective of this regional study was the development of a set of action plans for effective water management institutions in a number of selected Asian countries. The study concluded that there was no single best institutional model to satisfy all situations. Institutional requirements for water management vary depending on a number of environmental conditions, which are mainly determined by the stage of development of the country's water sector. Institutions evolve depending on the water-related issues that the sector faces, as the water resources are gradually developed and utilized. Thus, effective water sector institutions are basically demand driven.

Along with initial diagnostic investigations and action-plan development[2], an effort was made to assess the current status of water sector policy and institutional reforms. The basin studies were helpful in identifying some of the policy and institutional deficiencies, but were not adequate to have a firm grip on what was lacking, and what was being planned and implemented in each country in terms of water sector reforms. To supplement basin-level investigations and related analyses, five international consultants were involved in developing water-sector policy-analysis reports for China, Indonesia, the Philippines, Sri Lanka and Thailand[3]. George E. Radosevich[4], Theodore Herman[5], Wilfrido C. Barreiro[6], V. K. Nanayakkara[7] and Lien Nguyen Duc[8] prepared policy analyses reports for these five countries, respectively.

Each consultant was required to analyze the country's efforts, successes and failures in introducing institutional reforms in the water sector. Particular attention was to be on the country's efforts in installing appropriate policies, laws and other necessary institutions for integrated water resources management (IWRM) in the country. Their task was to identify particular conditions that enabled or inhibited the successful implementation of policy intentions, and also comment on

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[1]This was a multi-country study on "Developing Effective Water Management Institutions", conducted by the International Water Management Institute (IWMI), with support from the Asian Development Bank (ADB). Action plans for water sector institutional reforms were to be developed on the basis of information derived from a series of physical and institutional analyses associated with selected river-basins: Fuyang basin in Northern China, Ombilin sub-basin in West Sumatra in Indonesia, East Rapti in Nepal, Upper Pampanga in the Philippines, and Deduru Oya in Sri Lanka. In August 2001, Thailand was added to the study, which provided two more river basins, Mae Klong and Bang Pakong, for a rapid appraisal. The study also included three case studies on river basins which had reached an advanced stage of development and management: Murray-Darling in Australia; Omonogawa in Akita Prefecture, Japan; and Brantas in East Java, Indonesia, as illustrative of best practices.

[2]Analyses of water sector institutions were conducted by studying the structures of existing institutions related to water management in river basins, and the environment within which these structures were embedded. The methodology used for this regional study was outlined in IWMI Working Paper 5 (Bandaragoda, 2000), and predicted a more sophisticated research paradigm proposed in a subsequent IWMI publication (Saleth, 2004).

[3]Political situation prevailing at that time prevented the mobilization of an appropriate expert in Nepal.

[4]Consultant on legal and institutional aspects of water, and related resources development and environment management, Resources Administration and Development Inc., USA.

[5]Formerly of World Bank staff, Indonesia.

[6]Freelance consultant, former World Bank Program Officer, Water and Sanitation, International Training Network for Water and Waste Management.

[7]Former Chairman, Water Resources Council, Sri Lanka.

[8]Freelance consultant, former Program Officer of the Mekong River Commission.

the appropriateness of the chosen policies, relative to the desired objectives of IWRM. The five consultancy reports on policy reviews were reproduced in full in IWMI's final report on the study[9].

The paper first outlines some key findings of the regional study that is relevant to the theme of this paper, and then proceeds to synthesize the policy analyses presented in the five consultancy reports. The main purpose of the paper is to place a synthesis of these consultancy reports in the public domain.

OUTCOME OF THE REGIONAL STUDY

The regional study was designed and conducted in the backdrop of increasing international pressure to promote integrated water resources management (IWRM). By the early 1990s, the concept of IWRM along with the idea that the river basin should be the basis of its implementation had been widely disseminated among the water professionals. The term IWRM implied "*an inter-sectoral approach, representation of all stakeholders, all physical aspects of water resources, and sustainability and environmental considerations*" (Savenije and van der Zaag, 1998). The definition of IWRM that came to be popularly known, however, was the one given by the Global Water Partnership (GWP), which embraced the two broad conceptual bases of improved water resources management formulated in the international conferences, namely, "integration" and "sustainability". Accordingly, IWRM is seen as "a process, which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (GWP/TAC, 2000). It should be noted that, as it has been defined, the concept of IWRM does not seem to demand a specific institutional arrangement such as the river basin organizations, despite the fact that they are often prescribed along with IWRM.

Stages of Water Resources Development[10]

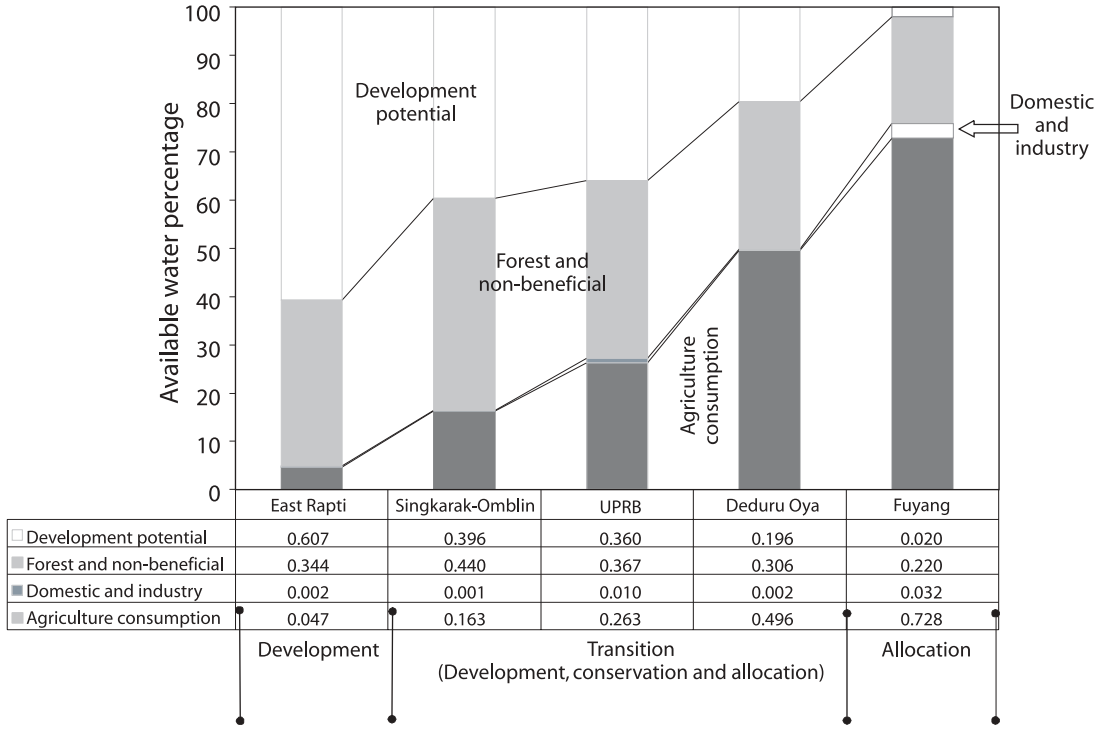
The analysis of the physical and socio-economic aspects of the five selected river basins during the initial phase of the regional study led to a broad classification of development processes within the river basins. Particularly, the water accounting component of the study was helpful in understanding that the stages of water resources development and the institutional development for water resources management were correlated (Sakthivadivel and Molden, 2002). The data derived from the early part of the study helped identify the stages of development and the potential for further development in each selected river basin (figure 1).

In the typology, the East Rapti river basin in Nepal was seen as an "open basin", with a great potential for further development relative to the other basins. The Fuyang basin in China, with very little potential for future development, was recognized as a "closed basin". The other three basins fit in-between these two extremes, as indicated in figure 1, and display varying stages of development and levels of water scarcity. The Upper Pampanga basin is relatively well endowed with water, whereas the Deduru Oya basin in Sri Lanka is seasonally water-scarce, especially

[9]The five consultancy reports on policy review case studies are reproduced in Volume V of IWMI (2003). Summaries of these five case study reports are given in Annex-1 of this paper.

[10]This section benefited from the analyses presented in Molden and Sakthivadivel (1999), Samad (2002), and Samad (2003).

Figure 1. Basin water use and development potential.



during the peak of the dry season when there is hardly any river flow. It is also spatially water-scarce, especially in the midstream region of the basin that is predominantly in the drier region of the basin. The Ombilin sub-basin located in the upper reaches of the Inderagiri river basin in West Sumatra, Indonesia, is still an "open basin." But, while there is inter-sectoral competition for water, there are also intra-sectoral water-related conflicts.

Theoretical Construct Arising From the Diagnostic Phase of the Study

As a generic situation of river basin development, three broad stages of development were identified: infrastructure development, utilization and allocation (figure 2). It is argued that, over a period of time, institutions must change their focus from the development of infrastructure, to the better utilization and conservation of water resources during the utilization stage, and lastly to the improvement of allocation and regulation of water resources (Samad, 2003).

Development Stage

In the infrastructure development stage, usually there is no shortage of good quality water. However, the gradually increasing demand drives the need for development of infrastructure to utilize the resources. At this stage the institutions are geared for infrastructure development, generally focused on a single sector (Irrigation; municipal and domestic supplies etc.). As the water resources of the basins are developed further, the sectoral institutions expand their functions to address the emerging inter-sectoral competition for water. Of the countries studied, Nepal, as typified by the case of East Rapti river basin, is in this development stage.

Utilization/Transition Stage

In the transition or utilization stage, a significant development of infrastructure has taken place. Although there are opportunities for further development, the cost-effective actions such as water conservation and saving, improved management of water deliveries, and maintenance and management of already-built structures are implemented to make the best use of the already developed facilities. In this phase, managing the supply of water for various uses is a primary concern. Pollution and water scarcity are localized issues, but they begin to emerge as major concerns. Institutions continue to be concerned primarily with sectoral issues, such as managing irrigation water or managing supplies of drinking water. In many situations, environmental issues exist but they are not adequately recognized at this stage of development. Sri Lanka, Indonesia, Thailand and the Philippines have qualified to be in this stage according to the regional study.

Allocation Stage

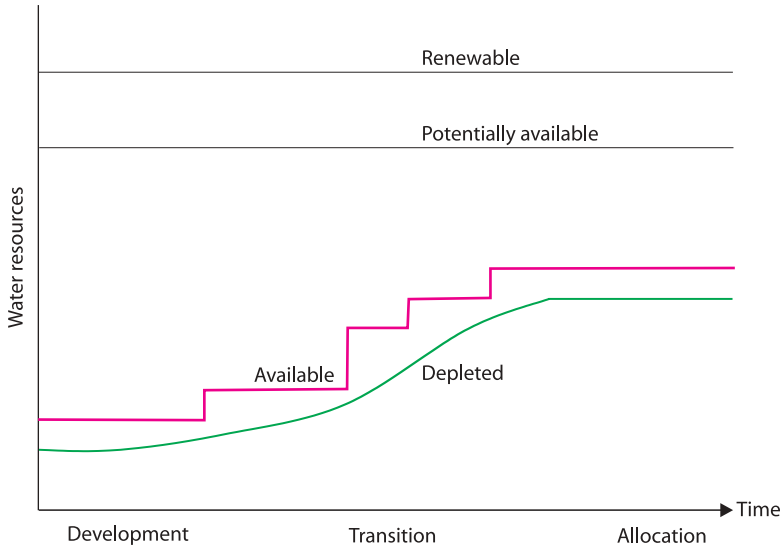
In the allocation stage, most of the river basins in the country reach closure, and depletion approaches the potential available water, with limited scope for further development. Efforts are placed on increasing the productivity, or the value of every drop of water. An important means of accomplishing this is to reallocate water from lower to higher-value uses. Managing the demand becomes increasingly critical. Construction of infrastructure is limited to those that aid regulation and control. Institutional issues concern allocation, conflict resolution, regulation, pollution prevention and environmental preservation, or restoration. Several important management and regulatory functions gain prominence, including inter-sectoral allocation. Coordination becomes important, involving significant transaction costs. Either a single entity emerges to effectively carry out these functions or several interlinked organizations may manage these functions in a given river basin. Single and interlinked river basin organizations may be seen in the case of the Brantas Basin in Indonesia, and Murray-Darling in Australia, respectively. The case of Fuyang as a typical river basin in China shows that the country has reached this stage of water resources development.

Key Concerns at Different Stages of Development

Institutional concerns evolve with the stage of development. These concerns may exist in the basin during all stages but their importance or emphasis may change over time as the basin develops, as illustrated in table 1.

In many instances, institutional transformation is conceived and put in place to tackle a whole range of issues simultaneously: pollution, poverty, allocation, regulation and construction for new development. Depending on the various stages of development of a river basin, some of these issues are not major concerns, and hence institutions concerning these issues become dormant and obsolete. It may be inappropriate to force premature development of institutions irrespective of the contextual needs. Institutions for the management of water resources must adapt themselves to meet different challenges as patterns of water use change. A key feature of an effective institutional design is the adaptability to accommodate changing needs.

Figure 2: Stages of water resources development.



Note: This figure is adapted from an analysis in Samad (2003:227)

Table 1. Key concerns at different stages of development.

Development	Utilization	Allocation
Construction	Improving O&M services for better water use	Shifting to higher-value uses
Managing supply distribution	Investing in O&M and managing through both supply distribution and demand management	Managing demand
Low value of water	Increasing value of water	High value of water
Large structures	Modernization and rehabilitation, recycling of return flow, water harvesting	Measurement and regulation
Utilizing groundwater Diluting pollution	Conjunctive management Emerging pollution/ salinity	Regulating groundwater Cleaning up and preventing pollution
Fewer water conflicts	Conflicts within systems	Conflicts between and among systems
Economic water scarcity	Localized water scarcity, river encroachment	Physical water scarcity
Water data not so important	System water delivery data important	Data on basin-water accounting important
Stakeholders excluded in decision-making; poor water-related services	Management transfer in irrigation systems, involving stakeholders in decision-making	Service orientation in water distribution
Developing new water resources with less emphasis on environmental needs	Agricultural, domestic and industrial pollution, off-site effects, water-logging, drying of wetlands	Allocating water to environment
Problem of poverty; poor excluded from development	Poor people not involved in decision-making	Pro-poor interventions; poor are the main beneficiaries

POLICY REVIEWS IN FIVE ASIAN COUNTRIES: A SYNTHESIS

As might be expected, the challenges related to water in the five countries were found to be basically similar. Central to the common challenges was the problem of growing water shortages under increasing population pressure, exacerbated by advancing urbanization and increasing industrialization. Consequently, competition among different water uses has increased, resulting in the degradation of water quality and unabated environmental damage in catchment areas.

Various international and national efforts have been able to sensitize the water sector stakeholders in all of these countries to varying degrees on the need for a holistic approach to address the challenges in the water sector. In addition to local situational compulsions, it is quite apparent that the new global awareness on sustainable growth approaching a peak with the Rio Earth Summit[11], has reached all these countries. Donor agencies have also played a crucial role in encouraging the policy level stakeholders in adopting new strategies for improved water management. All of the five countries needed (and perhaps would continue to need) some persuasion, but China and Indonesia appeared to have realized fairly quickly the need for institutional reforms towards IWRM. Some others have tried to adopt the concept without fully internalizing its real meaning.

A process towards accepting the need for some form of water sector reforms is under way in all countries, and a pattern emerges on the following elements of water policy, which form the basis of IWRM:

- River basin to be the unit of planning and management—The prescription does not seem to have been yet convincingly translated to practice in any of the cases.

- The need for a high-powered apex body for policy coordination and monitoring of implementation—Almost all are beset at present with a multiplicity of agencies with overlapping and/or conflicting jurisdiction, with the intended apex body in most cases yet apparently a distant dream.

- Introduction of participatory management at the lower end of the service provision spectrum, leaving secondary or tertiary segments of irrigation schemes to be managed by farmer organizations and small rural water supply schemes to be managed by community based organizations—Sri Lanka has achieved some positive results in this regard.

- A key feature related to subsidiarity that emerges from initial river basin studies, and is supported by policy reviews conducted later during the study—In all countries, attempts have been made to foster greater farmer participation in O&M of irrigation systems; China has introduced far-reaching institutional reforms in the groundwater sector with de-collectivization of the groundwater systems and transferring them to private ownership and management, while the management of surface irrigation systems has been vested with the local government authorities. In other locations, individual owners manage lift irrigation systems, both river lift and groundwater systems, except in Nepal, where the larger systems

[11]The Dublin Conference (International Conference on Water and Environment) and the Rio Conference (U.N. Conference on Environment and Development), both held in 1992, and the Second World Water Forum and the Ministerial Conference held in the Hague in 2000, were the key international initiatives on water that led to the formulation of reform packages involving IWRM.

are under joint management by Water Users' Association and Irrigation Agency. In Sri Lanka, minor surface irrigation schemes are managed by farmer organizations.

- Bringing in the private sector for the sake of anticipated operational efficiency, and perhaps more importantly, as a means of bridging the gaps in investment resources and operation and maintenance funds -- Except for some schemes in the Philippines, including the supply system for Metro Manila, the policy review reports do not highlight any successful private-sector schemes in operation.

- The need for water allocation and clear water rights—The principle is accepted by all, but some countries such as Indonesia and Sri Lanka seem to hesitate to introduce the regime fully; all countries acknowledge the justification for allocation that water as a scarce resource must be equitably distributed among competing uses in a way that will maximize the value of the public good, and that an institutionalized allocative mechanism is necessary as market forces do not come into play readily as the ownership of water is not seen as that of an ordinary commodity.

- The need for charging an economic price for water (which seems to be recognized by China) and the need for cost recovery in the case of all water services—The cost-recovery principle has been accepted by all subject to various caveats, but countries other than China do not seem to have finally decided yet regarding the implementation mechanisms, mainly because of the political sensitivity of the issue, whereas, regarding irrigation water, a compromise attempted in some countries such as Sri Lanka, the Philippines and Thailand is to allow the minor schemes and the secondary/tertiary segments of major schemes to be managed by farmer organizations which may appropriately levy an irrigation service fee and utilize it for operation and maintenance.

- The need to give some form of relief to less affluent communities in rural as well as urban areas, so that participation of all stakeholders could be obtained—Some countries such as Indonesia and Sri Lanka recognize a need to refrain from recovering the full cost; in the Philippines, the accepted policy is to charge the full cost in urban areas, with some cross subsidization to levy a partial recovery of costs from urban low income communities as well as rural areas. The predominant attitude in all the countries is that the small farmer and low-income city dweller should be entitled for special treatment in the matter of cost recovery, and further, in the case of the small farmer, the social consideration should be buttressed by the socio-economic consideration of not jeopardizing food security by unwelcome interventions.

The concept of the state ownership of water, which China and the Philippines have adopted unequivocally, would no doubt have reduced the conceptual problems in regard to state intervention in the sphere of water-resources in these countries. Sri Lanka's policy declaration also embraces the concept of state ownership of water.

Where the political will was readily available (e.g. China and Indonesia), the introduction of reforms started to have a smooth passage: conversely, other countries had to face the apathy and barely concealed hostility of higher echelons in the political and administrative hierarchy, who feared the loss of power and rent seeking opportunities implicit in some reform measures. Overall, the initial attempts in all countries were to modify the general framework of IWRM-related reforms

to suit their particular socio-economic and political contexts. Wherever these efforts confronted some political obstacles, such as in the Philippines and Sri Lanka, there seemed a tendency either to implement the prescribed IWRM package as a whole, though with little success, or to reject the concepts totally, just as throwing the baby away with the bath water!

In the typology that emerges out of the five-country situation, China appears to be the country that has achieved the most from the recent global efforts to promote water sector institutional reforms. The Indonesian case is characterized by a number of Presidential decrees to formalize some of the reform measures, and this ready support from the highest level of the country's political system helped the country to have the necessary legal framework in place. But, the layers of political authorities in the form of Districts, Provinces and the Center seem to have delayed the implementation processes. In 1978, the Philippines was the first country to adopt the necessary legal provisions and establish an apex body to coordinate water allocations for different uses. However, due to the continued independence enjoyed by the individual water user groups, and the relative dominance of the irrigation authorities, newly introduced coordinating arrangement has not been an effective instrument to move towards IWRM in that country. Sri Lanka has made considerable efforts to develop the necessary policy framework, but mostly due to lack of proper communication between the planners and the stakeholders, the proposed reform package was not acceptable to the local stakeholders, and the draft bill had to be kept in abeyance. Thailand's water sector has proceeded along in establishing the basic institutional structures necessary for IWRM, but again, the implementation of the management system for IWRM is slow due to the dominance of a few water use sectors. Table 2 below provides a summary of the key features of the policy frameworks of the five countries.

WHY HAVE THE IWRM REFORM PROCESSES SLOWED DOWN IN ASIA?

A survey of the water-sector institutional scene of the selected countries showed that basically, three main inhibitive features would characterize the present situation of complacency in adopting IWRM:

- Dominance of the irrigation sub-sector.
- Fragmented policies and laws for water resources management.
- Mistrust among national stakeholders regarding the policies on water pricing and private sector participation recommended by donors and professionals.

Dominance of Irrigation in Water Resources Development and Management

All the five countries, covered under the study, have had irrigation as a major economic activity for a long time. The dominance of irrigation pervades many aspects of water resources management such as resource mobilization for the water sector, the political value base in the sector, projects and programs for water resources management, and the boldly expressed bias of local institutions towards irrigation. The strong irrigation sub-sector tends to discourage the introduction of reforms aimed at integrated water resources management and the creation of coordinating mechanisms to allocate water equitably to all water user groups.

Table 2. Key features of the current water policy frameworks of the five countries.

	China	Indonesia	Philippines	Sri Lanka	Thailand
Acceptance of IWRM	Along with adoption of Agenda 21 by China in 1994	With adoption of the Reform Agenda in 1999	Formally with the adoption of the 2001-2004 development plan; slow process of putting it to practice	With the adoption of National Water Policy by the cabinet in 2000	With the adoption of National Water Vision
Enabling legal framework	Water Law of 2002 and supportive legislation for environmental protection	New Water Law awaiting parliamentary approval	Pre-1978 Water Code as amended from time to time	New Water Law awaiting parliamentary approval	Draft Water Law in gestation for several years
Other institutional arrangements	River basin management agencies, along with sub-national politico-administrative units for planning and management; and establishing supervision, monitoring and dispute resolution systems	Reform Agenda adopted in 1999, National Water Policy; National Water Council as apex body for policy coordination, promoting river basin based water management systems, inclusion of non-governmental stakeholders in such systems, regional autonomy and revenue sharing framework, and incentives for private sector participation	Promotion of river basin based planning and management, an integrated strategy to cover all water uses and environmental concerns	National Water Policy adopted in 2000; Water Resources Council and an Interim Water Resources Authority, promoting river basin committees and an integrated approach based on watershed/ catchment management	National Water Resources Committee established in 1987, Office of National Water Resources Committee established in 1996; National Water Vision promoting IWRM adopted in 2000; and New Thailand Water Policy approved by the Cabinet in 2000, committing a Water Act, basin level planning and management systems, and involvement of non-governmental agencies in water management
Ownership of water resources	State	Controlled by the State	State	State	Not specifically stated; assumed common property
Priority in use of water	Domestic consumption		Drinking water		Towards giving equitable allocations to all sectors on priorities established at basin level
Water rights, pricing, and cost recovery	Permit system; water use fees based on volume	Allocation system: self-financing water user associations for smaller irrigation systems; scheme of service fees for others	Water permits for bulk allocations for legitimate needs; full cost recovery for urban drinking water, and partial cost recovery for low income areas.	Bulk entitlements; transferability of entitlements; O&M cost recovery for irrigation and domestic water supply.	Equitable allocations for all sectors; cost sharing with “beneficiaries”; bulk water supplies to river basin committees

Sri Lanka is a typical example of irrigation dominance. While Sri Lanka has the longest history of irrigation spanning a period of over two thousand years, it also shows a significant stamp of colonial interests in the sub-sector. After years of decay of the irrigation infrastructure with the collapse of the ancient governance systems, the "irrigation renaissance" spearheaded by the British colonial administration consolidated the dominant role played by irrigation in the socio-economic development of Sri Lanka.

Cascades of small tanks within river basins (Sakthivadivel et al. 1996), diversion of river water through long canals to the valleys, the use of stored and canal water for mostly rice cultivation, and the practice of "Bethme", an informal water sharing method under shortage conditions are the typical features of Sri Lanka's irrigation tradition. Irrigation also received an uninterrupted state sponsorship from the ancient Kings' days to the present period. Much before the other countries in the region, Sri Lanka introduced a formal legal framework for irrigation through the Irrigation Ordinance of 1873. Being a very prominent piece of legislation, it highlighted the dominance of irrigation in rural life. To date, this dominant role of irrigation assisted by a strong entrenched bureaucracy is seen to be stubbornly resisting any intrusion by new reform measures which would tend to dilute irrigation's place in the socio-political system in Sri Lanka. Ancient traditions and informal rule systems, along with the formal rules established by the colonial administration in mid-nineteenth century, have guided the irrigation management for many decades and have become embedded in the social fabric of Sri Lanka.

Though not with a long tradition, the role of irrigation in the other three countries also dominates the water sector. Early attention of donors helped to enhance Philippine's irrigation sub-sector, with the donor-driven reforms paving the way for a new and financially strong National Irrigation Authority. In the light of attention given to the irrigation sub-sector, newly established National Water Resources Board failed to secure its due place in the overall institutional context of the Philippines, and to-date, it has not been able to make its presence felt, despite a very strong legal framework provided for its intended functions. Similarly, the recent policy measures to establish integrated water resources management in Thailand are apparently weak, and the reasons can be attributed to the strong bureaucratic and legal basis of the Royal Irrigation Department.

Surprisingly, Indonesia demonstrates a policy level willingness to surpass the strong pressure from irrigation authorities, and the country has incorporated a legal system with numerous Presidential Decrees to introduce river basin management and integrated water resources management. However, its success in implementing IWRM by way of establishing a coordinated framework of water sector institutions is yet to be realized.

China stands alone in trying to neutralize the dominance of irrigation in its IWRM policies. The institutional reforms to restructure water sector organizations at the national level in China augurs well for its efforts to proceed ahead with the planned reforms. In terms of the political economy of water management, China does not have a long tradition in irrigation dominance, nor does it seem to support a trend towards building a dominant role for one sub-sector or the other.

Fragmented Policies and Laws Related to Water

China has taken a fairly aggressive and positive approach to improve the water sector institutional framework, and relative to other countries, suffers less from the fragmentation of water policies and laws. Four major laws and some 30 state regulations can be identified as the main institutional elements managing the country's water resources. These laws and regulations are for water management, finance and water pricing, water withdrawal permit system, water saving, and irrigation

district management. Steps are being taken to formulate legislation to strengthen integrated watershed management, water allocation, and efficiency issues within and across major river basins. Water resources in China are administered by a nested hierarchical system of organizations, with the Ministry of Water Resources at the national level, and Water Resources Bureaus at Provincial, Prefecture and County levels, along with water management stations at township level. Seven cross-provincial River Commissions supplement the nested system. Conflicts are numerous among the nested system of agencies, and between horizontal and vertical controls. Lack of decision-making authority given to River Commissions tends to impede coordination (Wang et al. 2003).

In principle, the Hebei Province Water Resources Bureau should do water allocation in the Fuyang river basin in coordination with five prefectures within the basin. In practice, the bureau has very limited power in allocating water among prefectures and counties in the basin. Thus, the existing institutional arrangements for coordination of various water allocation and water use issues are still less than the prescriptions for RBM and IWRM.

In West Sumatra, Indonesia, where the Ombilin sub-basin is located, the responsibilities for water resources management are fragmented among several government agencies. Recently, a provincial water management committee (PTPA) was set up to coordinate the activities of the various agencies, and the policy documents claim that basin level committees would also be set up. However, no such committee has been formed yet in any of the six river basins located in the West Sumatra Province. The stakeholders of Ombilin have also not shown any serious interest in taking the initiative to form a river basin organization as prescribed, but would welcome the government's proposed basin committee.

The Upper Pampanga Basin in the Philippines has a similar institutional environment, with a number of government agencies involved in various ways in activities related to the management of water resources. Their interests and functions are basically administrative and regulatory in character. Despite the presence of these agencies, the basin is still beset with problems and issues such as siltation of waterways, land conversion, water pollution, and the absence of a coordinating body to promote effective water resource management. As part of the action research, stakeholders of Upper Pampanga recognized the need for coordination and formed a Basin Committee.

The situation is the same in the Deduru Oya river basin in Sri Lanka, where a multitude of government organizations are involved with water resources management (Jinapala et al. 2004). Stakeholder consultations[12] recommended the use of District and Divisional Coordination committees to consider basin planning and IWRM activities, with the assistance of a Basin Committee. There was clear objection to the forming of a new RBO.

The irrigated agriculture sector in Sri Lanka, because of its social and economic significance, attracted a considerable share from an institutional extravaganza that is normally found in the country. In fact, Sri Lanka has been described as having more "irrigation institutions per hectare" than most countries in the region (Merrey, 1992). Over 50 agencies and 40 Acts are there to deal with water, leading to confusion, duplication and mostly inaction (Amunugama, 2001).

East Rapti river basin in Nepal is no exception with the multiplicity of agencies involved in water management. There have been recent attempts to make district and village development councils responsible for coordinating the activities at the local level. They have not been very effective, partly because such functions were considered to be the responsibility of central line agencies and in part due to the limited local capabilities. There are various bodies for coordinating various agencies involved in programs associated with water resources. The Water Resources

[12]For consultative and participatory approaches used in the Deduru Oya study, see Bandaragoda (2004).

Development Council, National Planning Commission and District Water Resources Committees are the main agencies associated with the interagency coordination.

The major reason for not seeing the need for coordination can be attributed to the absence of basin-wide information regarding different water uses. In none of the countries studied, did the basin study teams or the country reviewers find that any particular water use group was aware of the scope of water use by other groups. This information was simply not available. Information arising from sample basins during the study generated unprecedented stakeholder interest in coordinating the overall water use.

Reluctance to Accept Some IWRM Principles

In Sri Lanka, a recent thrust for water sector institutional reforms included the proposed new water policy and an appropriate legal system. In this policy level initiative, most of the IWRM principles were appreciated as applicable. In summarizing the need for these reforms, a policy document explained[13], "*Competition among water users, lack of compliance on the part of the pollution control, poor land use policy are threatening critical watersheds. Lack of data and information for real time water planning is a setback for equitable water allocation. Absence of a legal basis to safeguard water rights discourages promotion of user commitment for protection and conservation.*"

While this paragraph strikes common ground applicable to most of the developing countries, the document further mentions some aspects of particular relevance to Sri Lanka: "*Degradation of river environment due to sand and clay mining and waste dumping are major issues causing damage to river health and water resources systems. Opportunities for further development of water resources being limited, expensive and fraught with socio-environmental issues, a greater part of the future demand has to be met from re-allocation of already harnessed water resources. Issues that could emerge with such allocations need to be addressed. The present legal provisions are scattered across a number of legal enactments implemented through functional agencies and are grossly inadequate to deal with the present situations. Some of the alarming environmental evidence has prompted the government to take action in the past decade to reform the natural resources management structure of the country*". While the rationale for the new institutional reforms was presented emphatically, the policy falls short of obtaining majority approval, mostly due to its failure to convince them on the whole IWRM package. Obviously, some of the elements of IWRM were objectionable. Consequently, pressure continues to hold against these elements of the reform package, particularly those related to the concept of water being treated as an economic good, and the related principle of transferable water rights, as well as the proposed private sector involvement in the water sector.

Similar sentiments were observed in Indonesia, where, according to the Indonesian constitution, water is considered a God-granted resource and should be used for the highest level of people's welfare. Therefore, water is to be owned collectively by all citizens, and no individual ownership can be claimed over water. This tradition has provided the basis for the state right to control water. As for irrigation, traditionally, no water charge could be levied, despite the prescribed IWRM principle of having to treat water as an economic good.

[13]Draft National Water Policy Document in Sri Lanka.

CONCLUSION

The current water-related issues outlined above lead to the identification of some emerging water management constraints. There are four key problems common to all five river basin contexts: (a) non-availability of reliable data related to extraction of water from river basins, (b) inadequate planning, (c) absence of well-defined water rights, and (d) lack of mechanisms for integrated development and management of water resources. The intensity of these problems tends to vary from site to site, and country to country, depending on the degree of their water resources development.

The basin studies in the five initially selected countries provide a typology for arriving at conclusions in a comparative analysis. The results of the analysis leads to the general comments presented above. *The findings agree with the working hypothesis of the study that the water sector development evolves and changes over time from both a biophysical and a socioeconomic perspective, resulting in an increasing demand for water*. The added value of these development-oriented changes tends to induce some technical and institutional changes.

For Asia as a whole, the "development stage" has reached a fairly mature level. The opportunities for further expansion of irrigation and other water diversions are limited and greatly constrained by the sharp decline in investment levels and food-grain prices, and associated benefit-cost ratios. Thus attention is focused on improving the productivity of already developed water resources through more effective water management institutions. However, Nepal has a very large potential for further development of water resources, whereas Northern China on the other hand, as illustrated by the Fuyang basin, has virtually no potential. Even in the Fuyang, domestic and industrial requirements are quite low.

Among the reform plans in all of these countries there were intentions of forming institutional arrangements for IWRM. In all five countries where the water-sector policy analyses were conducted, there was an explicit recognition of the importance of considering the river basin as the unit for planning, developing and managing water resources. But, none of the countries under review had any specific plans to establish river basin organizations extensively. The management of water resources was purely on sectoral lines by a multiplicity of government agencies with little interagency coordination. Stakeholder consultations led to the conclusion that all of these countries needed an apex body to coordinate water allocations among the various water user groups. The need for a clear water policy and related water laws was also acknowledged. Only such a clear and strong legal basis would ensure integration, sustainability and productivity—the cornerstones of IWRM. Although planned institutional reforms have been substantial in Asia, their actual implementation has been a very slow process due to many social, economic and political reasons.

ANNEX

SUMMARIES OF POLICY REVIEW CASE STUDIES IN THE FIVE COUNTRIES

The Case of China[14]

At the inception of the People's Republic of China in 1949, the Chinese government declared its policy of planned utilization of water resources on the basis of river basins. In the 1950s, River Basin Commissions were established, and River Basin Plans were prepared, the main concern being floods and droughts. Major construction works, related to these problems, were undertaken.

The first breakthrough in the direction of integrated water resources management, though without formal recognition of the concept of IWRM (the genesis of which itself was some years into the future) took place in 1988 with the passage of the Water Law. This law is credited with having laid down the initial groundwork for IWRM. The Water Law was followed during the next decade by several other pieces of legislation relating to soil conservation, flood control, environment protection, water pollution and land administration which all went to strengthen the increasingly holistic approach to water management.

The next most crucial step was the adoption by the State Council in 1994 of 'China's Agenda 21- White Paper on China's Population, Environment and Development in the 21st Century'. The adoption of this document was in direct response to the adoption of Agenda 21 by the world environment summit in Rio in 1992. The objective was the sustainable development and conservation of natural resources, which includes water.

This document declared, **"**China will reform the existing management system for water resources, pass new legislation and establish economic systems to promote integrated planning and management and to maximize development and protection of water resources for industry, urban development, hydro power generation, inland fisheries, transport, entertainment and maintenance of ecological balance. China will also work to improve the competence of management and technical personnel and promote public participation in the integrated management of water resources.**"**

This was a clear and unequivocal commitment to IWRM. Under the impact of the above commitment much research was done for the reform of the legal and institutional framework relating to water management. International best practices were also examined. As a result, the Water Law of 2002 was formulated and promulgated, which in fact, improved on the provisions of the Law of 1988. This could be considered as the basis for a very comprehensive and advanced legal and institutional framework for IWRM. The major provisions of the law from the IWRM perspective, are the following*:*

- Water resources are owned by the state.

[14]This section is based on George E. Radosewich's report, "Towards Water Sector Reforms: Policy Case Study on China", Volume V Appendix I of Project Final Report (International Water Management Institute, 2003).

- The law is formulated for the rational development, utilization, saving and protection of water resources, for the prevention and control of water disasters and for the realization of sustainable utilization of water resources in order to meet the needs of national and social development.

- Above objectives are to be realized through comprehensive planning at national level (a National Strategic Master Plan), at river basin level and at sub national political unit levels. Multiple uses, interests of all stakeholders (upstream/downstream, left bank/right bank and others) and ecological concerns are to be taken into account. Plans are to be consistent with national economic and social plans as well as specialty plans relating to flood control etc. (There is specific provision for harmonizing competing uses of water.)

- System of water allocations and water permits based on allocation plans.

- Priority for domestic consumption.

- Water user fees to be charged based on volumetric measuring.

- Systems for water conservation and water savings.

- River basin to be the focus of planning and management (through River Basin Management Agencies) at sub national level (in conjunction with planning/management at/by politico-administrative units).

- Setting up of data and information systems at all levels.

- Establishment of supervision, monitoring and dispute resolution systems.

There has been supportive legislation, notably the Environmental Impact Assessment Law of 2002 (water development projects being subjected to environmental considerations) and the Rural Land Contracting Law (facilitating investments in irrigation by small farmers through the grant of more security of tenure). The Water Law of 2002 enacted only in October of that year has yet to be supplemented with many directives to be issued by the State Council and other authorities needed to operationalize its many provisions.

Consequent on the 1994 policy statement – China's Agenda '21, which represents a well thought out firm commitment to IWRM, the Water Law of 2002, building up on the 1988 Water Law, has laid down a comprehensive legal and institutional framework for the implementation of IWRM. The need to plan for the development, conservation and utilization of water keeping in mind the multiple uses of the resource, the multiple concerns relating to it, the multiple stake holders and the requirement that the water plans be in conformity with broad national economic and social development plans have been given legal recognition and thereby made mandatory. The position of water as an economic good with an economic price has been legally recognized.

These are considerable achievements, which other countries cannot claim yet. What remains is to give effect to these declared policies and laws, and proceed to actual implementation. As for implementation, there has been some degree of institutional reforms: concerned ministries and their departments have been streamlined; at local levels, the holistic concept has been recognized in some geographical areas by the conversion of 'water bureaus' to 'water affairs bureaus'; 'Water Users Associations' (WUAs) transacting contractually with over 2000 'Water Supply Companies' have been established in 19 provinces in relation to irrigation water; and the maintenance of field

level delivery structures is becoming the responsibility of WUAs. Through such arrangements, the concept of self-management by users is coming to the fore.

The dissemination of information relating to water in China is also rated a success story with several journals and news letters propagating not only local but also international water news and research findings on a regular basis.

With all these achievements and despite the institutional reforms referred to above, some major weaknesses still remain in the institutional arena. Two significant weaknesses are: (a) overlapping and fragmented jurisdiction and (b) weak institutional capacity for the heavy dose of integrated planning that is envisaged. However it would be unfair to characterize these as failures because the problems have been duly identified and apparently there is a relentless search for improvements.

The relatively more satisfactory outcomes related to the water sector in China can be attributed to a number of features of the Chinese situation:

- The culture and industriousness of the people;
- Recognition of the needs, problems and the range of possible solutions relating to water, by those concerned, through the medium of many studies, workshops, review of international experience and expert consultancies;
- Shift to a market economy;
- China's admittance to the WTO which has significant implications for natural resources development and interdependent economic development;
- A constitutional amendment in 1999 which laid down the 'rule of law' principle, and legislation on related matters such as the environment, pollution control and soil erosion which focused attention on a holistic approach; and
- Climate of international opinion and concern created by the 1992 Earth summit, and related developments in other countries which appear to have been major enablers and catalysts.

In contrast, the following circumstances seem to have been the inhibiting factors against the introduction of IWRM in China:

- A lack of clear and universal understanding as to the scope and operational policy of IWRM, which affects the lower levels of the politico-administrative hierarchy and the public;
- Overlapping and often conflicting jurisdiction of implementing agencies;
- Lack of adequate and timely data;
- Some gray areas of concern not falling within the purview of any agency;
- The requirement of State Council approval of plans prepared by Basin Management Authorities and delays experienced in obtaining such approval;
- Non co-ordination and non-synchronization of planning and budgeting processes; and
- Over use of water in many sectors.

The Case of Indonesia[15]

Since 2000, the most gratifying impact of the reform agenda in Indonesia is the development of a participatory irrigation management approach originating from the Presidential Directive Number 3/99. Field-tested procedures have been developed to date for: (a) participatory design and construction whereby all designs are developed in consultation with Water Users Associations (WUAs) and WUA federations play a role in construction; (b) the formation of over 300 empowered WUA federations involved in O&M of their secondary systems; (c) a field testing of a framework for irrigation management transfer based on Service Agreements between WUA Federations and the irrigation agency; (d) the establishment of an NGO Consortium which is responsible for recruiting, training and supervision of Community Organizers to help with capacity building of WUA Federations; (e) the collection of irrigation management fees by WUAs for O&M expenses; and (f) field experiments with simple WUA Federation financial assistance mechanisms that serve as a precursor to the "Kabupaten" Irrigation Improvement Fund concept.

By December 2001, 39 districts in Java, Sumatra, Sulawesi and West Nusatenggara had issued memoranda of understanding to adopt the reform program and establish an irrigation planning unit. Federated WUAs had been established in 227 irrigation systems, with a total area of 353,778 ha. Legal transfer of authority had been implemented in 53 schemes on Java and 26 schemes had made service agreements between scheme-level WUAs and kabupaten government and/or contractors. With the December 2001 issue of a new Presidential Directive for Irrigation, the country is now ready to apply field-tested procedures for participatory irrigation management. In fact, ADB is finalizing a project based on applying the new Presidential Directive and the above procedures.

As against this success in irrigation management reforms, the overall water reform agenda has had little impact on basin management so far. Only one new river basin corporation is in the process of being established. Basin committees (Balai PSDA) have been established in the key river basins of eight provinces (only two basins in each of five Off-Java provinces). Establishment of Balai PSDA and their improvement as viable organizations are really attributable to donor-supported projects and not driven by the reform agenda itself. Similarly, these projects have also brought about conceptual improvements in basin management planning. They have also introduced the concept of making Balai PSDA basic hydrographic units and keeping Provincial Hydrological Units as oversight agencies to ensure quality of data.

As of August 2002, the number of completed outcomes is not large. Many Task Force drafts are available but these have not been processed and issued. Some of the completed outcomes are outlined below.

- Presidential Decree for the Establishment of the 'Inter-Ministerial Coordination Team (Tim Koordinasi) for Water Resources Management', and Coordinating Minister for Economic Affairs (Menko EKUIN) Decrees for Establishment of its secretariat and working groups for Water Resources Sector Policy Reform Implementation—This is not a reform as such; instead, it accommodates the new sector structure and has all the coordination functions necessary for the water sector. The Tim Koordinasi is supported by a large Secretariat having a Steering Committee of sixteen Echelon 1 officials from various ministries. The Steering Committee is supported by a Supervision Team and four Working Groups

[15]This section is based on case study report, "Indonesia's Water Sector Policy and Institutional Reform Process," by Theodore Herman, Project Final Report, Volume V, Appendix II (International Water Management Institute, 2003).

(institutions, river basin, water quality and irrigation). Upon the issue of the new water resources law, it is expected that the new Tim Koordinasi will become a National Water Council with stakeholder membership.

- Coordinating Minister of Economic Affairs Decree for Direction of a National Water Resources Policy (NWRP)—This is not quite the type of document originally envisaged as a presidential decree based on recommendations of the National Water Council; however, it is the first time a declared set of national policies for the water sector has been enunciated and issued operationally. It is expected that this policy will be further elaborated by the National Water Council. The NWRP has vision and mission statements followed by 75 policies that cover the following five areas: (i) water resources management, (ii) water resources conservation, (iii) control of water damage, (iv) empowerment and involvement of the community and private sector and (v) increasing transparency and availability of water resources data and information. Compared to earlier policy statements, this document is quite revolutionary in its integrated and sustainable approach to water resources management.

- Memorandum of Understanding Between 14 Director General-Level Line Agency Managers Endorsing the Concept Paper for a National Integrated Sector Data Network, its Framework, Procedures and Implementation Arrangements—The concept paper was accepted by the Water Resources Sector Adjustment Loan (WATSAL) Steering Committee but the World Bank required some form of commitment that the agencies involved would continue to work toward an integrated data network by setting up its administrative framework within the government structure as well as planning for the procurement of its hardware. This was accomplished by the MOU.

- Decree of Director General of Water Resources for "Establishment of Water Resources Data and Information Unit" in the Ministry of Settlements and Regional Infrastructure (KimPrasWil)—With ADB support a Water Resources Data Center was established in KimPrasWil linking its central data base and 400 PCs. The primary function of this system, in addition to data, is to provide standard reports and maps for regular users. The web-based applications include: (i) an Irrigation System Inventory; (ii) Natural Disaster and Flood Monitoring; (iii) Water Resources Inventory; (iv) Hydromet Infrastructure Inventory; (v) Project Monitoring; and (vi) Sector Information.

- Decree of Minister of KimPrasWil for "National Hydrology Management"—In addition to a clause in the new water resources law supporting strengthening of hydrology activities, the Presidential Directive on Water Management will explicitly support hydrology management. The KimPrasWil decree gives the necessary legal basis for its funding, delegation of authority, organizational structure, data collection and quality, as well as recognizing the hydromet network as an infrastructure asset to ensure its sustainable O&M funding.

- Decree of Minister of KimPrasWil, "Technical Guidelines for Preparation of Regional Regulations on Hydrology Management"—Two guidelines are issued for regional government management of hydrology.

- Completion of Establishment of Provincial Hydrological Units in Ten Provinces and Balai PSDA in Key Basins of Eight Provinces—This requirement is essentially completed.

- Government Regulation on "Water Quality and Pollution Control"—The Presidential Directive 82/01 for the first time provides for the regulation of all polluters (including municipalities and mining) and, for levying wastewater discharge fees to support water quality monitoring and basin level water quality management. Its other provisions are similar to the framework in the old PP 23/82 that it replaces. The Presidential Directive and its accompanying Guidelines for provincial and kabupaten legislation and procedures are by far the most significant and integrated reform accomplished so far. It completes a major commitment of Objective 4 of the WATSAL Letter of Sector Policy and Policy Matrix. It is however, still operationally incomplete as the all important decrees/ministerial guidelines on restructuring of regional government irrigation agencies and, new irrigation financing mechanisms, have still to be cleared by both national and regional governments.

A number of additional risks have arisen during the reform process, which may affect the completion of future programs. Some of them are given below.

- Three out of the four new river basin corporations may not be established because of the difficulty of reaching agreement about revenue sharing between provinces and kabupaten and the desire for provincial control of a potential revenue source.

- The transaction costs of developing financial incentives (such as corporate tax deductions) for industry investment in pollution abatement facilities may be too high and such incentives may never be agreed to.

- In practice, stakeholder representation may be a 'toothless' arrangement unable to really confront powerful vested interests (such as a power company in the Ombilin basin).

- The Task Force may no longer be motivated to work hard because many of its products have been—or will be—altered to suit conservative interests.

A number of important conclusions and lessons may be learnt from these reform efforts. A few of them are given below:

- Effective sector reform requires a very high level 'Champion' with a perception of crisis. The comparison between the successful far-reaching irrigation management reform in Andhra Pradesh, India and the limping reform in Indonesia is instructive. In Andhra Pradesh, irrigation costs played a large role in a fiscal crisis when the political authorities in the State subscribed to a community participation ideology. Having seen a demonstration of what WUAs can achieve, they proceeded to enact a model 'Farmer Management of Irrigation Systems Act' despite opposition from the irrigation bureaucracy and personally supervised its implementation. In Indonesia, the sector reform champions are middle level officials who do not receive strong support in the higher levels of the lead sector ministry while their strong support comes from peripheral ministries and agencies who do not have the power to really confront the lead ministry. The lead ministry does not have an overall perception of the need for reform and, goes along with those reforms that do not strongly threaten its bureaucratic and staff interests. Its concerns regarding the loss of power and

budgets as a result of the government decentralization far exceed its interest in improved performance and professional improvement. Consequently, the reform process is driven more by the 'financial' carrots of loan disbursement and World Bank pressure than by a genuine motivation within the Government. It is fortunate that decentralization has developed regional power bases that see the reform agenda as increasing their authority and are willing to try new approaches even if the national legislation is not forthcoming.

- A comprehensive and lengthy adjustment operation is riskier than several short operations but unavoidable under the particular circumstances of Indonesia. WATSAL is a simultaneous reform lasting three years instead of its planned 18 months. The causes for delay lie in the political-economic turmoil that has wracked Indonesia since 1998. It could be argued that a less ambitious approach would have been to have two or three sequential adjustment operations starting with the all important irrigation management. However, in retrospect, this alone has turned out to take three years. A follow-up reform for water resources management would also take another three years in view of the need to change a basic law and its regulations. However, there are close symbiotic relationships between the irrigation reforms and those of water resources management; separate operations would mean that these relationships would have been lost with both areas having weaker reforms. In retrospect, the need for sector reform was so great in 1998 and the national reform atmosphere so strong, that the decision to embark on one large holistic reform agenda was justified. While the name of the ministry may change, the lead officials by and large do not. It can only be hoped that the 'winds of change' will not die down after WATSAL closure and that reform will continue, albeit at a much slower pace.

- One of the most pleasant surprises of the reform process has been the emergence of policy analysis ability inherent in many Task Force members and some national consultants. This development vindicates the Government of Indonesia-World Bank approach of not using full-time foreign consultants to do conceptual work, but relying on experienced bank consultants and experts for guidance and advice to the Task Force. It goes without saying that a select core group of about 20-25 people working full-time for the Task Force could have yielded quicker and possibly better results. Unfortunately, the right people are the best trained and most professional staff in the civil service and it is inconceivable that, in a country where such talent is in short supply, they could be removed temporarily from their duties. It should also be remembered that ideas take time to gel, especially where a process of deliberation is needed to change entrenched opinions.

The case of the Philippines[16]

At an annual renewable fresh water supply of about 4,400 cubic meters per capita, the availability of water in the Philippines is more than four times the threshold of 1000 cubic meters per capita used for classifying water scarcity globally. However, some isolated areas in certain parts of the country experience occasional periods of water stress and in 1995 there had been a nation-wide

[16]This section is derived from the case study report, "Implementing Integrated Water Resources Management in the Philippines", prepared by Wilfrido C. Barreiro, in Project Final Report Volume V, Appendix III (International Water Management Institute, 2003).

crisis, which prompted even special legislation (Water Crisis Act of 1995). In any case, water availability is expected to decline to about 2500 cubic meters per capita by the middle of the century.

Basic policy and laws required for systematic management of water resources have long since been adopted together with the establishment of an institutional framework. The Philippines Constitution of 1987 stipulates that natural resources including water shall be explored, developed and utilized under the full control and supervision of the state. It further stipulates that water rights will be subject to 'beneficial use' limits.

One of the earliest attempts at systematic management of water has been the adoption of a National Water Code prior to 1978. The Water Code makes the very radical declaration that all water belongs to the state. It goes on to categorically include under this declaration, water found on private land, permitting the owner the use of it without a permit only for domestic purposes. Even this is liable to be restricted in times of scarcity or for reasons of wastage. The Code establishes:

(a) the basic principles and structural framework relating to appropriation, control, conservation, and protection of water resources to achieve their optimum development and efficient use to meet present and future needs;

(b) the scope of the rights and obligations of water users and provides for the protection and regulation of such rights; and

(c) the necessary administrative machinery.

The National Water Resources Board (NWRB), which has existed for over twenty five years, is the regulatory body, which issues water, permits and performs other regulatory functions. This body was reconstituted and strengthened in 2002. It now consists of very senior officials of the level of secretaries (Chair - Secretary, Department of the Environment and Natural Resources).

The National Water Summit of 1994 organized by the President of the Republic had been a key milestone in the reform process. The deliberations resulted in the recognition of the need for a coordinated approach in regard to the management of water. In response, the President established a 'Cabinet Cluster' — high level body of senior officials, each with individual responsibilities on various aspects of water— to advise the President and the Cabinet regarding all matters related to water.

In 1995, in response to the prevailing water crisis, the National Water Crisis Act was promulgated. The mandate of the high level Commission established under this Act included actions of continuing relevance. These included the study of the entire water supply and distribution sector, and the institution of mechanisms for the continuous monitoring of supply and distribution. The Act also facilitated private sector investment in the water sector by authorizing negotiations on arrangements for the provision and operation of water facilities. The privatization of two public bodies concerned with the supply and distribution of water was also authorized by this Act. In 1996, a high level Presidential Task Force on Water Resources Development and Management was established as an overseeing body to ensure the efficient exploitation and use of water resources. The Task Force duplicated the existing NWRB but drew inputs from a wider spectrum of stake holders. When the NWRB was re-constituted and strengthened in 2002 the Task Force was disbanded, and the Chair of the Task Force — the Secretary of the Department of Environment & Natural Resources — assumed office as Head of NWRB. In 1996, a Directorate on Integrated Water Resource Management was established to act as an apex body for coordinating, planning, monitoring and regulatory responsibilities.

Initiatives towards river basin based planning & management had started as early as 1966 with the setting up of the Laguna Lake Development Authority (LLDA). Several models of such organizations have emerged. LLDA is described as a centrally mandated quasi government regulatory and developmental organization. Another such organization is a local government unit led initiative with representatives of user organizations and academia in addition to officials. A third is described as a department led arrangement while a fourth comes under the description of a project led arrangement.

Over the years the responsibilities of the LLDA have been expanded and now it stands as an organization responsible for the management of the water and related natural resources of the lake and its watershed in all its aspects. Its geographical area of authority covers 2 provinces and 42 towns. The management role extends over several uses of water ranging from irrigation and domestic use to fisheries and transportation.

The authority is resorting to the delegation of its powers to local government units and enlisting the working participation of the local communities (for environment protection etc. through the mobilization of environmental activists into 'River Basin Councils' and an 'Environment Army') and users (e.g. fishermen as watch dogs against illicit use) in a significant way. It is also using private sector partnership.

Current efforts are directed towards expanding the knowledge base that supports integrated management of multi-sectoral use of the waters, training of personnel and institutional development. Several studies in the 1990s and thereafter have lent support to the development of IWRM in the Philippines. These studies have expanded the knowledge relevant to various aspects of water use/ abuse and management. One of these studies has resulted in the development of a 'National Strategy and Action Plan for the Water Supply and Sanitation Sector'.

One of the management reforms included in the water sector is the introduction and implementation of a water use permit system. Charging for the use of water is an established principle although its implementation may vary. The National Water Code empowers the NWRB to charge for water. Water charges appear to be made for more than one reason. The first is the recovery of costs related to the provision of water. The accepted policy is that costs should be recovered subject to the considerations of paying capacity. Another rationale for charging (including charging for raw water) is that water as a limited resource must be procured by users at its economic worth in order that there is an optimal allocation of resources. Much activity is on-going to develop methodologies to determine the economic price of water. Water charges are also considered as a source of revenue for 'more effective water resource development.

A related charge is the 'environmental user fee' based on the principle 'let the polluter pay'. A fee is payable by users depending on the discharge of polluting effluents into the water body. Such a fee is operative in the LLDA area. It is reported to have significantly brought down levels of pollution in the Laguna Lake (a 73.6 % reduction in 1999).

Much attention is being paid to the collection of water related data to support the management effort. However, at present, it is apparently being done in a rather fragmented manner and the coverage is inadequate. Further initiatives relating to this activity will be discussed in a later section.

Stakeholder and community participation in the activities of LLDA has already been referred to. At the national level two organizations provide for such stakeholder participation. The Philippines Water Partnership (PWP) is a multi sectoral group – government, private sector and civil society – that functions as a neutral forum for discussing issues and as an instrument for advocacy of IWRM. The Philippines Center for Water and Sanitation – ITN Foundation (PCWS-ITNF), is a similar organization with a mandate for IWRM through community participation. It mainly supports

community-based water and sanitation projects through the development and dissemination of simple technology appropriate for local projects and through organization development work.

The Medium Term Philippine Development Plan (2001 - 2004) has explicitly made a commitment towards IWRM. It has declared that IWRM shall be the guiding principle relating to action concerning water. It has declared that sustainable development and management of water resources through appropriate policy and legal reforms particularly in relation to resource exploitation, allocation, prioritization, optimization, protection, and conservation shall be followed. The link of water management to social and economic development and environment concerns has been emphasized.

Current efforts are directed at strict enforcement, maintaining harmony of water management policy with socio-economic policies and capacity building. The Medium Term Philippines Development Plan 2001-2004 has called for the development of a pricing mechanism, which meets specific objectives. Cost recovery and externalities are to be taken into consideration on the one hand while on the other, capacity and willingness of the different users to pay is to be paid heed to. The National Economic Development Authority (NEDA) has observed that the current approach to pricing raw water leads to wasteful or inefficient use and is devoid of any economic basis. NEDA has also recommended volumetric pricing of irrigation water so that a definable commodity transferable to higher value use can be created. However such pricing should not lead to farmers being discouraged to use irrigation water.

The case of Sri Lanka[17]

The demand for water has increased over the years in Sri Lanka and will continue to increase in view of the accelerating tempo of urbanization, population growth, industrialization and agricultural intensification. The general objective of IWRM, as it is applied in Sri Lanka, is to make certain that adequate supplies of good quality water are maintained for the entire population of the Island, while preserving the hydrological, biological, and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and combating vectors of water-related diseases.

Sri Lanka's challenges in water resources management include seasonal shortages of water for irrigation, domestic use and hydropower generation as well as degradation of the quality of surface waters through domestic and industrial effluents and agricultural runoff. Hence during the past several decades, the Government of Sri Lanka (GOSL) has made several attempts to institutionalize a coordinating mechanism amongst the plethora of sectoral agencies in the water domain to resolve the water allocation issues. The competitive user agencies fell within the purview of a number of separate Ministries in charge of the subjects of Irrigation, Land, Mahaweli Development, Energy and Urban Utilities.

Since the early sixties several attempts have been made for institutional reform in Sri Lanka's water sector. In 1964 the Water Resources Board was established to advise the minister responsible for irrigation on water management issues such as the formulation of national water policies, integrated water resources planning, coordination of river basin and trans-basin development; project coordination in general and the prevention of water pollution. Despite its mandate, the Water

[17]This section is based on the case study report, "Sri Lanka's Efforts in Introducing Water Sector Policies and Initiating Related Institutional Development", by V. K. Nanayakkara, in Project Final Report Volume V, Appendix III (International Water Management Institute, 2003).

Resources Board has not functioned as a water management advisory body. At present, it carries out hydro-geological investigations and the development of ground water through the drilling of tube wells. In 1980, a Water Resources Bill was drafted by the Ministry of Irrigation, Power and Mahaweli Development. This draft legislation made provision for bulk water allocation to various sectoral agencies and for the establishment of a National Water Resources Council as an advisory body under a "minister in charge of water resources planning." However, the legislation could not be submitted to Parliament due to a lack of cabinet support.

With the formal approval of the policy of "Participatory Management of Irrigation Systems" in 1988, the GOSL called for substantial devolution of authority and responsibility to Farmer Organizations. In order to facilitate the implementation of this policy, the Irrigation Management Policy Support Activity (IMPSA) was designed and implemented by the International Irrigation Management Institute (IIMI) with USAID assistance. It executed a systematic and analytical planning process to assess experiences and formulated policies and guidelines for the implementation of the new irrigation management policy. The outcome of IMPSA was expected to be a broadly participatory activity involving a wide range of stakeholders including specialists, policy makers, irrigation managers and farmer representatives with an emphasis on achieving a broad consensus on future directions. The project highlighted the need to address competing demands for water in the light of limitations of available water resources. The Ministries of Lands and Irrigation, Mahaweli Development, and Agriculture supported the IMPSA program.

In its 1992 summary report the Irrigation Management Policy Support Activity (IMPSA) made recommendations on land, watershed and water resource management. That report recommended that the government should establish a high-level, advisory National Water Resources Council and Secretariat. The functions of the proposed Council would include the development of national water resources policy and law and a national water resources master plan. The IMPSA report also recommended "a comprehensive water policy that looks at water in a holistic way, to put water to the most beneficial use at the least cost, so as to conserve it without degrading the environment, sustaining it for future generations as well."

A proposal to carry out a water resources master plan was presented to external support agencies in 1992. As a result, in late 1993, the Asian Development Bank funded the "Institutional Assessment for Comprehensive Water Resources Management (IACWRM) Project" to assess the institutional capacity for water resources management. Its outcome was a strategic framework and an action plan for comprehensive water resources management. The action plan highlighted the need to develop a National Water Resources Policy, to establish a permanent institutional arrangement for water sector co-ordination, to prepare and enact "The National Water Act" and amend other related legislation, to establish a system to provide information and data to decision makers and to carry out comprehensive planning in selected watersheds. The Technical Assistance (TA) included broad consultation with the government agencies, water-related private sector groups and NGOs and other donor agencies.

A strategic framework and an "Action Plan for Comprehensive Water Resources Management" were drawn up to establish the improved institutional framework over a three year period. The project recommended the formation of a temporary Water Resources Council (WRC) for a period of three years to oversee the implementation of the Action Plan and also to recommend permanent institutional arrangements for water resource management.

Concurrently, the second TA project funded by ADB, "Institutional Strengthening for Comprehensive Water Resources Management" and FAO/Netherlands funded "Water Law and Policy Advisory Programme" were developing water legislation and assisting groundwater policy development. On the basis of these recommendations, in 1995, the national Cabinet approved the implementation of the Strategic Framework and Action Plan for the "Institutional Strengthening for Comprehensive Water Resources Management" (ISCWRM) project. As a result of these recommendations, the Government of Sri Lanka established a Water Resources Council (WRC) and a Water Resources Secretariat (WRS) in 1996, with support from the Asian Development Bank, which pledged funding over a 30 month period beginning in April 1996. Parallel funding for legal and policy assistance was provided under the FAO / Netherlands "inter-Regional Water Law and Policy Advisory Programme" over approximately the same period.

These projects resulted in producing the "National Water Resources Policy and Institutional Arrangement" and the "National Water Resources Authority Bill". The National Water Resources Policy was approved by the Cabinet of Ministers in March 2000. The draft National Water Resources Authority Bill was released by the legal draftsmen's department in September 2000. However, this has been subsequently revised on comments given by the Water Resources Council and the present available document is the fifth revision of the National Water Resources Authority Bill. Subsequently, the policy has been further revised due to public concerns expressed on a number of perceived sensitive issues, such as water pricing and privatization. The bill, which is still receiving mixed reactions from various political groups, is yet to be formally approved by Parliament.

The reform processes undertaken so far generates some important suggestions:

(1) The growing competition for water between the irrigation use for food production by the farmer and the domestic use for drinking and personal hygiene by both the urban and rural consumers needs urgent resolution. This can only be achieved by agreeing on a set of guidelines for conflict resolution to be implemented by a non-partisan body such as the National Water Resources Authority (NWRA). The guiding principles for such water allocations, particularly under water stress situations, as during a period of drought need to be backed by appropriate legislation. Currently, there is a "free-for-all" situation where the contending sectoral interests are resolved by means of the greater "political" clout. Formulation of appropriate legislation setting out the principles of "priority water allocations" needs be based on socio-economic, financial, environmental, technical and political considerations. Case studies, which illustrate the competing rights for limited water, must be documented and analyzed in order to formulate policies and procedures.

A system of "water entitlements" is likely to fail if the categories of "reasonable use" are not defined in the legal enactment. Rights to extract and use surface and ground water are based on two principles which should be modified to suit Sri Lanka's situation. These are the doctrines of riparian rights and prior appropriation. The riparian doctrine gives the occupier of land bordering a stream a right to make a reasonable use of water and imposes liabilities on upper riparians who unreasonably interfere with that use. The reasonable use should be defined to include only withdrawals by manual means to protect "chena" cultivations and not commercial farms, hotels or industry. What about underground water? Can a landowner be regarded as owning the water underneath his land and permitted to take, whatever quantity he could capture? An occupier's use of groundwater must be reasonable. This "reasonable use" must exclude mechanical means of pumping, for which purpose an "entitlement certificate" should be obtained specifying the conditions, limiting the quantities that can be drawn. These doctrines must be discussed and agreed upon, if the new policy is to make any headway.

(3) The delegation of water resources management to the lowest appropriate level necessitates educating and training water management staff at all levels and ensuring that women participate equally in the education and training programs. Particular emphasis has to be placed on the introduction of public participatory techniques, including enhancement of the role of women, youth, and local communities. Skills related to various water management functions have to be developed by municipal government and water authorities, as well as in the private sector, local/national non-governmental organizations, cooperatives, corporations, and other water-user groups. Education of the public regarding the importance of water and its proper management is also needed. To implement these principles, communities need to have adequate capacities. Those who establish the framework for water development and management at any level, whether international, national or local, need to ensure that the means exist to build those capacities. The means will vary from case to case. They usually include: (a) Awareness-creation programs, including mobilizing commitment and support at all levels and initiating global and local action to promote such programs; (b) Training of water managers at all levels so that they have an appropriate understanding of all the elements necessary for their decision-making; (c) Strengthening of training capacities (d) Appropriate training of the necessary professionals, including extension workers; (e) Improvement of career structures; and (f) Sharing of appropriate knowledge and technology, both for the collection of data and for the implementation of planned development including non-polluting technologies and the knowledge needed to extract the best performance from the existing investment system.

Sri Lanka's past experience in not being able to get a majority acceptance on the proposed reforms indicates that it is prudent to achieve the most important broad objectives before the sensitive issues are presented. Any attempt to achieve all the multiple objectives aimed at sectoral users, such as, demand management and cost recovery, would retard the progress on the major task, namely the bulk allocation strategy. The demand management section particularly gives rise to fears of "attempted sale of water". While the cost recovery fees have been well established for over two decades with respect to drinking water, not much progress has been made in user cost recovery for irrigation water. When the IWRM Policy document refers to principles of cost recovery whereby the beneficiary or the water user is called upon to bear the cost rather than the entire society, much leeway is given to those who champion the protests. Consequently, many middle-roaders emphasize on the currently achievable tasks. The summary recommendations of an Expert Study Group set up by the National Science and Technology Commission refer to the objections to transferable water entitlements and pricing, which would render water a marketable commodity. It laments the lack of measures for catchment or watershed protection and measures against pollution of surface and ground water. Clearly, these are the functions of proposed River Basin agencies and the Central Environmental Authority.

In order to go forward through this apparent tangle, the best option for the IWRM Policy initiative is to tackle the more important problem first, namely the bulk water allocation by a non-partisan authority. The National Water Resources Policy completed in March 2000, should serve as the cornerstone for the development and utilization of water resources over the time horizon to 2020. Policy includes efforts to ensure water availability to all the inhabitants through a system of bulk entitlements, appropriate institutional changes and a legal and regulatory framework. The policies outlined for various sectors can be implemented later based on the success of broader reform measures.

The case of Thailand[18]

Agriculture still plays a significant role in the economy. About 14% of exports are agricultural and more than 60% of the population is engaged in agriculture. Agriculture consumes about 70% of the water withdrawals. Demand is ever increasing due to population growth and rapid economic development (on the average, 8% annual GDP growth; urban dwellers are about 18% of the population).

Severe droughts have been experienced. Therefore, water scarcity, exacerbated seasonally, remains a problem. At the same time, frequent nation-wide floods also occur. Concerns about the quality of water are growing, and the over use of ground water is becoming a problem.

Up till now, the concentration had been on the increase of supply with huge investments on dams and other supply enhancement projects. Currently, the total storage capacity is around 43% of the average annual run-off. About 94% of the urban population is served with treated pipe borne water, and 88% of the rural population is served with safe drinking water from piped water systems and other sources. This is supplemented in rural areas with water from other sources for other domestic needs.

On the institutional perspective, there is no integrated water resources management policy or planning as yet. Each individual agency does its planning in isolation following its own policy. Little attention has been paid to demand management. In agriculture there is little or no cost recovery while for other users low tariffs operate. Poor allocation and lack of formal system of water rights adversely affect, particularly downstream users. Weak political commitment to water resources management on the one hand, and politicization of water-related decisions on the other, seem to characterize the policy environment.

There are over thirty water related laws administered by many departments. This includes one comparatively recent (1992) law for the regulation of ground water exploitation. However no law exists for integrated management of water resources.

At the national level, over 30 departments coming under the purview of 9 ministries existed till recently. In addition there are 7 national committees. With 'Bureaucracy Reforms' in 2002, the number of relevant Ministries and Departments has been reduced to 5 and 15 respectively. A similar situation of multiple responsibility centers exists at river basin level. Also, important water-related data are located in various places, and there is no networking arrangement.

Participation of stakeholders in decision making is minimal except that politically powerful groups of water users wield influence in decisions relating to enhancement of supplies. There is no mechanism for the resolution of conflicts relating to water. However, the existence of the four nation Mekong River Commission with Thai membership for managing the riparian rights of the lower Mekong basin is an important feature of the institutional framework.

Significant features of the future outlook for water management in Thailand are the following:

- Thai authorities have given high priority to meeting the UN target of reducing by half the number of people with no access to safe drinking water, by the year 2015.

[18]This section is based on the case study report, "Thailand's Efforts in Introducing Water Policy and Initiating Related Institutional Development for Integrated Water Resources Management", by Lien Nguyen Duc, Project Final Report Volume 16. This section is derived from the case study report, "Implementing Integrated Water Resources Management in the Philippines", prepared by Wilfrido C. Barreiro, in Project Final Report Volume V, Appendix III (International Water Management Institute, 2003).

- Budget constraints and environmental concerns militate against the earlier pace of supply enhancement.

- Situational imperatives indicated earlier have prompted the Thai authorities to embark on various measures towards IWRM. A National Water Resources Committee (NWRC) was established in 1987 to coordinate policy and the Office of the National Water Resources Committee (ONWRC) was established as its secretariat in 1996. The collaboration between the irrigation department and the electricity generating authority in the use of water in reservoirs, under the aegis of the NWRC is an illustration of this new trend.

- The new Thai constitution of 1997 has had the effect of creating an environment supportive of IWRM. The state is now obliged to encourage civil society participation in the conservation and management of natural resources. Access to information has been expanded. Decentralization of decision making in regard to natural resources has been enabled.

The guidelines of the 8th National Plan (1996-2001) stipulate that development and conservation of surface and ground water should be in accordance with systematic plans drawn up on the river basin basis taking all socio, economic and environmental factors into account. In July 2000, the National Water Vision was adopted by the government with the pledge, "By the year 2025 Thailand will have sufficient water of good quality for all users through an efficient management, organizational and legal system that would ensure equitable and sustainable utilization of its water resources with due consideration on the quality of life and participation of all stakeholders". Thus, a strong commitment has been made, and accordingly, a New Thailand Water Policy has been adopted by the Cabinet in October 2000. The main points in this policy statement are:

- early promulgation of a Water Act.

- creation of necessary national organizations (to formulate national policies and to monitor implementation) and river basin level institutions (to prepare water management plans through a participatory approach).

- equitable allocation of water for all water use sectors while fulfilling basic requirements of the agricultural and domestic sectors, to be achieved through the establishment of river basin specific priorities, which in turn will be on clear allocation criteria. Beneficiaries to share costs according to service and capacity.

- Formulation of criteria for raw water provision compatible with each basin's potential and subject to resource and environment conservation considerations.

- Provision of fresh water to farmers equitably in a way similar to the provision of other basic government infrastructure services.

- Conducting of awareness campaigns on efficient use of water.

- Promotion of user participation in water management.

- Acceleration of flood and drought protection planning.

- Provision of sufficient and sustainable financial support for above activities.

Under the aegis of the ONWRC, the following initiatives have already commenced:

- Formulation of a comprehensive water management system at the national level, involving regulating rights to water, water allocation, licensing, costing of extraction, penalties for illegal use, flood protection and relief.

- Reforming of policies, laws and institutional arrangements relating to the delivery of irrigation water.

- Establishment of a number of River Basin Committees.

- Case studies in regard to the decentralization of water management to the river basin level.

- Formulation of a strategic plan for IRWM in twenty five major river basins.

- Preparatory work for several river basin pilot projects.

The four nation Mekong River Commission of which Thailand is a member is currently undertaking several regional programs for integrated sustainable resource management in the lower Mekong basin. These include a basin development plan, a water utilization plan, an environment program, fisheries and flood management, forestry and navigation programs.

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