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# Stakeholder Participation in Developing Institutions for Integrated Water Resources Management: Lessons from Asia

D. J. Bandaragoda

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International Water Management Institute

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## Summary

A five-country river basin study in Asia used a participatory method for diagnostic investigations to learn about contextual processes, as well as for stakeholder consultation to develop action plans. The use of this methodology was encouraged by the positive results of an earlier action research program conducted in Pakistan for mobilizing farmers to form their own organizations. The method was found to be exceptionally effective, and had many advantages over the conventional methods of field research and action planning where the stakeholders are treated as objects of research and passive recipients of development messages. The contribution of participatory learning and action in developing institutions appeared to vary across the five selected river basins, depending on the degree to which stakeholder participation was forthcoming. This variation could be attributed to study constraints in terms of time and other resources, which acted differently on the five study teams. In some cases, conducting full-fledged participatory methods was not possible due to socio-political constraints, and in some others, time was too short to build sufficient awareness among the large number of stakeholders for meaningful participation. Of the five river basin case studies in China, Indonesia, Nepal, Philippines and Sri Lanka, satisfactory participation levels achieved in the cases of Sri Lanka, Philippines and Indonesia generated a momentum on their own, which helped them to initiate action plans for further institutional development.

## INTRODUCTION

This paper is based on a recently conducted study of five river basins in Asia.<sup>1</sup> In all of the basins studied, the water sector was confronting the challenge of a complex management situation, which characterized a growing competition among various water user groups, and consequently, an increasing number of linkages between water and other resources. Integration was the most felt need. For instance, in the well developed Fuyang river basin in southern China, where the supply of water was reaching its upper limits, the requirement was a management regime with groundwater-surface water integration. In the scarcely developed East Rapti basin in Nepal, the needed integration was one between environmental concerns and developmental needs. The Ombilin subbasin of West Sumatra in Indonesia, having an issue of a disputed location of a hydropower plant, demonstrated a vital requirement for an integrated water management approach to achieve a balance between hydropower generation and irrigation management. The Upper Pampanga in the Philippines clearly needed an upstream-downstream integration. In the Deduru Oya basin in Sri Lanka, the requirement was for integrated management to cater to urban-rural demands and water quantity-quality concerns. Thus, each of the five study basins illustrated some form of a need for integrated water resources management (IWRM).

The different emphasis on needed integration in each basin calls for contextually crafted water management institutions. The contextual designs for appropriate institutional development, in turn, require consultation with the local stakeholders.

The regional study used participatory learning and action (PLA) methodology to involve stakeholders of the selected river basins. A series of consultation meetings during the study helped the stakeholders of selected river basins to participate in study processes. Selected groups of stakeholders were engaged in long sessions of participatory learning activities, among which one was to understand the concept of IWRM. Participation of stakeholders was sought in the diagnostic analyses of their institutional contexts, as well as in the preparation of appropriate action plans aimed at further institutional development towards improved water resources management. The study teams, mainly through these participatory and consultative methods, were able to mobilize the interest of some key stakeholders in the river basins they studied, as well as of academics and policymakers at the national level, to move forward in their institutional reform programs in the water sector. One drawback in the study, however, was its inability to see all countries achieving similar success in using participatory methods for designing action plans.

The paper highlights a key issue that surfaced from the regional study. The issue that forms the central theme of this methodological paper, is that participatory and consultative processes involving all stakeholders of a river basin are an effective means of both introducing IWRM, as well as establishing the needed institutions to implement it effectively.

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<sup>1</sup>A regional study covering five Asian countries on the subject of "Development of Effective Water Management Institutions" had its overall goal to foster integrated water resources management. The study was conducted during 1999-2002, by the International Water Management Institute (IWMI) with support from the Asian Development Bank (ADB). The specific study objectives were to identify institutional strategies, and develop and initiate policies and institutional strengthening programs aimed at realizing the overall goal. The core activity of the study was a set of in-depth institutional assessments on selected river basins in five developing countries (Fuyang river basin in northern People's Republic of China; Ombilin subbasin of the Indragiri river basin in West Sumatra in Indonesia; East Rapti river basin in Nepal; Upper Pampanga river basin in the Philippines, and Deduru Oya river basin in Sri Lanka).

## What really is IWRM?

The study teams proceeding to consult the local stakeholders needed to have a good understanding of the term IWRM. An apt description of what is meant by integration of water resources management was introduced fairly early, in 1933, by the proponents of a law to establish river basin management through the Tennessee Valley Authority (TVA) (Radosevich 2003). As a deliberate and well-considered national policy, the TVA Act provided a legislative concept for comprehensive and integrated planning and development of the Tennessee River basin, USA. For the first time, the resources of a river basin were not only to be “envisioned in their entirety,” but also, were to be “developed *in that unity with which nature herself regards her resources*—the waters, the land, and the forests together.”<sup>2</sup>

The term IWRM is a product of various concepts presented in major international meetings in the early 1990s. The 1987 report of the Brundland Commission (World Commission on Environment) emphasized on the concept of “sustainable resources development,” which was defined as “the process of satisfying society’s current needs without jeopardizing the ability of future generations to meet their own needs.” The Dublin Conference (International Conference on Water and Environment, 1992) set out four guiding principles associated with water use, that, water is a finite and vulnerable resource; participatory approach is essential; the role of women is important; and water needs to be managed as an economic good. The Rio Conference (U.N. Conference on Environment and Development, 1992) and its Agenda 21 emphasized the focus on a number of water management programs, the first of which was integrated water resources management. The Agenda 21 identified three key objectives for integrated water resources management: priority for satisfying basic human and ecosystem requirements, river basin as the basis for managing water resources, and preparation of national action and sustainable water use programs by 2000.

Of the eight principles and concepts concluded by the Agenda 21 and the Dublin Principles (Savenije and van der Zaag 1998), one specifically referred to “*integrated water resources management, implying an inter-sectoral approach, representation of all stakeholders, all physical aspects of water resources, and sustainability and environmental considerations.*”

Despite these conceptual formulations, the term IWRM defies a precise definition. The Global Water Partnership (GWP) attempted to consolidate the two broad conceptual requirements of “integration” and “sustainability,” and provide a comprehensive scope for IWRM, which was summarized 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).

In unpacking this definition, the content of integration embodied in the concept of IWRM is seen as basically between the natural and human systems (Jonch Clausen 2000). Within the natural system, integration is sought between “freshwater and coastal zone, land and water, “green water” and “blue water,” surface water and groundwater, water quantity and quality, and upstream and downstream”. Similarly in the human system, integration is required between demand and supply, across various water use sectors, among various stakeholders and in numerous socioeconomic considerations. Lacking still was the reference to water-related biological and ecological processes within a river-basin context (Bandaragoda 2002).

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<sup>2</sup>David Lilienthal, Chairman of TVA, in *TVA-Democracy on the March (1944)*, quoted in Radosevich (2003).

As an unambiguous definition of IWRM does not currently exist, it is best that the national contexts develop their own IWRM practices using the collaborative framework proposed by the GWP. It is for this reason that participatory and consultative processes are particularly useful, involving all the different stakeholder groups in designing contextually appropriate IWRM systems.

## **Participation and involvement**

A few definitional clarifications are given first. Participatory Learning and Action (PLA) is an umbrella term for a wide range of consultative approaches and is fast becoming an ever-growing toolkit of participatory methods (PLA Notes, International Institute of Environment and Development (IIED), [www.iied.org/sarl/pla\\_notes/](http://www.iied.org/sarl/pla_notes/)).<sup>3</sup> Common to all of these approaches is the participation of people in the processes of learning about their needs and opportunities. The genuine PLA approaches go beyond the processes of learning, and promote the active participation or involvement of communities in the interventions that help them in their development.

Participatory methods for research and development are fast gaining popularity among development professionals. Nelson and Wright (1995) compiled a book arising from a conference organized by the Group for Anthropology in Policy and Practice (GAPP) to explore increasing empirical evidence of participatory development. The GAPP conference also provided ample opportunity to digest the theoretical basis of participation. The word “participation” is essentially a palliative, a word that connotes something good, positive and pleasant. For it to be more explicit and meaningful than this connotation, participation should necessarily involve “shifts in power, within communities, between people and policymakers, between people and resource-holding organizations, and within the structures of these organizations.” Based on this participation-power linkage that came so strongly in the conference as a major issue, the shifts in power became the theme of the book, highlighting the imperative of empowerment through community participation in rural development.

Electronic media provide a number of sources on participatory methods. A refereed journal of action research sponsored by the Southern Cross Institute of Action Research (SCIAR) provides information on current case studies and research papers. This source gives empirical material which can be adapted in participatory learning and action programs.<sup>4</sup> Another useful source of information is the “Participatory Learning and Action: A Trainers Guide,” authored by IIED.

For “participation” to mean empowerment, the people who are involved in using this method to empower others need to be altruistic, and be able to value the advancement of others. Chambers (1995) refers to three different ways in which “participation” is generally used: “as a cosmetic label to make whatever proposed appear good; or as a co-opting practice to mobilize local labor and reduce costs; or to describe an empowering process, enabling local people to make their own decisions.” In first two of these instances, participation is used as a “means” of trying to involve a community to implement a project efficiently and effectively, with the user’s objectives that may not be entirely altruistic, and in the third, it is used to initially mobilize a community to enhance its capacity, and the community takes the initiative to continue participating in activities for its own benefits. In this instance, participation is seen as an “end” in which a community absorbs its positive

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<sup>3</sup>“PLA Notes”, which has been changed to “Participatory Learning and Action”, is an informal journal on participatory approaches and methods, providing a forum for practitioners of participatory methodologies from around the world to share their field experiences, conceptual reflections and methodological innovations.

<sup>4</sup>See [www.scu.edu.au/schools/gcm/ar/ari/arihomet.html](http://www.scu.edu.au/schools/gcm/ar/ari/arihomet.html)

outcomes for the community's own development. Either way, participation results in developing new power relationships, but the latter clearly implies more effective empowerment and involvement of the community.

Basically, consultation involves "a shift from one-way communication to two-way interaction, from education to dialogue" (Bruns 2003a). Among many consultation methods are public hearings, focus groups, suggestion boxes, open houses, and question and answer sessions. The choice of a particular method depends on the contextual factors.

As for participation, the objectives of consultation can also be for extractive purposes. More traditional research tends to "consult" communities and then take away the findings for analysis with no meaningful inputs to the direct benefits of the community. Often, consultation is effected as a means of achieving project aims more conveniently, and applied as a window dressing to please participants and evaluators of project processes. In contrast, the genuine consultation, as in PLA tools, can involve the sharing of insights with analysis and provide a catalyst for the community itself to act on what is analyzed and commonly understood.

There are some limitations and weaknesses in PLA methods, which the user need to be aware of. For instance, the possible biases ingrained in the minds of the user can inadvertently be transferred to the process. Thus, there is the risk of bias against women, ethnic minorities, and other marginalized groups, and the risk of tilting in favor of some political affiliations. Another deficiency in the PLA method is the difficulty to incorporate fully the advantages of using quantitative data and analysis.<sup>5</sup> Recent academic efforts have tried to bridge the gap between statistics and participatory methodologies, and contribute to the development of methods that take advantage of the strengths of statistics and participatory methods when gathering information for decision making in a development context.<sup>6</sup>

In the learning and action process designed for this regional study, the researchers were to conduct PLA consultation meetings, primarily to obtain participation of the community and their contributions to data collection. Consultation could then be sought to design knowledge-based action programs to address the issues identified in the initial phase of research. However, some of the study teams did not have the opportunity of using more sophisticated qualitative research methods mentioned above during the regional study.

## **GUIDANCE FROM PREVIOUS RESEARCH**

IWMI's five-country regional study in Asia benefited from the positive results of its precursor, a set of participatory action research programs conducted in Pakistan in the late 1990s. Of particular relevance to the present study were the field work conducted on canal irrigation issues in Pakistan,<sup>7</sup> and the introduction of RAAKS to IWMI field researchers in Pakistan by the researchers of the Wageningen University<sup>8</sup>(Salomon and Seegers 1996). Their research focused on how the farmers

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<sup>5</sup>See "Combining Quantitative and Qualitative Survey Work: Methodological Framework, Practical Issues, and Case Studies," March 2001, by the University of Reading's Statistical Services Centre, London.

<sup>6</sup>See "How to generate statistics and influence policy, using participatory methods in research," a SSC Working Paper by Carlos Barohana and Sarah Levy, London: University of Reading.

<sup>7</sup>This work was later published in Gosselink et al. (1997).

<sup>8</sup>The acronym RAAKS stands for Rapid Appraisal of Agricultural Knowledge Systems. RAAKS is a participatory action research methodology and alternative system of inquiry developed by Paul Engel, Monique Salomon and colleagues at the Department of Communication and Innovation Studies, now the Communication and Innovation Studies Group of Wageningen University, the Netherlands.

perceived the quality of irrigation services. Later, some elements of this methodology were adopted in an action research program to establish water users' organizations in selected distributary canals in Punjab and Sindh provinces of Pakistan (Bandaragoda 1999). The preference for participatory methods in the multi-country regional study was based on strong empirical support derived from this social mobilization experiment in Pakistan.

The action research program conducted at four pilot sites had succeeded in establishing socially viable water users' organizations at the secondary level of Pakistan's canal irrigation system. The program's success was contrary to the popular beliefs that existed both within and outside Pakistan, mostly related to constraints of a powerful technocratic administrative system, illiterate farmers, social and economic pressures from big landowners, and obstacles caused by the hierarchical society. The popular notions were all proven to be invalid under conditions of a participatory process of social organization.

The methodology used in Pakistan pilot sites was characterized by a stepwise dialogic process<sup>9</sup> of social organization for achieving genuine stakeholder participation. The process was catalyzed by a locally recruited small field team with the assistance of community-based social organization volunteers. Training, field days, demonstrations and other forms of capacity building were the major motivating influences. This combined effort resulted in successfully achieving the formation of two hundred water user associations (WUAs) at the tertiary (watercourse) level, and four water user federations (WUFs) at the secondary canal (distributary) level at the four pilot sites located in two provinces of Pakistan.

The new WUFs were able to take collective decisions to negotiate with state irrigation authorities on joint management agreements for managing water resources in the canal system. Although these agreements were not made immediately effective due to a procedural difficulty imposed by the prevailing legal framework,<sup>10</sup> the WUFs proceeded to test their capacity for collective action by undertaking a planned maintenance program during the canal closure period, and also to initiate a maintenance-related infrastructure improvement program.

The step-wise social organization process was of progressively enhanced interactions in a series of meetings with the water users in each pilot site. Building on the steps already taken, the process advanced towards the group behaving on mutual trust, sharing information, consulting for consensus, developing options and implementing an appropriate organization design. Since the interactions were initially between the catalysts and the water users, the stages of this iterative process of social organization was named "Five Dialogic Steps" given in box 1.

Lessons derived from this experience include the use of community-based volunteers for social organization, the value of step-wise dialogic interaction processes and stakeholder involvement in planning and implementation of actions. As the research group and the community members meet a number of times, and as their mutual trust develops, there can be a visible improvement in the community interest in participation. Table 1 below shows that, in the case of the action research program in Pakistan, the participation rates gradually improved, in all four pilot sites, as they advanced across the step-wise participatory and consultative encounters.

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<sup>9</sup>Schrijvers (1995) refers to five characteristics of dialogical communication between the researcher and the researched: dynamic focus on change, exchange, ideal of egalitarian relations, shared objectives, and shared power to define. See for more details Schrijvers (1991). These features were embodied in the dialogic steps used in the action research.

<sup>10</sup>The joint agreements were not totally withdrawn, but they were not made operative for the pilot WUFs, probably as a decision was taken to replicate distributary level WUFs in the whole province.

**Box 1: Five Dialogic Steps Used in IWMI’s Action Research on Participatory Social Organization for Pakistan’s Canal Irrigation.**

*First Dialogue: A series of “familiarization meetings” to get to know the area and the people, and to introduce the purpose of field teams’ visits, and to explain the idea of the pilot study and its proposed activities.*

*Second Dialogue: A series of “rapport-building meetings” to meet with the identified social organization volunteers (SOVs) and other water users in small groups. The main purpose was to discuss the objectives of the program and build up fellowship with the SOVs and their colleagues.*

*Third Dialogue: A series of “planning meetings” in which the tentative plans for establishing water users’ organizations were developed. These planning meetings formed a crucial step in the social organization process to ensure that the field teams and water users knew the project objectives clearly, and to follow up on earlier rapport building meetings for clarifications.*

*Fourth Dialogue: A series of “selection meetings” for the purpose of discussing the process for selecting or electing organizational leaders at the primary (watercourse) level.*

*Fifth Dialogue: “Federation meetings” to initiate the identification of office bearers for the pilot Water Users Federations at the secondary (distributary) level. During these interactions, the water users proceeded to select the watercourse nominees, forming the general body of the federation in each pilot area, and then to select the WUF office bearers.*

*Source: Bandaragoda 2000:10.*

*Table 1. Participation Rates (%) at Different Dialogic Steps.*

Pilot Site	Rapport Building Meetings	Consultation Meetings	Selection Meetings	Federation Meetings
Hakra 4-R	10	40	76	96
Bareji	29	58	72	90
Dhoro Naro	14	50	53	80
Heran	12	51	64	96

*Source: Bandaragoda (1999: 13)*

## **METHODOLOGICAL PROPOSITIONS IN THE REGIONAL STUDY**

The efforts in conducting iterative consultation processes had paid dividends in the Pakistan’s study. However, all of its participatory features were not included in the regional study as some flexibility was necessary to allow for contextual needs. As Chambers (1995) has noted, “participation which truly empowers implies a process that is unpredictable, and should be flexible to meet the

requirements of the context.” Considering the desirability of being flexible, only some key features of positive results from the action research in Pakistan formed the basis of “a Framework for Institutional Analysis for Water Resources Management in a River Basin Context,” which was distributed among the field teams. The Framework acknowledged that transposition of institutional models from one context to another, even if they were desirable in some instances, was extremely difficult. For problems of “contextual fit”, it is not possible for developing countries to do an “institutional leapfrog” and quickly approach the level of developed-country basin institutions (Shah, 2003). This does not mean that the experience of river basin management in the developed world is irrelevant, but “it does mean that uncritical imposition of developed-country institutional models in developing-country river-basin contexts may prove dysfunctional or even counterproductive.” In order to gain from flexibility that was demanded by different contextual situations, the Framework suggested an approach in “institutional adaptation” (Bandaragoda 2000: 31) in which the existing institutions could be improved and built upon for establishing IWRM, without having to replace them totally with new ones, and with minimum disruption to the whole institutional framework. It also suggested a participatory methodology that was to be developed and tested throughout the study period. As an initial step, the Framework recommended a diagnostic phase to assess the contextual factors, which would then form the foundation for analyzing the existing institutional arrangements and developing further improvements.

The Framework highlighted the advantage of participation by user groups and other stakeholders in strengthening their capability to effectively attend to a number of local resource management needs. Particularly, the stakeholder participation can effectively attend to resolving local conflicts and attending to water use misbehavior, the members of the community, mobilizing local resources and effective handling of supply inputs and marketing of produce.

The Study Framework also recommended that outsiders could play only a facilitating role in a typical participatory approach. The associated constraints included a great deal of patience and understanding on the part the facilitator, as helping the people to help themselves reach a reasonable degree of stability and strength in community participation was very often a time-consuming process.

With the suggested participatory approach, the value of research and expert advice could become an issue among the stakeholders. To what extent can research guide a group of stakeholders in policy-oriented decisions? This query represents a major distinction between the traditional field research methods and the proposed participatory approaches. The Framework mentioned as an apt reply, the recommendations presented at the end of the UNESCO World Conference on Science; its main thrust was that public participation would certainly serve to extract the best of lessons and advice (see box 2).

*Study Hypotheses:* In sum, the regional study was based on three main hypotheses associated with the strategy of institutional adaptation. First, the proposed method hypothesized that a participatory approach involving the stakeholder groups through a series of consultation meetings would be an effective way of achieving the study objectives. Second, the methodology proposed that institutional adaptation, rather than the total transposition of an institutional framework that exists and works well elsewhere, would be greatly facilitated by local participation strategy. The third hypothesis was that the stakeholders of river basins at higher stages of development were likely to show greater interest in participation.<sup>11</sup>

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<sup>11</sup>As illustrated in figure 2, the five study basins are in varying stages of development, with Fuyang reaching almost at a closed basin stage, and East Rapti still in a developing stage, and others in between them.

***Box 2: Declaration of the International Conference on Participatory Processes in Water Management (PPWM) – Satellite Conference to UNESCO’s World Conference on Science, Budapest, Hungary, June 1999.***

*“Science is a necessary but insufficient basis for public policy decisions. Science informs policy decisions by providing the factual basis upon which decisions can be made, and alerts decision-makers to the degrees of certainty or uncertainty associated with these facts. But decisions about public policy inevitably involve choices among competing visions of the kinds of societies in which we want to live.*

*Public participation is a precondition for social acceptance of public policy decisions. Public participation informs public policy decisions with the goals and aspirations of those people who believe themselves or their societies to be affected by these decisions. Participation is a process of mutual education among the public, scientists, and decision-makers about public concerns, the factual basis for the decision, and the process of decision making itself. The transparency of the process deepens the trust between the public and policymakers, and also the trust between the public and the scientific community.*

*Public participation must meet the following requirements before it will ensure legitimacy and credibility for science decisions:*

- 1. The public should have a say in decisions about actions that affect their lives;*
- 2. Public participation includes the promise that the public’s contribution will influence the decision;*
- 3. The public participation process is effective if it (a) actively seeks out and facilitates the involvement of those potentially affected at all levels of society, (b) provides participants with the information they need to participate meaningfully, (c) creates a forum for discourse and interaction with others who are potentially affected, with the scientific community and policy decision-makers.*

*Public participation is a catalyst for more responsive governance. The conference concluded that public participation is an essential precursor for sustainability of both the environment and civil society.”*

*Source: Water International, Vol 24, No. 3, September 1999, pp 277-278.*

## **FROM RESULTS OF THE REGIONAL STUDY**

As the study framework anticipated, an initial effort was made in all of the study sites to bring about the required awareness among the participants. A wide awareness was considered essential for the community to be able to mobilize meaningful collective action for rational decisions. A facilitating role by the study teams included capacity building among the stakeholder groups to understand and appreciate the main principles of integrated water resources management in the context of a river basin. The initial consultation meetings with the stakeholder groups were successful in creating the necessary awareness among the basin-based stakeholders.

As the comprehensive dialogic process of interactions used in the pilot studies in Pakistan was rather time consuming, an adaptation of it was designed for the five-country regional study. The method, however, retained the dialogic character in a series of consultation meetings, as an adaptation of the PLA methods (PLA Notes, IIED, [www.iied.org/sarl/pla\\_notes/](http://www.iied.org/sarl/pla_notes/)).<sup>12</sup> An outline of this process can be seen later in this paper, with reference to the “multi-level participatory and consultative approach” used in the study of Deduru Oya river basin of Sri Lanka.

### **Data collection through participatory research**

Preliminary consultation meetings with groups of stakeholders succeeded in obtaining valuable background information about the five river basins. Accurate data on cropping intensities, extent of underground water irrigation, and average incomes (not used in this study) could be more easily obtained through participatory research methods than through secondary records. Some of these items could be crosschecked using the two types of methods. Table 2 gives some key features of the information collected through both methods.

Thus, the participatory methodology also highlighted that traditional methods of physical measurements and individual interviews could provide more authentic field data, when they are combined with participatory research methods. The study also completed a set of diagnostic analyses to understand the institutional setting in each of these basins, based on their physical and socioeconomic features. Consultation meetings were continued to analyze the two sets of information, physical as well as socioeconomic, for identifying the related water management issues and appropriate institutional strategies.

Similarly, information collected from the five study sites through a series of PLA meetings and water accounting methods (Molden and Sakthivadivel 1999) helped to generate a comparative analysis of the degree of development in each basin. Based on this work, IWMI researchers were able to present a theoretical framework on river basin development, suggesting three broad stages of development in a river basin: infrastructure development stage, utilization or transition stage giving emphasis on developing water resources management strategies, and allocation stage in which the basin is fully developed and the emphasis is on allocating available supplies (Sakthivadivel and Molden 2001:37; Samad 2003:227). Figure 1 shows this hypothetical development path, which could be applied to any river basin or any set of river basins. Figure 1 was, in fact, generalized from preliminary results of the regional study, in placing the five river basins in the typology, indicating their different stages of development (figure 2).

An analysis of the stakeholder consultations from the five river basins showed that the more developed basins had a stakeholder demand for institutions that were responsive to water management requirements. These demands differed from those oriented towards construction and infrastructure development requirements in the less developed basins. The study was concluded through a diagnostic analysis, which was based on a combination of participatory and more traditional research methods, and an action planning stage, which was done entirely through participatory and learning processes. Importantly, the diagnosis in each basin leading to a contextually designed action plan helped in an institutional adaptation rather than a transposition of institutions from elsewhere. Some details of country studies given below describe how this was done and some of the issues encountered, and serve to explain why PLA methods were not fully utilized in some cases.

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<sup>12</sup>For further information on PLA in general, see: Meera Kaul Shah, with Rose Zambezi and Mary Simasiku, June 1999. *Listening to Young Voices: Facilitating Participatory Appraisals on Reproductive Health with Adolescents*, FOCUS on Young Adults and Care International in Zambia, Washington, D.C. and Lusaka, Zambia. [www.pathfind.org/focus.htm](http://www.pathfind.org/focus.htm).

Table 2. Salient characteristics.

Basin Characteristics	Fuyang	Singkarak-Ombilin Subbasin	East Rapti	Upper Pampanga	Deduru Oya
Country	People's Republic of China	Indonesia	Nepal	Philippines	Sri Lanka
Catchment area (sq. km)	22,814	2,210	3,135	3,742	2,623
Location: Province	Hebei	West Sumatra	Not applicable	Nueva Ecija	North Western
District/s	Shijiazhang, Handan, Xingtai	Solok, Tanah Datar and Sawah Lunto Sijunjung	MakawanpurChitwan	Bulacan Pampanga	Kurunegala Puttalam
No. of urban centers	345	4	3	3	2
No. of villages	9,092	400	Not known	325	2,663
Average annual rainfall:	570 mm	2,025 mm	3,576 mm	1,994 mm	1,494 mm
Normal year					
Dry year	200-300 mm	1,163 mm	1,778 mm	1,100 mm	1,152 mm
Per capita water availability (m3)	868		9,034	3,630	1,046
Facilities/Assets					
No. of irrigation schemes (surface irrigation)	3 (major) and a number of small storage systems	None (Ombilin Subbasin)	214	37	3, 4, 3,596 major, medium and minor systems, respectively
No. of lift irrigation units (groundwater and river lift)	185,527 (groundwater)	14 pump and 184 water wheel (Ombilin Subbasin)	Shallow tube wells = 589; dug wells = 1,809; treadle pumps = 47	9	shallow wells = 2,450
Domestic water supply schemes	41	2 (Ombilin Subbasin)	45	17	37 pipe-borne 1,199 tubewells
No. of hydropower plants	14	1 Hydroelectric, 4 micro hydroelectric	None	2	None
Land use and agriculture					
Cultivated area (ha)	1,239,000	130,291	85,578	254,490	201,585

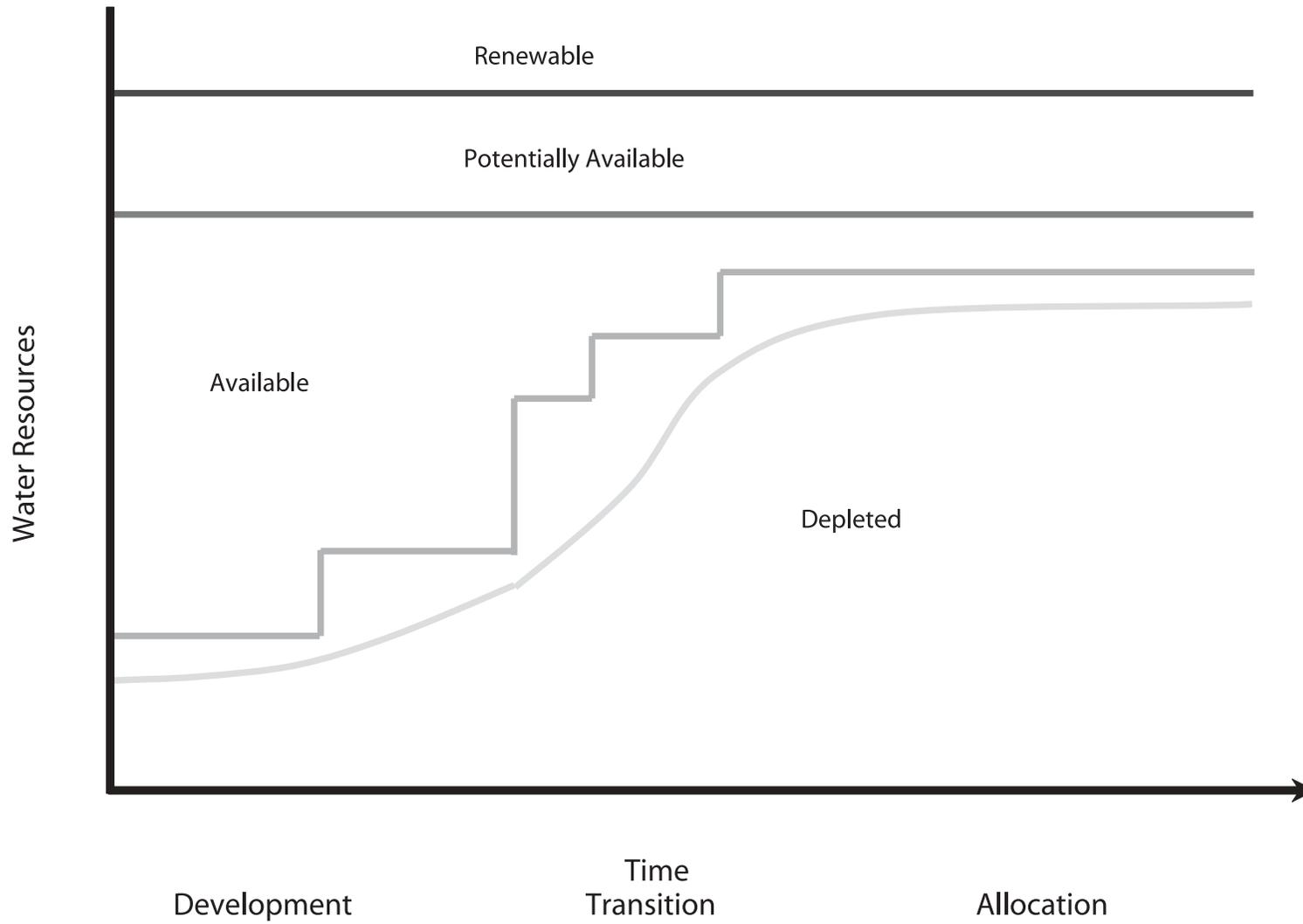
(Continued)

Table 2 Continued.

Basin Characteristics	Fuyang	Singkarak-Ombilin Subbasin	East Rapti	Upper Pampanga	Deduru Oya
Country	People's Republic of China	Indonesia	Nepal	Philippines	Sri Lanka
Grassland/Savannah (ha)	-	11,234	10,500	4,117	55
Forestland (ha)	119,000	45,498	120,959	37,425	8,035
Area covered with water bodies (ha)	223,800	1,956	17,275	9,600	1,410
Surface irrigated area (ha)	150,000	31,180	32,388	98,222	47,150
Groundwater irrigated area (ha)	875,000	-	7,743	25,135	1,515
Main irrigated crops	wheat, corn, cotton, rape seed	rice, mungbean, groundnut	rice, maize, wheat	rice, vegetable, corn, onion	rice, chili, pulses, vegetables
Annual cropping intensity (%)	155	rice irrigation=200 other field crops=38	274 = irrigation from main river 257 = irrigation from tributary	156 = surface irrigation 200 = groundwater irrigation	133-165 = surface irrigation 180-300 = groundwater irrigation
Irrigated area (%)	45	14.8	12.8	33	18.5

Source: Sakhivadivel and Molden (2002: 32)

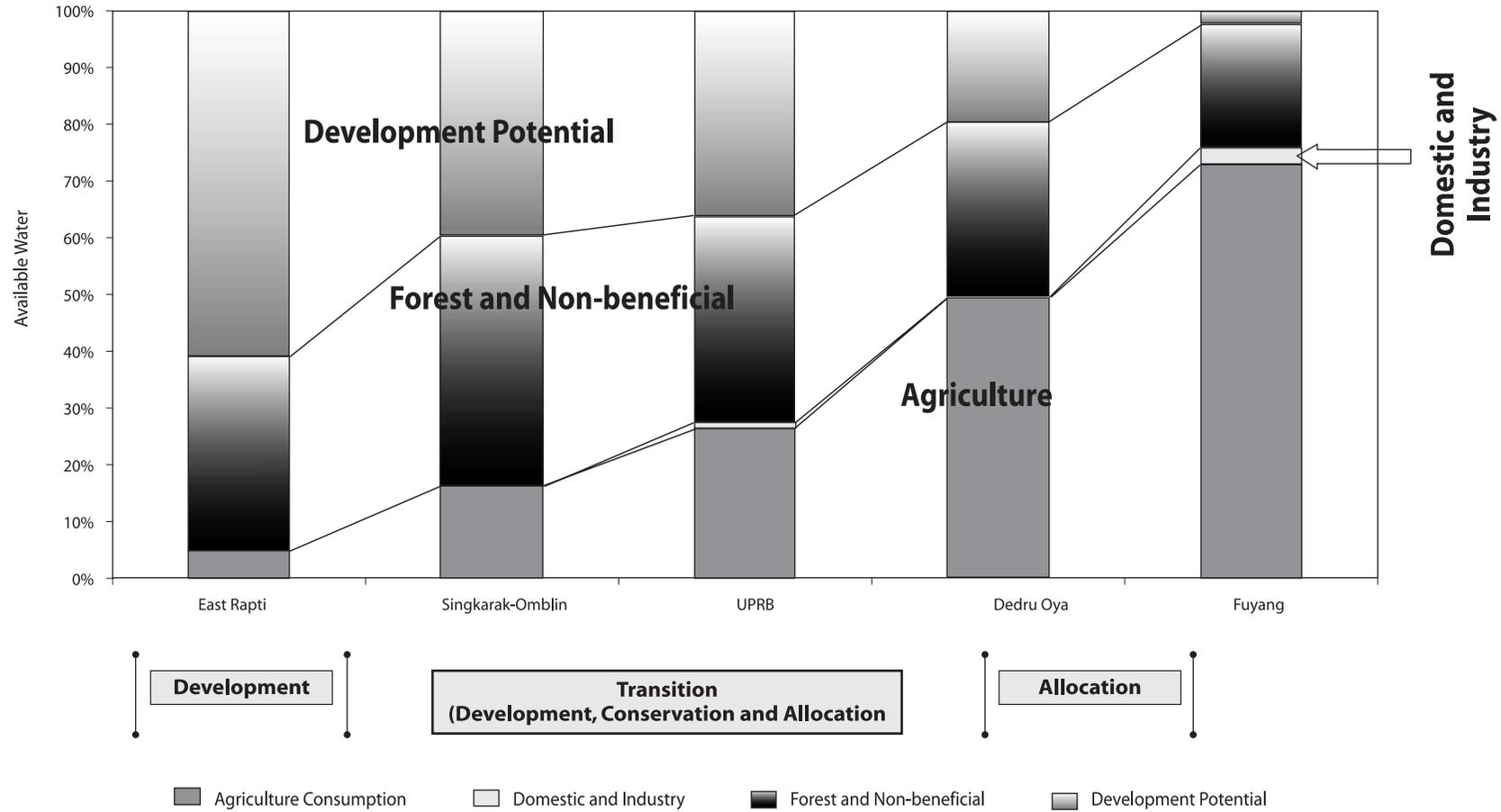
Figure 1. Phases of river basin development.



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Source: (Samad 2003:227)

Figure 2. Development stages of the five basins and sectoral water use.



Source: Reproduced from Samad, Madar (2003).

## The Study of Deduru Oya River Basin in Sri Lanka<sup>13</sup>

The relatively small size, as well as the relatively high percentage of rural population, in the Deduru Oya river basin seems to belie its wide range of water uses. The water-related activities in the basin include: irrigation (major, medium, small and minor tank systems, *anicut*<sup>14</sup> systems and lift irrigation), agricultural and livestock farms, domestic water supply, small-scale industries, extraction of river sand, fisheries and forestry. These different activities create different kinds of problems and raise different issues, depending on the nature of the resource users. The reconnaissance surveys and preliminary consultation meetings conducted during the initial stages of the study provided some understanding on the dynamic nature of the issues related to different water use activities in the basin. Therefore, a series of more in-depth consultation meetings were designed to gain a deeper understanding on the problems and issues of their individual concerns.

Time and resource constraints associated with the study made it necessary to select rapid appraisal methods for identifying water resource management and institutional problems in the basin. Methodologies for stakeholder consultation needed to be those that promote their active participation. Unless the stakeholders were involved in the whole process of a development project, including its problem identification phase, they were less likely to participate actively in implementation activities (Chambers 1994 ; Ford et al. 1992). The river basins are large geographical contexts, and the stakeholders are widely dispersed within them. Some selectivity of places, persons, and their numbers was needed to make stakeholder groups engage themselves in meaningful discussions. These selections were all done during the preliminary consultation meetings.

As the best suited method for in-depth consultation in the given circumstances (limited time, wide dispersion of stakeholders, and non-controversial issues for discussion) , the method of Focus Group Discussions (FGDs) was selected (Krueger and Casey 2000). A Focus Group is “a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research” (Powell and Single 1996: 499). Focus Group Discussions can take the form of group interviewing, but as Morgan (1997:12) defines, they are necessarily the interactions within the group based on issues and questions raised by the researcher. When the group proceeds through the stage of initiation, a series of questions are raised for the group to discuss, and supplemental questions and issues are raised to help the flow of the discussion. In the study, care was taken in selecting the groups to ensure that they well represented all the segments of the stakeholder community (different water uses, upstream and downstream, urban and rural, different occupations, etc.). They were invariably selected in a consultative process, with the local stakeholders taking a major responsibility.

In addition to these consultation processes, a few other supplementary data collection methods were also deployed in order to capture information that might not be forthcoming through FGDs.<sup>15</sup> Following World Bank’s guidelines (World Bank Social Analysis web site), focus groups were used for both group discussions and group interviews. In the preliminary semi-structured group discussions, small groups were consulted regarding the selection of persons for group interviews. In the latter, through a more structured process, a two-way learning exercise was conducted, and

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<sup>13</sup>More details of this study are reported in Jinapala et al. 2004.

<sup>14</sup>*Anicut is a small diversion dam across a stream or river.*

<sup>15</sup>The supplementary information collected included: quantitative information for basin level water balance studies; information for assessing the performance of different types of irrigation systems in the river basin; socioeconomic information of the basin; and Information on the performance of existing institutions.

preferences were explored for consensus-building. It was generally found that these consultations were limited in achieving consensus, confirming the constraints mentioned in the recommended procedure.<sup>16</sup>

Participatory methodologies were adopted during the problem identification phase of the study to make different stakeholders aware of the gravity of the problems that their water resources are currently facing. The main outcome of an early understanding of issues was the readiness with which they would mobilize themselves in the action phase.

The stakeholder consultation methodology during the first phase for diagnostic investigations involved three different components:

- Meetings with key actors of the water resources development and management agencies functioning in the basin area.
- FGDs with representatives of water resources development and management agencies.
- FGDs for participatory appraisals with representatives of communities of water users and other resource users in the basin.

The methodology was used on representative groups in a sample of geographical units. A hierarchy of such units consisted of four different categories: Province, District, Divisional Secretary division (DS), and Grama Niladhari (Village Headman) division, mentioned in the descending order of size. Of these, the DS area was chosen as the unit of data collection for the study. The DS divisions were found to be appropriate, because they were manageable units representing different agro-ecological zones in the basin, and with official representatives of different line agencies attached to them. This arrangement facilitated the collection of data and information on resource use, population, and institutions related to water and other natural resources. As in other countries, in some places of the Deduru Oya basin also, the administrative boundaries tended to differ from hydrological boundaries. The former was adhered to in the sampling and analyses.

The interviews with key individual agency officials were a prelude to having FGDs with resource users. The main objectives of these interviews were:

- Identification of water resource based development and management activities implemented by the key agencies (collecting data available in their respective agencies).
- Identification of the main problems with regard to the availability and management of water resources for main income earning activities in the basin.
- Identification of their institutional problems and possible solutions to such problems.
- Identification of possible future threats they may have to face in developing and managing water resources in the basin.
- Finally, documenting their suggestions to improve the development and management of water resources.<sup>17</sup>

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<sup>16</sup>World Bank's Social Analysis web site: <http://lnweb18.worldbank.org/ESSD/>

<sup>17</sup>For more details, see Jinapala et al. 2004.

Subsequently, FGDs were conducted with agency officials. The objectives of meeting agency officials in groups were:

- To create a joint forum for officials of different agencies to exchange views and opinions on similar issues.
- To identify the similarities and differences of the views of different agencies on problems and issues in the basin.
- To identify the significance of different issues and problems in the basin from the agencies' perspectives.

The agencies consulted and the key actors interviewed are shown in table 3.

*Table 3. Agencies and key officials interviewed in sample DS divisions.*

Name of the agency	Key actors interviewed	The main functions of the agencies
Divisional Secretary's office	Divisional Secretaries and the Assistant Directors (Planning)	Coordination of activities related to land and water resources development in the DS division. The Divisional Secretary acts as the chairman of the two coordination bodies at DS level, the divisional agriculture committee and the divisional development committee. He also has authority to enforce rules, regulations and acts in land and water resources management in his jurisdiction, the DS division.
Department of Agrarian Services (DAS)	Divisional Officers (DOs), 1-2 DAS centers falling under each DS division	DAS is responsible for small tank irrigation systems, for mobilizing resource users in them, and registering the water users' associations in irrigation systems. Especially, the rehabilitation of small tanks is handled by the DAS when the government provides funds for rehabilitation and improvement activities.
Department of Agriculture (DOA)	Agricultural Instructors-AIs (1-2 AIs from each DS division)	DOA is responsible for agricultural extension, technology transfer etc., in both irrigation and rain-fed farming systems.
Coconut Cultivation Board (CCB)	Seven officials in charge of coconut development zones in the basin	CCB is responsible of promoting coconut cultivation by providing extension services, and inputs such as seedlings to the farmers in the area. Coconut is the main perennial crop in the basin and is a significant source of income for the farmers in the basin.
Irrigation department (ID)	The Deputy Directors (Kurunegala and Puttalam District), Irrigation Engineers in charge of major and medium tank and anicut systems in the basin	The Irrigation Department is responsible for managing medium and major irrigation schemes in the basin. The main water use in the basin is irrigated agriculture.
Irrigation Management Division of the Ministry of Irrigation and Power	The Project Managers of major irrigation systems within the basin	Irrigation Management Division is responsible for organizing farmers in major irrigation schemes for joint management.
Forest Department	District Forest Officer (DFO)	The agency responsible for the development and management of forest resources in the district.
Water Supply and Drainage Board	Manager (NWS&DB)	The agency in charge in acquisition and distribution of water for domestic and industrial purposes.

Source: Jinapala et al. (2004: 9)

Consultation of agency officers through FGDs was a joint activity of the organizing agencies and the IWMI field research team. The Divisional Secretaries of the six DS divisions sponsored (providing transport, refreshments etc.) the FGDs using their resources, while IWMI field researchers facilitated and documented the discussions. The FGDs with resource users followed the interactions with the agency staff. The groups were selected jointly by agency staff and IWMI researchers following the suggestions presented at preliminary meetings with resource users. In this instance, some selection bias could creep in, as the preliminary discussions with resource user groups, though done at random, were fairly informal conversations. However, this may not have affected the final outcome as the objective was not to find controversial solutions or to effect competitive leadership selections. The discussions with the resource users focused on: water quality and quantity-related problems and their impact on their livelihood activities; the nature of competition and conflicts among different water use sectors; institutional support for conflict resolution among different water users; suggestions for addressing unresolved problems; identifying similarities and differences of views between agency personnel and resource users.

The merits of the approach could be observed in the Deduru Oya basin from the interest and commitment shown by the participants at stakeholder meetings and in implementing some IWRM activities in the basin during the action phase of the project. The stakeholders' interest in the proceedings was far more than what could be seen in traditional nonparticipatory meetings.

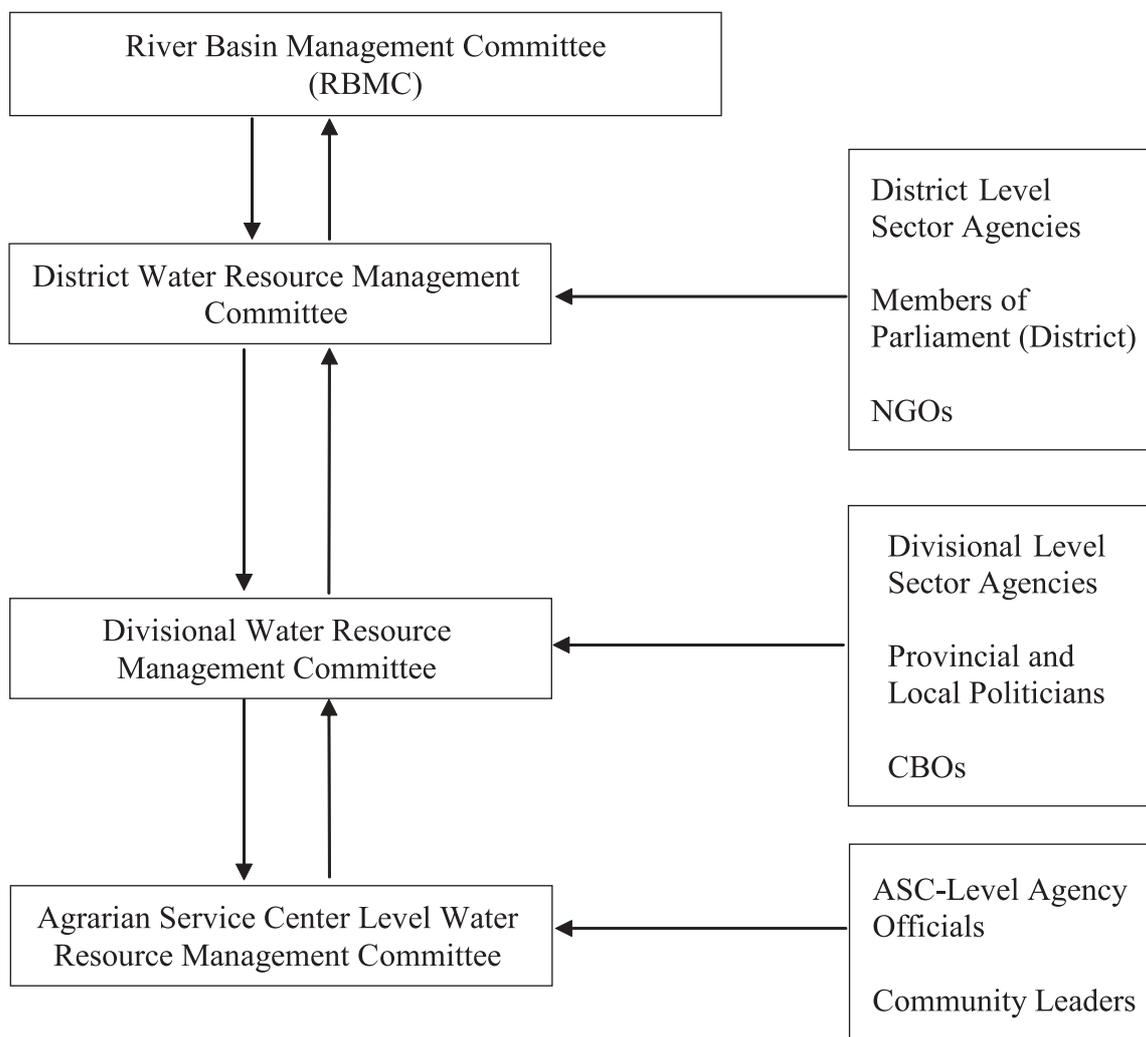
During the group discussions, institutional problems related to water-resources management were discussed in detail. The stakeholders proposed ways and means to overcome these institutional problems by strengthening the existing institutions rather than by creating new ones. It is on the suggestions of the stakeholders that strengthening of the Divisional Secretariat level for planning, implementing, and monitoring of IWRM and other development activities were proposed. Another main activity during the action phase was to identify new roles and functions for the organizations that would take responsibility for IWRM activities. These new roles and functions were proposed by stakeholders to fill the existing gaps in the institutions.

Instead of having a permanent river basin organization dedicated to undertake IWRM in each basin, the preference indicated in the consultation meetings was to have a three-tier committee system (figure 3). The committees at the three levels would be responsible for taking water allocation decisions and for other key IWRM functions, for a single river basin or a cluster of river basins, through a hierarchy of delegated authority regimes.

This proposed arrangement is similar to what Berkes' ladder illustrated with varying levels of co-management (Bruns 2003b). Starting from face-to-face contact for initial consultation, the community then cooperates with the government to provide local knowledge, and gets involved in a two-way communication process to influence government decisions, and enters into a partnership with the government in the form of "advisory committees." Going up the ladder, the community is given an opportunity to participate more meaningfully in the "management boards." In this instance of the Deduru Oya proposal, the "management committees" are at that level. Following the principle of subsidiarity, the next step is to establish local level self-sustained basin organizations managed by the local stakeholders.

One of the stakeholder consultations pointed out the difficulty in establishing a River Basin Organization for the Deduru Oya, as there could be a legal impediment due to its inter-provincial coverage. Consequently, a special study was commissioned to review related legal provisions, and its report found that there were no legal impediments that would stand in the way of the North Western Province setting up a river-basin organization for Deduru Oya. Accordingly, the Interim National Water Resources Authority (INWRA) embarked on preparatory steps to establish IWRM in the Deduru Oya basin. The information collected through participatory methods during one year

Figure 3. Proposed new organizational structure for Deduru Oya basin.



Source: Project Final Report on Developing Effective Water Management Institutions, Volume IV, June 2003, Chapter 6.

of the study was handed over to the INWRA. Under normal procedure, through commissioned feasibility studies, this work would have taken more than double the time, and several multiples of the cost. Even then, the valuable information on stakeholder preferences on institutional development would have still been missed.

### Experiences in the Philippines and Indonesia

Of the five selected river basin sites, the other two sites in addition to the Deduru Oya river basin in Sri Lanka, where the participatory methodology was used successfully were the Upper Pampanga in the Philippines and the Ombilin subbasin in West Sumatra in Indonesia. However, the study teams of both sites, using the flexibility provided in the Study Framework, tended to rely considerably on more nonparticipatory methods to gather information initially, and resorted to consultation meetings later to mobilize stakeholder support for action planning.

In the Philippines case, a series of group discussions helped to bring together the staff of operating agencies related to water resources management in the basin, and the water users, to identify common problems, and plan some actions. These group discussions were not conducted entirely according to PLA procedure; they were not FGDs as in the Sri Lanka case, but in terms of motivating the participants, the step-wise group discussions served the purpose.

In general, study results indicated that the basin still has abundant water resources both surface and groundwater, and when shortages of surface water occurred during the dry months, there was adequate groundwater that could be harnessed. Institutionally, no single agency was found to have complete information about the basin. With the results of the diagnostic study highlighting this deficiency, the group agreed that a river basin coordinating council would be a viable and productive strategy to manage the water resources in the basin more effectively than at present.

The group collectively agreed to design and implement a coordinating council for the Upper Pampanga river basin (UPRB). They also agreed on the functions of the council. More importantly, the stakeholder group collectively agreed on the composition of the council. Considering that the geographic location of the basin was mainly within the province of Nueva Ecija, the common agreement was that the council should be chaired by the Provincial Governor of Nueva Ecija, with the members to represent the different water stakeholders in the basin. The roles and terms of reference for each of the agency to be involved in the council were jointly defined during a round table discussion.

The run up to this stage of developments was a typical consultative process. A Concept Paper prepared by a small team was widely shared among the stakeholder groups in the UPRB, and their comments were received regarding the need for, and the method of, establishing a Coordinating Committee (CC) to coordinate various water uses in the basin. The stakeholders decided that such a coordinating committee with representation from existing organizations related to the basin would be an appropriate first step in institutional reforms towards IWRM. A separate River Basin Organization (RBO) could be formed later, particularly when the stakeholders of rest of the Pampanga basin could join in the process. The final Concept Paper, which was prepared after incorporating various suggestions and comments at the first meeting, was presented at a meeting of all stakeholders chaired by the Governor of the Nueva Ecija Province. The participants for this meeting were invited through general announcements by the Provincial authorities. The main feature of these efforts is the formalism in the form of an agreement reached by the stakeholders. A document titled "Declaration of Commitment" was signed by seventeen key persons representing various stakeholder interests, including the Governor himself, and five Mayors in the basin area. Thus, a series of stakeholder meetings with cooperation from the study team and the local authorities led to the establishment of the UPRB Coordinating Council. At the national Workshop held during 17-18 April 2002, the UPRBCC was formalized by the signing of an Administrative Order by the Governor. At this meeting, a Working Group (Executive Committee for the UPRBCC) was also identified by the stakeholders.

In the Ombilin river basin in West Sumatra, Indonesia, three stakeholder dialogues were held to discuss the National Water Management Reform Policy, and its implication for improvement of water management in West Sumatra in general, and Upper Subbasin of Inderagiri River Basin in particular. They were in the form a step-wise, progressively advancing series of discussions. The first was to discuss the results of water accounting and performance investigations, and the water users' perceptions indicated in consultations carried out initially in the study. The participants included the staff from national level agencies as well. The second was held along with the initial discussion on the implementation of Northern Sumatra Irrigation and Agriculture Development Project funded by ADB and the Netherlands Government. The third was held towards the end of the study to finalize ideas for an action plan, and the formalization of a national water policy.

As an outcome of consultation processes, a draft of “Provincial Water Regulations” for West Sumatra was drafted. This document was further processed and finalized and presented at the third workshop, and was ratified by the representatives of a number of Provinces in Indonesia, and key officials from water-related agencies in Jakarta who attended the meeting.

The water users in the agricultural sector of the upper Indregiri river basin had a long-term grievance since the establishment of a Hydro Electric Power Plant on the Singkarak lake, located upstream of Ombilin river. As the water used in power generation flowed into another different river basin, the power plant caused a net decline in the water supply for irrigation in the Ombilin river basin. The stakeholder consultations started by the study team provided an opportunity for the first time for different water user groups to meet together and discuss the relevant issues. The formation of a river basin organization consisting of representatives of all water users (irrigation, power generation, coal mine, and domestic water supply) was the conclusion of the stakeholder consultations.

### **Experience in China and Nepal**

Complete PLA processes with local stakeholder groups were not possible in the Fuyang river basin in southern China and the East Rapti in Nepal for logistical reasons. However, a few consultation meetings were held during the preliminary stages of the study.

In China, the selected river basin was in fact a subbasin of a larger river. The almost fully developed water resources in the subbasin provided considerable needs for stakeholder consultation, and the stakeholders were enthusiastic about the concepts of IWRM, and the need for them to participate. However, the study team found it inappropriate to have participatory consultative processes without the involvement of the stakeholders of the rest of the larger basin. This was not feasible within the study provisions. Also, the study team, which was from Beijing, found it difficult to undertake detailed stakeholder consultation even in the subbasin as anticipated in the Study Framework.

However, the study team conducted the physical and social diagnostic investigations using traditional survey methods and identified the main issues related to IWRM needs in the Fuyang basin. A few consultation meetings were held with local stakeholders, and later, with macrolevel stakeholders to discuss action plans. A strong issue surfaced at these consultations was the heavy draw down of groundwater in the basin.

In the absence of local level participation for institutional development for IWRM, the institutional changes agreed upon, mostly at the national level, were restricted to the introduction of stricter rules and laws to regulate groundwater extraction in the basin. In Nepal, the designed study activities were restricted to secondary data collection and national level consultation meetings. Adequate use of participatory methods was not possible in the East Rapti basin area due to local level security restrictions at the time. Even during the preliminary stages when consultations meetings were held in the basin area, the stakeholder interest was visibly low, as there was no substantial water-related stress in managing the main activity, which was irrigation.

The major concern among some stakeholders of East Rapti was the need to protect the fragile mountain environment in the context of any further water resources development. Over the last 20 years, the cultivated area in the basin has increased from 83,448 hectares to 85,578 hectares whereas the forest cover has decreased by 73,255 hectares. Similarly, water pollution in the river caused by the disposal of industrial wastes and stream degradation due to sand mining were the environmental issues reported by the water users. Since irrigation is the dominant user group, there are informal arrangements made by irrigation water user organizations to allocate water to other users such as the mills.

## Comparative Outcomes of Participatory Efforts

Table 4 gives a comparison of the level of participation in the five selected river basins and the main features of actions planned and initiated during the study period. Higher the level of participation, greater has been the final outcome in the form of plans and actions for institutional development.

*Table 4. Level of Participation and Achievements in Five River Basins.*

Country and River Basin	Level of Participation	Intensity of Other Interactions	Level of Outcomes in Action Planning	Key Actions Initiated
China – Fuyang	Low	High	Low - Actions planned only	Plans for groundwater regulations
Indonesia – Ombilin	Medium	High	Medium - Some actions initiated	Provincial regulation for IWRM in West Sumatra
Nepal – East Rapti	Low	Low	Low - Interest created for future actions	No direct outcomes
Philippines – Upper Pampanga	Medium	High	Medium - Some visible outcomes	Upper Pampanga River Basin Coordinating Council formed
Sri Lanka – Deduru Oya	High	High	High - Strong visible outcomes	Legal basis for inter-povincial river basins established; pilot level river basin committee for Deduru Oya initiated by the national water resources authorities

*Source:* Author assessments based on study results

This attempt at a comparative evaluation of the five contexts is not a complete analysis, as two of the countries could not fully fit into the study framework requirements as anticipated due to unavoidable circumstances. Both China and Nepal, not having enough opportunity for participatory consultations, could not achieve as much as the other three countries did by way of at least identifying local institutional changes that are needed for IWRM. Neither of them was able through the traditional study approaches to reach the stage of designing any organizational arrangement for river basin management.

## PARTICIPATION, INSTITUTIONAL ADAPTATION AND SUBSIDIARITY

In view of difficulties and inefficiencies in the transposition of institutional models from one context to another, the approach suggested in the foregoing sections of the paper was “institutional adaptation,” in which the existing institutional framework was adjusted and improved to meet the new management requirements. The contextual factors assessed during the diagnostic phase of an evaluation could considerably help this process. A participatory learning and action approach could more easily assess the intricacies of an existing institutional framework than a nonparticipatory expert evaluation. The Deduru Oya and Upper Pampanga experiences have shown beyond doubt that the information collected and the consensus reached during such a short time period could not

have been achieved by much greater efforts through nonparticipatory methods. While the outcome of these interventions would be an adaptation of the existing institutional framework to accommodate the identified needs for improvement, rather than the total transposition of an institutional framework that exists, and works well, elsewhere, yet, lessons from success stories from other places can be used in the awareness building activities, needs identification and crafting and adapting the needed institutional structures.

The alternative to institutional adaptation is the creation of new organizations. Very often, these new institutional structures are normative models recommended by experts, who have seen and studied effective institutions elsewhere. They promote these models, with or without any stakeholder consultation, and invariably through “nonparticipatory” methods. As in the case of the Mahaweli Authority, which has been established on the lines of the TVA river basin organization, a newly created organization has a tendency to grow in its power and scope. Particularly, if it is based on government funds, it increasingly becomes a heavy burden on the budget, until it reaches a stage when it has to be restructured or down-sized. The Brantas river basin organization is another example of institutional transposition, and remains to be one with very little stakeholder participation and with a highly centralized management system. The crucial test for the extravaganza in either of these instances is that they have not been replicated in other river basins in Sri Lanka or Indonesia. As long as government and donor funds are forthcoming, the creation of such new organizations is rarely dependent on any evaluation of their ability to maintain themselves in the future. Experience in many countries is that the down-sizing of an organization is extremely difficult. Strategies for restructuring the strong and powerful Mahaweli Authority of Sri Lanka have been in the melting pot for the last decade, and still cannot see the potential for a politically viable conclusion.

Institutional adaptation is an exercise, which is well grounded on local institutional conditions, and it is cost-effective not only to establish, but also to maintain. It is facilitated by a participatory and consultative process as was discussed earlier. Of equal importance is its amenability to further restructuring with minimum difficulty. The structures such as those proposed by the Deduru Oya and Upper Pampanga stakeholders are flexible enough to be changed into complete stakeholder control in management on a future date. The present trends for shared control, or for stakeholder management, can be fairly easily achieved through institutional adaptation.

However, in countries where full democratic systems do not exist and stakeholder preferences may not matter much, such as in China, moves toward more effective integration, such as in the Yellow River Basin, can largely be attributed to top-down intervention by the State. Stakeholder consultation becomes valuable in contexts where the local stakeholders have a voice in the decisions that affect them directly.

In most developing countries having heavy budgetary constraints, to create new river basin organizations under government control and sponsorship would be an unwise proposition. Invariably, for such organizations to be sustainable, they will have to be self-financed. It is in this context, that initially some form of institutional adaptation is better suited.

The advantage of participation by user groups and other stakeholders in the design of water institutions, and the resultant institutional adaptation, would be the facility of developing organizations for stakeholder control of IWRM. A recent survey of reforms in Mexico and South Africa has concluded that, “moving from stakeholder participation to substantive stakeholder representation in river basin management holds more promise of achieving equitable water management” (Wester et al. 2003). Such devolved management systems can attend to a number of local level resource management needs more easily and efficiently than the centralized systems: arresting free-rider behavior among the members, imposing sanctions on individual members for resource degradation, mobilizing the needed labor resources for common tasks, providing incentives

for resource saving, interacting with the government and other individuals and organizations, and developing and implementing group decisions for equitable resource distribution and environmental protection. Some of these activities were proved to be achievable by the accomplishments of distributary level Water Users Federations established in Punjab and Sindh provinces of Pakistan (Bandaragoda 1999).

## CONCLUSION

In this study, PLA dialogues were held with groups of stakeholders in each country. These dialogic sessions were in the form of Focus Group Discussions in Sri Lanka, structured group discussions in the Philippines and Indonesia, and unstructured consultation meetings in China and Nepal.

Of these, the most effective stakeholder participation was seen in the Sri Lanka case, where FGDs were conducted throughout the consultation process by the Deduru Oya water users. Through the FGDs, stakeholder preferences in institutional development were identified, and were conveyed to the relevant authorities. Participatory methods helped them to take some concrete steps towards establishing an organizational arrangement for river basin management. Participation also helped to develop coordinating relationships among different water users, such as agriculture, domestic supply and healthcare, which in turn started to sort out water quantity and quality issues, and take remedial measures on the adverse effects of urban effluence, sand mining and lift irrigation, three major activities which had caused environmental degradation in the Deduru Oya river system. Most surprised about these quick results were the agency officials, who had tried to achieve them for years.

The next effective outcome of participatory learning and action methodology used in the study was in the Upper Pampanga in the Philippines, where the stakeholder initiative achieved the formal establishment of a Upper Pampanga Coordinating Committee for the subbasin, surfacing the need to consolidate the activities of the whole basin under one such organization. Previous attempts to discuss IWRM through top-down processes involving agency staff initiatives had not generated desirable results.

In the Ombilin subbasin in Indonesia, the study team mixed their traditional surveys with structured participatory and consultative methods to discuss the multi-sector water use demands. For the first time, after many previous attempts through nonparticipatory methods by relevant authorities, stakeholders met together to resolve a long standing dispute between the downstream irrigators and the owners of an upstream hydro-power plant. Stakeholder initiatives also led to the drafting of Provincial Regulations for IWRM in West Sumatra, an activity that the authorities had not been enthusiastic about previously.

The PLA procedure, in some form or the other, helped all the five study sites in many ways: in explaining study objectives to stakeholders, in assimilating information about the study context, and also in obtaining stakeholder participation in the study process, and importantly in learning about IWRM in a pragmatic way. In addition, at least one major consultation was held in each country to discuss the study results with a wider audience of stakeholders, beyond the basin level. With the completion of diagnostic studies, four of the five participating countries held their final national-level consultations to share the results of field studies with the key players in the water sector.<sup>18</sup> The more important objective of these national meetings was to obtain the involvement of national partners in formulating and implementing new policies and institutional strategies for integrated water resources management.

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<sup>18</sup>The study team in China could not hold this final workshop.

Overall, the three hypotheses mentioned earlier in the paper stand validated. Where the study was able to apply the planned participatory methods to a reasonably satisfactory degree, the study objectives of identifying appropriate institutional strategies and planning relevant actions to implement them were achieved satisfactorily. As anticipated in the first hypothesis, the PLA methods suited well with the large, dispersed groups of stakeholders in river basins to come to a consensus regarding institutional strategies. As expected in the second hypothesis, a strategy of institutional adaptation was preferred by the local stakeholders and was facilitated by the local involvement that was mobilized by the participatory methodology.

The third hypothesis was that the stakeholders of river basins in higher stages of development were likely to show greater interest in participation.

In fact, this proved to be true, as the cases of Indonesia (Ombilin), the Philippines (UPRB) and Sri Lanka (Deduru Oya) could be ranked in that order to have demonstrated progressively higher levels of successful participatory action, corresponding to their stages of development (figure 2). Of these three basins, the most significant results of participatory methodology were achieved in Deduru Oya in Sri Lanka, as stakeholder interests have been relatively greater in it than in the cases of Upper Pampanga and Ombilin basins. The high stakeholder involvement in river basin studies augurs well for their successes.

Of the five basins, the least developed East Rapti river basin showed the lowest level of participation even during preliminary consultation meetings that were possible, but since the PLA procedure could not be continued there, it cannot be considered in a comparative analysis. Though the river basin selected in China was the most developed of all five, it has to be considered as an outlier too, since the study team had difficulties in conducting the recommended interaction-intense consultation processes.

The study results show that the participatory methodology responds well to the complexity associated with multiple interests of multiple stakeholder categories in a river basin. Particularly, when the given study objectives are linked with institutional analysis and related action planning, PLA methods can be a very appropriate way of conducting river basin studies, as they enable the optimum levels of involvement by various stakeholders in the basin in study activities. Open discussions help in having a balance in participants' time, coverage of all important issues and associated time and costs for the participants. A structured PLA process allows a large widely dispersed group of stakeholders in a river basin to be given an equitable opportunity to participate.

Results of stakeholder consultations conducted in the study sites highlight four key advantages associated with participatory learning and action methodology:

- (1) The methodology facilitates very effectively the harnessing of local knowledge of the historical development within a river basin, as well as of the current physical and socioeconomic features of the basin to gain a realistic understanding of the current institutional needs, and developing appropriate strategies;
- (2) Such local knowledge is far superior to any other source of information regarding many complex issues related to a river basin, and is therefore most likely to help in crafting appropriate institutional strategies;
- (3) There is a natural tendency of local stakeholders to readily provide this information, and participate in action planning, as long as they are convinced that the efforts are for their own interests;

- (4) This process is more reliable than the traditional method of outsiders' involvement to collect data, analyze and develop institutional models, as the participants exchange information and engage in the analysis themselves and generate options; and
- (5) This cooperation is highly productive when the stakeholders themselves are involved in the implementation of action programs based on their participation.

In three of the river basin studies, where PLA methods were used without interruption, the stakeholder groups achieved cost-effective and user-friendly results in designing and initiating actions on appropriate institutional arrangements for river basin management. The common minimum for all five study countries was the generation of wide awareness among the stakeholders of the respective issues, constraints, and possible solutions in each of the five selected river basins. Additionally, this newly created interest and awareness at the basin level were able to reflect at higher levels, achieving the essential policy support of national level stakeholders of water resources development and management.



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