# Promoting Effective Water Management Policies and Practices (Phase 4)

**ADB TA 6219 (REG)**

# Water Rights and Water Allocation: Issues and Challenges for the Asian Region

## Technical Report

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**AND THE ASIAN DEVELOPMENT BANK**

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## CONTENTS



The views expressed in this draft report are those of the author and do not necessarily reflect the official position of ADB, its member countries or any of their agents.

**Abbreviations**

| | |
|---|---|
| ADB | Asian Development Bank |
| CHR | International Commission for the Hydrology of the Rhine Basin |
| DMC | Developing Member Country (of ADB) |
| DRBC | Delaware River Basin Commission |
| ICCPR | International Covenant on Civil and Political Rights |
| ICESCR | International Covenant on Economic, Social and Cultural Rights |
| ICPDR | International Commission for the Protection of the Danube River |
| IUCN | The World Conservation Union |
| IWRM | Integrated Water Resources Management |
| JVA | Jordan Valley Authority |
| JWA | Japan Water Agency |
| KBO | Kagera Basin Organization |
| LCBC | Lake Chad Basin Commission |
| LLDA | Lake Laguna Development Authority, Philippines |
| MDGs | Millennium Development Goals |
| MDBC | Murray Darling Basin Commission |
| MRC | Mekong River Commission |
| NARBO | Network of Asian River Basin Organizations |
| NBA | Niger Basin Authority |
| NWA | National Water Act (South Africa) |
| NWSA | National Water Services Act (South Africa) |
| OKACOM | Okavango River Basin Commission |
| OMVG | Gambia River Basin Organization |
| OMVS | Organization for the Development of the Senegal River |
| PJT1 | Perusahaan Umum Jasa Tirta I (RBO for Brantas, Indonesia) |
| PJT2 | Perusahaan Umum Jasa Tirta II (RBO for Citarum, Indonesia) |
| RBO | River Basin Organization |
| SRBC | Susquehanna River Basin Commission |
| TVA | Tennessee Valley Authority |
| UNEP | United Nations Environment Programme |
| WWF | World Wide Fund for Nature |
| ZRA | Zambezi River Authority |

## FOREWORD

1 In 2005, the Network of Asian River Basin Organizations (NARBO) initiated a program on Water Rights and Allocation in partnership with a number of its members from Indonesia, Lao PDR, the Philippines, Thailand, Viet Nam and subsequently Sri Lanka. Key representatives of national governments and basin organizations met during a sequence of four workshops[1] with the stated objective of:

- sharing information on the current status of participating countries regarding water allocation and water right issues;
- making clear the problems faced in participating countries; and
- identifying an approach towards improving cooperation with participants.

2 Water rights have been a key tenet of water resources policy in the development process of industrialized countries. For example, in Japan, the earlier water rights system under the 1896 River Law was modified and further regulated in 1964 with the adoption of the 'one basin – one permitter' principle that moved from a sectoral approach to water allocation to that of a basin perspective. A mechanism to determine the water for allocation was introduced to ensure a minimum discharge remains in the river during a drought. As many rivers had already reached the limit on abstractions, further abstraction could only be considered with the construction of dams for additional water storage.

3 In the United States, two quite different systems emerged in the east and west of the country as new areas were settled – prior appropriation in the east and riparian systems in the west.[3] A hybrid system is now developing and the former distinction between two is changing.

4 The former system of water abstraction in France was based on rules of custom related mainly to riparianism and was administered by the courts. This was replaced in 1992 in the Law on Water by an allocation system organized within the boundaries of the six river basins.

5 Introducing water rights has now become a challenge for countries around the world. With economic growth, population growth and rapid urbanization comes increased pressure on water resources in terms of the quantity of available water and a changing dynamic in the mix of stakeholder groups seeking to utilize the resource, and also the deteriorating quality of the water, thus adding a further constraint on the quantity of usable water available. Superimposed upon these pressures is an imbalance of power among users – for example urban and rural, industrial and agricultural, emerging middle classes and the poor. Traditional or customary users of water also tend to be caught up in the changing pattern of water use – usually with negative outcomes, (Bruns and Meinzen-Dick, 2000).

[1] 1st Thematic Workshop on Water Rights and Water Allocation, Hanoi, 5-9 December 2005, organized by the Red River Basin Organization.
2nd Thematic Workshop, Manila, 5-9 June 2006, organized by the National Water Resources Board and Laguna Lake Development Authority.
3rd Thematic Workshop, Bangkok, 27 November to 1 December 2006, organized by Department of Water Resources, Ministry of Natural Resources and Environment
4th Thematic Workshop, Saitama, 22-26 January 2007, organized by the Japan Water Agency

[3] The **riparian doctrine** of the USA traditionally allows all those with land adjacent to the water body to use water in a way that is reasonable relative to other users. In case of shortage, there would be a proportional reduction among uses. The **prior appropriation** doctrine accords rights to those with first use of the water provided it is put to beneficial use. In times of shortage, water is curtailed sequentially from the more recent to the more established users. (based on Getches, 1997)

6 So why are water rights and a consistent system of water allocation so important? In a word, it can be summarized in the concept of security as noted by Bruns. For the rural and urban poor as with others, it relates to security of the basic supply necessary for a healthy and dignified life. Beyond that it is the security of subsistence agriculture through water for livestock on which villagers depend and the cultivation of basic crops. For those with more land, it is an issue of security for investing labor and money into developing the land. For urban dwellers, it is the security of a more advanced lifestyle that inevitably involves higher rates of water use, for example the purchase of automated household appliances. For industrial and commercial users, it again comes down to the issue of a secure investment climate for their business development plans. Without clearly articulated water user rights, there is a risk that the security of water for these purposes will be compromised and lives and livelihoods adversely affected.

> *"Done right, water rights can secure access to water for existing users and offer equitable ways to meet additional water needs, including urban expansion, economic growth and environmental protection".*
>
> Bruns, 2005 (p283)

7 A number of generally accepted high-level principles have been developed to help guide the processes of allocating water resources including such concepts as 'beneficial use', 'equitable distribution' and 'avoiding significant harm'. Although these frequently appear in policy statements and primary legislation, their interpretation within a given context proves difficult in practice.

8 Each of the participating countries in NARBO's series of four thematic workshops on water rights and water allocation are facing similar challenges to a greater or lesser degree – challenges that continue to face developed economies. However, the main competitors for water may be different in each country and indeed within different parts of the same country. For example, in parts of Sri Lanka and the Philippines there are tensions between storage for hydropower generation and the release of water for agriculture and urban water supply whereas in Thailand and Indonesia, the main constraint is providing water for urban, industrial and agricultural development in areas surrounding the mega-cities of Bangkok and Jakarta. Water shortage is generally not so acute in Laos, but a number of hydropower concessions that involve river diversions raise potential problems for customary and existing users of water. Underlying such sectoral competition for water are the needs of the environment and the extensive rural livelihoods that it supports.

9 ADB's *Water for All* policy[4] promotes the establishment of a legal framework for water allocation that embodies the principles of protecting the rights of the poor and ensuring transparency in decision-making. It promotes the Integrated Water Resources Management (IWRM) within the context of a river basin '*to maximize economic benefits and social welfare in an equitable manner without compromising the sustainability of vital environmental systems'*. To help address the challenges facing its Developing Member Countries (DMCs), ADB's Policy:

- encourages '*the DMCs to adopt participatory and negotiated approaches for water allocation*';
- supports *'the evolution of water allocation through markets of transferable water rights once the necessary policy, legal, and institutional framework for IWRM in a river basin context have been put in place'*;
- commits to helping regulatory agencies '*to develop water rights in a manner that protects the rights of the poor to equitable water services'*; and

[4] Water for All: the Water Policy of the Asian Development Bank available at http://www.adb.org/Water/Policy/default.asp

- until a system for transferable rights has been developed, supports '*the introduction of systems of water entitlements, or usage rights'.*

10 An independent review of the implementation of ADB's water policy completed in 2006 commented on ADB's roles in promoting water sector reform, the introduction of IWRM and water rights systems - '*ADB has been instrumental in promoting national water policies, water policy reforms, and establishing new institutional frameworks'*.[5] It noted though that '*the effectiveness of the new laws and water policies in some countries has been constrained by weak legal and regulatory frameworks and institutions'*. Among the recommendations of the Review Panel was a call for improved water governance and ADB's continued support to this goal.

11 Building on the foundation of the four NARBO thematic workshops, the aims of this Report are to:

- summarize some of the key findings on water rights and water allocation from the cross-country comparisons made during the four workshops;[6]
- stimulate a more in-depth discussion on water rights and ways to overcome the challenges of their implementation; and
- provide an issues paper that informs future NARBO and ADB activities and policy dialogue with Governments.

12 The Report starts with a look at the types of challenges associated with allocation of water user rights and the role that river basin organizations play in these processes. It raises a number of generic issues followed by some specific points that emerged from the first four workshops. Chapter 2 examines in more detail the definitions and characteristics of water rights and water allocation, looks at how a number of countries set priorities among competing uses, and explores some of the basic concepts such as beneficial use, equity and adaptive management. Two approaches to water allocation are outlined – an 'explicit' system based on water licensing and a less structured 'implicit' system resulting from master planning and project development. The current situation of water rights and water allocation in each of the participating countries, including the setting of priorities, is summarized in Chapter 3. Finally, the framework for discussion at the forthcoming regional workshop planned for 29-31 May 2007 in Manila is outlined in Chapter 4. Based on the outcome of those discussions, this draft report will be updated and more case studies incorporated to provide a tool for raising awareness of the issues within DMCs and ADB.

[5] Available at http://www.adb.org/Water/Policy/pdf/review-panel-report.pdf (paras 17 and 19). For more on ADB's support to reforms in Sri Lanka and Viet Nam, see paper by Arriens and Custodio presented at the 1st Thematic Workshop.

[6] The focus of this Report is on water rights as they relate to the supply and use of water – both surface and groundwater. The aspect of wastewater discharge rights is not included in this discussion although may be linked through the licensing system.

# 1. OPPORTUNITIES FOR RIVER BASIN ORGANIZATIONS IN RELATION TO WATER RIGHTS AND WATER ALLOCATION

## 1.1 What River Basin Organizations (RBOs) can do

> A water right is the formal or informal *entitlement* which confers on the holder the right to withdraw water. Water user rights are rights conferred through an administrative process of water allocation.
> Water allocation is the *process* whereby an available water resource is distributed to legitimate claimants and the resulting water-user rights are granted, transferred, reviewed, and adapted.
> (See section 2.1)

13 The prime audience for this paper are the management and staff working in RBOs in Asia. Some of the NARBO member organizations have existed for decades, while other RBOs have been established recently and are still in a formative stage with little or no authority for managing water resources. Roles and responsibilities are therefore different, and are evolving as pressures in the basin are building up. While this paper seeks to impart knowledge about the fundamentals and application of water rights and allocation, it is important to maintain a practical focus. This first chapter therefore raises three basic questions to keep in mind when considering RBO roles in water rights and allocation: (i) how can RBOs help to solve problems in the basin; (ii) how can RBOs help avoid problems in the basin; and (iii) how can RBOs help to build the enabling environment for integrated water resources management (IWRM) in the basin. More details on key challenges for water allocation are presented in Annex A5. A more analytical treatment on distinguishing between water rights and water allocation is provided in Chapter 2..

***NOTE: Some examples of what RBOs can do in each of the three areas are given below. These can be expanded with inputs from the participants during the workshop for finalization of the paper.***

## 1.2 RBOs can Solve Problems in the Basin

### Alleviating Water Shortages

14. **RBOs can deliver the necessary supplies of water.** Many river basins in Asia are now encountering water shortages, especially in the dry season. Prolonged drought conditions intensify the challenges of water allocation. RBOs with authority to manage water resources can deliver the necessary supply of water to meet the demand and match water entitlements.

15. Examples: PJT1 and PJT2, two large RBOs in Indonesia for the Brantas and Citarum river basins, respectively, control, develop, and utilize water resources to meet water requirements; and draft the water allocation plan for the use of waters of the respective river basins. The Japan Water Agency of Japan and K-Water of Korea develop water resources in several river basins; and provide water for domestic, industrial and agricultural purposes through the construction of dams, and other facilities.

### Improving Water Quality

16. **RBOs can improve ambient water quality.** Many river basins in Asia are polluted and this affects the availability of water for water rights. RBOs can help rehabilitate river systems from highly polluted to healthy rivers that support aquatic life. RBOs can also conserve and maintain vital ecosystems of the river basin.

17. Examples: In the Philippines, LLDA's 'environmental army' conducts regular clean-up of the Laguna Lake sub-basins. LLDA also implements the polluters pay principle to protect water quality. The Yellow River Conservancy Commission in PRC promotes healthy life of the Yellow River through administrative, legal, technological, engineering, and economic measures. In the United States, the Tennessee Valley Authority (TVA) works with local communities to improve watershed management and eliminate non-point source pollution. The Murray Darling Basin Commission (MDBC) in Australia manages salinity and nutrient levels to reduce algal blooms and relieve strain on the aquatic ecosystem. The Jordan Valley Authority (JVA) monitors water quality through regular testing of water samples in the Jordan River.

### Resolving Conflicts over Water Use

18. **RBOs can help to resolve conflicts over water**. Whether or not a regulatory framework for water rights is in place, there will be conflicts over in implementation. In the Philippines, for example, there is a reported widespread illegal abstraction of water. When conflicts do arise, RBOs can help to resolve them.

19. Examples: In Brazil, river basin committees arbitrate conflicts relating to water resources as the first administrative recourse. As part of resolving conflicts, RBOs can detect and prosecute illegal water use as in the case of river basin authorities in Spain (namely, Duero, Ebro, Guadiana, Guadalquivir, Júcar, Norte, Tajo, and Segura) which have jurisdiction to detect and prosecute illegal water use, including detecting unauthorized wells and surface water intakes, as well as identifying farms where a greater volume of water is used than had been assigned. In the United States, the DRBC and the Susquehanna River Basin Commission (SRBC) first address disputes over water through negotiation rather than through litigation or Supreme Court petition.

## 1.3 RBOs can Avoid Problems in the Basin

### Minimizing Conflicts over Water Use

20. **RBOs can facilitate coordination, foster cooperation, and minimize conflicts.** Conflicts over scarce resources may occur at various times, for example, resulting from refusal of an application for water use; due to an imposed change or restriction placed on an approved use; due to upstream pollution; or as a result of a violation of conditions of water use by another user. Such conflicts often come to a head during periods of shortage or drought. RBOs can facilitate coordination, foster cooperation, and avoid conflicts. The establishment of a basin council with representatives from affected stakeholders can itself be a powerful instrument to avoid and minimize conflicts.

21. Examples: Several RBOs in Asia including PJT1 and PJT2 in Indonesia, JWA in Japan, LLDA in the Philippines, MASL in Sri Lanka, and Red RBO in Viet Nam, continually undertake dialogues and coordination with stakeholders to realize better water management. In Thailand, the Bang Pakong River Basin Committee helps achieve effective water allocation through communication and participation among basin stakeholders. In Europe, Asia and Africa, international transboundary RBOs [7] strengthen and develop mutual understanding between and among countries, thereby reducing the likelihood of conflicts.

[7] The transboundary RBOs are (i) the International Commission for the Protection of the Danube River (ICPDR); (ii) the International Commission for the Hydrology of the Rhine Basin (CHR); (iii) the Mekong River Commission (MRC); and (iv) several RBOs in Africa including Gambia RBO (OMVG), Kagera Basin Organization (KBO), the Organization for the Development of the Senegal River (OMVS), the Niger Basin Authority (NBA), the Okavango River Basin Commission (OKACOM), the Mano River Union, the Zambezi River Authority (ZRA), and the Lake Chad Basin Commission (LCBC).

### Transferring Water User Rights

22. **RBOs can implement allocation for water user rights.** Rapid population growth, urbanization, and industrial transformation has led to a number of challenges for water allocation and water rights in the major river basins in Asia. The rapid pace of urbanization and industrialization of mega cities such as Bangkok, Jakarta and Manila has seen related changes in water demands that were hardly conceivable 20-30 years ago. Here the challenge often relates to a transfer of use from agriculture to municipal, commercial or industrial use. RBO can implement allocation for water user rights.

23. Examples: In the Philippines, the Laguna Lake Development Authority (LLDA) gives water rights to a private firm to abstract waters from the Laguna Lake for domestic and commercial uses. In Thailand, the draft water law provides for the River Basin Committee to allocate water user rights (Article 28). In Australia, the MDBC facilitates inter-state water trade by developing technical and operational mechanisms necessary to allow exchange between water entitlements. In South Africa, the Catchment Management Agencies will, on transfer of powers from the Minister, become the licensing authority.

## 1.4 RBOs can Help to Build an Enabling Environment for IWRM

### Improving River Basin Planning

24. **RBOs can facilitate effective river basin planning.** Comprehensive basin planning remains a critical ingredient of IWRM, however the notion that each basin has only one plan is rapidly becoming outdated in an era of decentralized responsibilities. Planning that affects water resources in the basin increasingly takes place at many levels and by a multitude of actors. RBOs can add value by analyzing, updating, and harmonizing existing plans, and by producing an overall strategic basin plan that sets medium and long term objectives and provides a synthesis of ongoing planning efforts. RBOs can make sure that stakeholders from all sectors are included in the planning process. RBOs can also help to establish a coordination body like a basin council to oversee the formulation and implementation of the basin plan(s).

25. Examples: In Indonesia, the Ministry of Public Works is now involving RBOs and local authorities in an attempt to streamline and synthesize basin planning in the six basins surrounding the capital Jakarta. In the United States, the DRBC and SRBC formulate and adopt a comprehensive plan for the immediate and long-range development and uses of the water resources. The OKACOM and LCBC in Africa prepare an integrated water resources management plan for the Okavango river basin and Lake Chad, respectively. In Brazil, river basin committees approve and monitor the implementation of the river basin water resources plan.

### Developing Guidelines, Rules and Regulation

26. **RBOs can assist in developing guidelines, rules and regulations**. Rules and regulations, and guidelines at basin or national level provide the structure for carrying out provisions of the law. They clarify, among others, mechanisms for water rights and process of water allocations. RBOs can also support the establishment or strengthening of a national water sector apex body, like the National Water Resources Committee, as a national coordination and policy-making body on water rights and water allocation.

27. Examples: In Indonesia, PJT2 helps to prepare the Government Regulation to implement the Water Resources Law of 2004 thus improve the system of water rights. In Viet Nam, Red RBO can help prepare the technical guidelines for proper implementation of the system of water rights and water allocation, including for granting water license. The

DRBC prescribes special surface water withdrawal and diversion regulations, declares drought emergencies, and enforces adoption of conservation strategies.

### Developing Decision Support Information

28. **RBOs can improve river basin information systems to support policy, planning, and decision-making.** Another recognized important element for IWRM is decision support information, whereby accurate information to facilitate decision-making in water resources management is needed. RBOs can improve river basin decision support information for IWRM policy, planning, and decision-making.

29. Examples: In Indonesia, PJT1 provides technical recommendation to serve as basis for the issuance of water license. The International Commission for the Hydrology of the Rhine Basin (CHR) develops joint hydrological measures for sustainable development of the Rhine basin. Several RBOs in Africa conduct studies on environmental protection, soil conservation, energy generation, prevention of irrational exploitation of water resources, institutional coordination, water resources and ecosystem, and cross-sector issues. The Zambezi River Authority (ZRA) collects, accumulates, and processes hydrological and environmental data of the Zambezi river for use by the riparian countries. The Okavango River Basin Commission (OKACOM) in Africa provides technical, advisory and other support services on environmental conservation, development and management of shared water resources. The Niger Basin Authority (NBA) has established the HYDRONIGER for hydrological monitoring and forecasting using real-time satellite data to collect hydrological data for west and central African countries.

## 1.5 Keeping a Practical Focus

30. The literature on the roles, functions, and practices of RBOs is expanding rapidly. As water resources challenges change in river basins, the roles of RBOs will evolve and their work will become better recognized in the region. The development of inclusive and effective water rights and allocation processes will be of key importance in the next years. At present, the authority and capacity of NARBO members in this area is still limited. This paper is an attempt to build up more interest and capacity among NARBO member organizations and interested stakeholders. With the development of more information and theory on the functions of RBOs and the development of water rights and allocation processes as part of IWRM, the risk is always present to veer away from focusing on actual needs in the river basin. Hence this chapter has emphasized the need for focusing on solving problems at hand, avoiding problems in the medium term, and helping to build a better enabling environment for IWRM, which will take many years.

## 2. DISTINGUISHING BETWEEN WATER RIGHTS AND WATER ALLOCATION

### 2.1 Basic definition and priorities

31. A water right is the '*right to take and use water subject to the terms and conditions of the grant',* (Burchi and d'Andrea, 2003). It is also defined as the formal or informal *entitlement* which confers on the holder the right to withdraw water, (WWF, 2006), although the emphasis here on withdrawal does not fully encompass a right to reserve water in the river for environmental purposes. Water rights may be considered either as a 'fundamental right' conferred upon a class of persons as a consequence of primary legislation or a 'user right' conferred through an administrative process of water allocation.

32. Water allocation is the *process* in which an available water resource is distributed to legitimate claimants and the resulting water user rights are granted, transferred, reviewed, and adapted. Priorities for allocating the water may be established in the law or through subsequent strategy development or planning processes. Hence, water allocation processes generate a series of water use rights governing the use of water within a catchment.

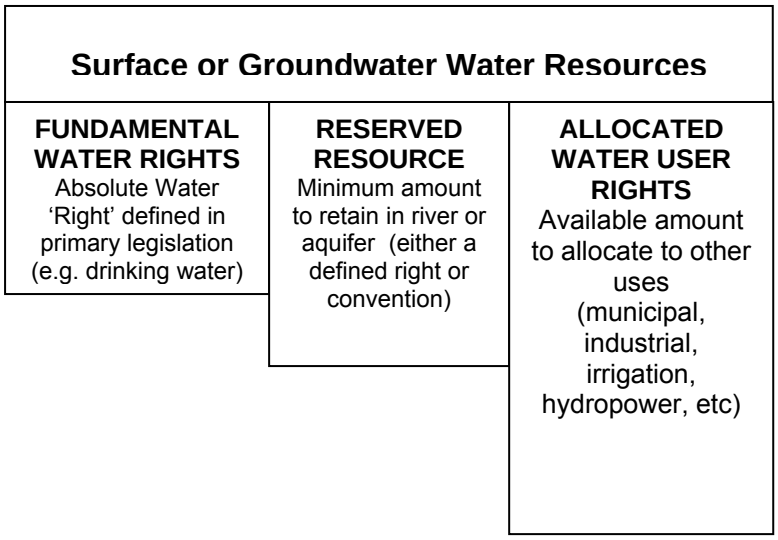
33. Burchi and D'Andrea (2003) define water allocation as the '*function of assigning water from a given source to a given user or number of users for abstracting it and applying it to a given source*'. They note that within a system where the State is responsible for a country's water resources, the decision on who should abstract water and to what use the water should be applied rests with a public authority, whether it be a government administrator or, in some cases, a judge.[9]

34. Figure 2.1 distinguishes between 'fundamental' water rights, such as those defined in primary legislation for basic human needs, and 'allocated' water use rights (or usufruct rights) that are decided through a defined administrative process. The middle column of the figure represents the 'reserved' amount of the water resource (surface or groundwater) that is to be retained in the river or aquifer for environmental or other sustainability related downstream purposes. Such reserved resources may be legislated as a fundamental right (as in the case of South Africa – see below), or decided administratively through the water resources planning process. Although not to scale, the figure shows there are different magnitudes for the three elements. Fundamental water rights generally amount to a very small percentage of the overall water resource, while the allocated water component is by far the largest element. In most countries in the region, allocations for agriculture far outstrip those for other uses.[10] The reserved resource component may vary from zero in some cases, to a complex pattern of seasonally dependent flows.

[9] Burch and D'Andrea refer to another set of rules for allocating water that 'belongs' to an individual or corporation – or user controlled rules. These are governed by rules of neighborliness and specific bodies of rules developed in the courts such as riparianism and prior appropriation. They note that 'user-controlled' allocation decisions represent an ever shrinking minority of water allocation decisions due to wider government intervention in the growing complexity of water resources management, (p3-4).

[10] At an estimated 2500 cubic kilometers per year, water use for agriculture is in the order of 70% of total water withdrawals (World Commission on Water, 2000). In terms of scale, if 25 liters per capita per day is assumed as the basic human need for the world's population of approximately 6 billion, then this amounts to 54 billion cubic kilometers or 2% of that withdrawn by agriculture.

**Figure 2.1: Schematic representation of fundamental and allocated water user rights**




35. South African legislation provides a clear example of a fundamental water right.[11] The 1996 Constitution establishes a right of access to water[12] which is given effect through assignment of a reserve for basic human needs in the 1998 National Water Act (NWA) (s.16).[13] It is also one of the main objectives of the 1997 National Water Services Act (NWSA) that provides for: '*the right of access to basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being'.*[14] Regulations under the NWSA define the minimum standard for basic water supply as 25 litres per person per day of potable water.[15] This is an absolute right of access defined in primary legislation and is therefore not subject to allocation procedures, but only the capacity of government at all levels to deliver on this commitment. The NWA also contains a legislated right for an ecosystem reserve (see section 2.2). Further uses of water for reasonable domestic use are defined as 'permissible uses as defined in Schedule 1 of the NWA, but are not defined as rights, nor carry the same obligation on government for supply.[16]

36. Similar priorities for domestic consumption appear in water legislation of other countries, but rarely is the right of access so explicit as in the case of the South African legal

[11] A review undertaken by IUCN (2004, p9) notes that although '60 national constitutions refer to environmental obligations, less than one half expressly refer to the right of its citizens to a healthy environment' and only one expressly enshrines an explicit right of access sufficient water – South Africa.

[12] '*Everyone has a the right to have access to health care services, including reproductive health care, sufficient food and water, and social security*'. (Art 27)

[13] The basic human needs element of the Reserve is defined as '*the quantity and quality of water required to satisfy (a) basic human needs by securing a basic water supply…for people who are now or will , in the reasonably near future, be (i) relying upon; (ii) taking water from; or (iii) being supplied from, the relevant water resource'.* (South Africa, National Water Act, 1998 s.1(1)(xviii).

[14] The term '*basic water supply'* is defined in the 1997 National Water Services Act as '*the prescribed minimum supply of water supply services necessary for the reliable supply of a sufficient quantity and quality of water to households, including informal households, to support life and personal hygiene'.* NWSA, s.1(iii).

[15] Regulation Relating to Compulsory National Standards and Measures to Conserve Water, 2001, s.3. *'The minimum standard for basic water supply services is (a) the provision of appropriate education in respect of efficient water use; and (b) a minimum quantity of potable water of 25 litres per person per day or 6 kiloliters per household per month – (i) at a minimum flow rate of not less than 10 litres per minute; (ii) within 200 metres of a household; and (iii) with an effectiveness such that no consumer is without a supply for more than seven full days in any year'.*

[16] Includes other household uses, small gardening and commercial purposes, watering of animals, etc.

framework. A comparison of water use priorities as stated in various water laws is given in Table 2.1. Indonesia's 2004 Water Law appears to assign such a right by using by establishing the States responsibility to '*guarantee water for rudimentary needs'*. However, the elucidation to the law explains that the State '*is obliged to carry out various efforts to guarantee water availability for every person…*' which rather softens interpretation of the word 'guarantee' and places the emphasis on the State's actions rather than the outcome.

37. A frequent approach in legislation is to assign a priority to domestic consumption and exempt it from licensing requirements, as in China's 2002 Water Law where *'it shall be excluded to draw a small amount of water for household use and for the drinking of scattered or penned livestock and poultry, etc.'* (Art..48). Such priorities for drinking water exist in the legislation of many Asian countries. Although defined as a priority, the supply for basic needs is clearly dependant on the availability of the resource and does not carry the same weight as the right of access established in South African legislation.

(Add some examples from other countries in Asia e.g. Japan, Korea, Malaysia, or Singapore, and others from outside – Aus, US, or UK)

**Table 2.1: Examples of water use priorities defined in national legislation**

| | **Priorities conferred explicitly in legislation** |
|---|---|
| **Cambodia** (draft law) | *Drinking, washing, bathing and other domestic purposes, watering of domestic animals and buffaloes, fishing and irrigation of gardens and orchards in an amount not exceeding that necessary to satisfy individual and family needs of the user.* (Draft Law on Water Resources Management, Art. 8) |
| **China** | *The development and utilization of water resources shall first satisfy the need of the urban and rural inhabitants in the domestic use of water and give overall consideration to the agricultural, industrial and ecological environment need for water as well as to the need of navigation.* (China Water Law, Art. 21) |
| **Indonesia** | '*The state guarantees the right of every person in obtaining water for minimum rudimentary daily use to fulfill a healthy, clean and productive life'*. (Water Law No.7/2004, Art. 5). The elucidation to the Law explains that the State '*is obliged to carry out various efforts to guarantee water availability for every person…*' which rather softens the interpretation of the word 'guarantee'. |
| **South Africa** | The quantity and quality of water required<br>(a) '*to satisfy basic human needs by securing a basic water supply, as prescribed in the Water Services Act, 1997, for people who are now or who will, in the reasonably near future, be – (i) relying upon; (ii) taking water from; or (iii) being supplied from, the relevant water source; and*<br>(b) *to protect aquatic ecosystems in order to secure ecologically sustainable development and the use of the relevant water resource.* (National Water Act, 1998) |

38. Beyond domestic water, what rights to water do individuals or organizations have whether it be for urban consumption, irrigation, industrial production, commerce, generating electricity to navigation? In general two approaches are evident:

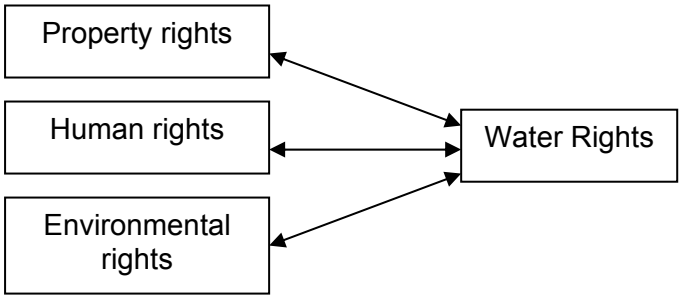
- Historically, allocation has been undertaken through rather top-down, government driven planning processes, in which the quantities of water for specific development projects are determined and tend to become accepted practice. In such cases, there is limited security in the form of rights for the user. There has often been limited participation and transparency in the decision-making process. In this report, this is categorized as an '**implicit'** allocation system.

- The second and increasingly more frequent element of recent legislation is allocation through a system of time-bound licenses or permits in which the user is provided security of use for a stated period. Here such an approach is categorized as an '**explicit'** allocation system.

These two approaches are discussed in more detail in section 2.2.

## 2.2 Characteristics of Water Rights

39. The components of water rights discussed above can also be viewed through the lenses of property rights, human rights and environmental rights as proposed by Hu (2006).




### Property rights

40. Water rights are a form of property right in which the owner of the property is generally taken to be the State which then sets rules for its beneficial use. A useful definition of property rights by Furubotn and Pejovich (1972) is '*claims, entitlements, and related obligations among people regarding the use and disposition of a scarce resource'.* In reflecting on this definition, Bruns (2005)[17] noted that as the resource becomes scarcer and competition increases, property rights can clarify expectations and thereby reduce conflict over the resource. He stressed that effectiveness of the rights is only as good as the institutions responsible for implementing them.

41. The link to property rights is also at the heart of customary uses of water. Traditional patterns and conventions of water use are closely tied to the land of indigenous and native communities that may or may not have formal land ownership title under prevailing land law. Past developments have frequently compromised such customary uses, although today there is greater recognition of their role and importance. Water rights have evolved from small abstractions from rivers adjacent to one's land, to the distribution of water through man-made conveyance systems from reservoir storage or rivers many tens or hundreds of kilometers away.

> Communities in Sri Lanka have for centuries constructed village ponds or tanks for local irrigation use with access and distribution governed through customary rules. Such conventions were replaced with formalized rules as such tanks were incorporated into the Government's larger irrigation systems as part of its settlement program. (Source: )

42. In a recent discussion paper on the interface between customary and statutory rights, Burchi notes:

> *'In the countries where customary rules play a significant role, particularly in the rural areas, customary law and customary water rights are a factor to be*

[17] Chapter 1, p6

*reckoned with when preparing "modern" legislation regulating the abstraction and use of water resources through government permits or licences. From a statutory perspective, the two water rights systems intersect and interact in the transitional phase following enactment of new water legislation, and in the course of administering the latter's abstraction licensing regulatory provisions'.*

43. Owning land adjacent to surface water may generate expectations regarding its use, but these days, major abstractions such as for commercial irrigation are now generally regulated by water licensing systems. Property rights related to groundwater however often differ from those applied to surface water. Although in China, State ownership and regulation of water applies equally to both surface water and groundwater, this is not generally the norm in the region.[18] In Pakistan for example, surface water is highly regulated through a major network of river barrages and canals, whereas the right to abstract groundwater is closely linked to land ownership.[19] The riparian system of surface water rights in the United States is also intimately linked to the land.[20]

**Human Right to Water**

44. The debate over whether or not water is a human right has gathered pace in the past decade and attracted considerable attention from academics and international organizations, see for example Gleick, (1999), IUCN, (2004) and the World Bank's publication by Salman and McInerney-Lankford (2004). Much of the discussion centers on interpretation of the International Covenant on Civil and Political Rights (ICCPR) that incorporates the 'right to life' in Article 6(1)[21] and the International Covenant on Economic, Social and Cultural Rights (ICESCR) that recognizes the right of everyone to an adequate standard of living including adequate food and freedom from hunger in Articles 11, and the right to enjoy the highest standard of physical health in Article 12.[22]

45. Interpretation of the role of water in relation to the IESCR was provided by the UN's Committee on Economic, Social and Cultural Rights in its General Comment 15 in 2002. The Committee stated:[23]

'*The human right to water is indispensable for leading a life in human dignity. It is a pre-requisite for the realization of other human rights'.* (para 1)

*'The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.' (*para 2*)*

[18] Art 3: '*Water resources shall be owned by the state'* where under the definition Art. 2 *'The "water resources" referred to in this Law includes surface water and groundwater'.*

[19] Only Balochistan has passed legislation to control groundwater development and over-abstraction through licensing provisions, although this has not been effective in practice – 1978 Groundwater Rights Administration ordinance was promulgated to *'to regulate the use of groundwater and to administer the rights of the various persons therein*.' In other areas, federal and provincial actions have been taken to control waterlogging and salinity.

[20] For a description of the riparian system see Getches, 1997.

[21] International Covenant on Civil and Political Rights, adopted 16 December 1966, entered into force 23 March 1976, G.A. Res. 2200A (XXI), UN Doc. A/6316 (1966), 99 UNTS 171, reprinted in 6 ILM 369 (1967). Art. 6(1) states 'Every citizen has the inherent right to life. This right shall be protected shall be protected by law.

[22] International Covenant on Economic, Social and Cultural Rights adopted on 16 December 1966, entered into force 3 January 1976, G.A. Res. 2200A (XXI), UN Doc. A/6316 (1966), 993 UNTS 2, reprinted in 6 ILM 360.

[23] United Nations Economic and Social Council, Committee on Economic Social and Cultural Rights, General Comment Nno.15 (2002). Twenty-ninth session, Geneva, 11-29 November 2002. E/C.12/2002/11, available at http://193.194.138.190/html/menu2/6/gc15.doc .

*'The right to water clearly falls within the category of guarantees essential for securing an adequate standard of living, particularly since it is one of the most fundamental conditions for survival'.* (para 3)

46. Although in the long term, States must work towards realizing Articles 11 and 12 of the IESCR, there is no immediate obligation and so, the status of the Committee's General Comment should not yet be considered as an obligation on the part of States to recognize water as a right.[24]

47. General Comment 15 notes that recognizing water as a human right would impose three obligations on States:

- an obligation to *respect* the right, i.e. refrain from any activity that interferes with enjoyment of that right;
- an obligation to *protect* the right, i.e. prevent interference by third parties
- an obligation to *fulfill* the right, i.e. to adopt the necessary measures to provide water including the legislative framework, strategy and action plans.

48. The Committee maintains that a right to water is subject to the following three tests:

- *accessibility* (safe physical reach, affordable for all, accessible to all on law and fact);
- *adequate quality* (water for personal and domestic use must be safe); and
- *quantity* (sufficient and continuous for personal and domestic use).

49. It is important also to differentiate between an absolute right to water as proposed in the interpretation of General Comment No. 15 and the 'right of access' to water as embodied in the UN's Millennium Development Goals (MDGs).[25] Right of access to water is a less onerous commitment for States and more open to interpretation in regard to who is responsible. For example, would it be sufficient for a State to merely embody the right of access in national legislation, without any obligation on the part of a government to actually fulfill the provision of water through strategies and action plans? Whereas most nations have subscribed to the MDGs, they do not form a legal commitment in the same way as intended by the International Covenants and their codification into national law.

50. General Comment No.15 comprises both freedoms and entitlements:

*The **freedoms** include the right to maintain access to existing water supplies necessary for the right to water, and the right to be free from interference, such as the right to be free from arbitrary disconnections or contamination of water supplies. By contrast, the **entitlements** include the right to a system of water supply and management that provides equality of opportunity for people to enjoy the right to water.* (para 10)

51. Questions on whether the human right to water has been incorporated into national legislation are provided for workshop discussion, see section 1.2. In terms of priorities, ICESCR stated:

[24] The Committee does not have power to create new obligations, but rather to provide interpretation of existing obligations of IESCR. Under IESCR, member States have committed to take steps '*with a view to achieving progressively the full realisation of the rights recognised in the present Covenant by all appropriate means, including particularly the adoption of legislative measures'*. (Art.2(1)).

[25] MDG Target 10 aims to '*halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation'*. http://www.undp.org/mdg/goallist.shtml . Note the sanitation target was added at the World Summit on Sustainable Development in 2002.

'*priority in the allocation of water must be given to the right to water for personal and domestic uses. Priority should also be given to the water resources required to prevent starvation and disease, as well as water required to meet the core obligations of each of the Covenant rights'*.(para 6)

**Environmental Rights – 'the reserve'**

52. Beyond general statements on sustainability and protection of the environment and specific requirements related to pollution control, there are few examples of national legislation that explicitly recognizes a right of the environment to water. Or in other words, the need to retain a certain flow of water in rivers or to set maximum limits beyond which groundwater aquifers should not be depleted. Again, South Africa provides an example of the most explicit right of the environment to water in the form of an '*ecological reserve*' to be determined for each river basin and which carries a level of priority similar to that of basic human needs.[26] Kenya has adopted a similar approach in its Water Act of 2002.[27]

53. A more common approach is to include provisions that state a more generalized obligation towards protection of the environment without assigning specific priorities, such as in China's 2002 Water Law. Article 21 assigns priority to the domestic needs of urban and rural inhabitants and then requires that '*overall consideration'* be given to agricultural, industrial and ecological environment needs for water and navigation. It expands this with a further general statement of intent – '*Full consideration shall be given to the ecological environmental need for water in the development and utilization of water resources in the arid and semi-arid areas'.*

54. IUCN make the point that the debate on the right to water extends to environmental needs through a number of linkages between the environment, provision of safe drinking water and safeguarding of livelihoods and social systems that are dependent on aquatic ecosystems, (see Box). This position is central to the principles of IWRM and goes beyond the narrower considerations of biodiversity conservation, '*Management of water is not merely about managing water in-stream, but about the health of the land and the ecosystem'*. (IUCN, 2004, p27).

> 'The term 'right to water' does not only refer to the rights of people but also to the needs of the environment with regard to river basins. Lakes, aquifers, oceans, and ecosystems surrounding water courses'. (IUCN, 2004, p27).

## 2.3 Approaches to Water Allocation – assigning water user rights

**Basic concepts – Beneficial Use and Equity**

55. Beneficial use of water has historically been a central concept to the allocation of water. In the prior appropriation systems of the United States, all States recognize domestic, municipal agricultural and industrial uses to be beneficial, while the treatment of other uses such as stock watering, hydropower, mining, recreation, fish and wildlife varies from State to State (Getches, 1997). The interests of the public may also be safeguarded as in the case of South Dakota in which the definition of beneficial use has to be '*consistent with the interests of the public.'*[28] Such recent legislation also incorporates consideration of efficiency

[26] South Africa, National Water Act, s.1(1)(b) ecological component of the Reserve is the quantity and quality of water required '*to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource'.*
[27] The Water Act, 2002, available at http://faolex.fao.org/docs/pdf/ken37553-a.pdf
[28] '*Beneficial use," any use of water within or outside the state, that is reasonable and useful and beneficial to the appropriator, and at the same time is consistent with the interests of the public of this state in the best utilization of water supplies'*; South Dakota Code Title 46 s.1-6(3)

and introduces tests of reasonableness to ensure other beneficial uses are not compromised unfairly.[29]

56. The principle of beneficial use is similarly reflected in many of the water laws of the region. In the 1976 Philippine's Water Code, Article 18 states, '*All water permits granted shall be subject to conditions of beneficial use*,…'.[30] Similarly, in the 1998 Vietnam Water Law, exploitation of the water source is defined as '*activities aimed at bring benefits from the water resource*' (Art.3(9)) and the obligations on water users include, '*to use water for the right uses, economically, safely and efficiently'*, (Art. 23(1)(b)). In China's Water Law, emphasis on beneficial use is stressed[31] and obligations of efficient use are required at all levels of Government and by individual users, for example, *'Units and individuals shall have the obligations of economical use of water'* (Art.8).[32]

57. Considerable emphasis is given to the principle of equitable distribution at various scales of water distribution, from the macro level of transboundary water sharing[33] down to the micro level of providing water supplies to communities as emphasized by many international conferences.[34] In reporting of the International Court of Justice, McCaffrey (2001)[35] commented on the difficulties in determining an equitable share between States, concluding that equitable utilization '*must be arrived at through an ongoing comparison of the situations and uses of the states concerned*.' This has relevance not just to the international dimension, but also to sub-national considerations.

58. The question of equitable distribution within a basin context raises many economic and social dimensions. However, in practice the discussion of equity tends to focus on only a very small part of the water resource – that needed for drinking water supply and domestic purposes. Secure access to water to support life and livelihoods is central to poverty reduction and as Bruns (2004) points out, the '*lack of secure and enforceable rights poses a much bigger problem for those who are poor*'. He notes that water rights can help the poor: (i) safeguard access to basic needs; (ii) sustain livelihoods; (iii) participate in governance; (iv) prevent and resolve conflicts; and (v) invest in improving their lives. Such rights may also be linked to greater certainty in land tenure, for example, the marked increase in productivity of irrigated agricultural production in Vietnam once land rights were granted during the *doi moi,* or renovation period, in the late 1980s.

59. While the discussion of safe drinking water is clearly the most fundamental aspect of the equity dimension, it represents only a few percent of the overall water resource in a basin. Beyond that, aspects of equitable distribution also need to be considered explicitly in

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[29] Id, s 46-1-4, '*The right to water or to the use or flow of water in or from any natural stream or watercourse in this state is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of diversion of water'*.

[30] Article 20 of the Philippine Code amplifies this concept:. *'The measure and limit of appropriation of water shall be beneficial use. Beneficial use of water is the utilization of water in the right amount during the period that the water is needed for producing the benefits for which the water is appropriated'*.

[31] Article 4 requires all factors to be considered in the development, utilization, economization and protection of water resources including an emphasis on '*multi-purposes use and on achieving maximum benefits'*

[32] Articles 50 to 53 of lay out conservation measures.

[33] For example, article IV of the Helsinki Rules on the Uses of International Rivers (1966) of the International Law Association, *Each basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of an international drainage basin,* available at http://www.internationalwaterlaw.org/IntlDocs/Helsinki_Rules.htm .

[34] For example, equitable access to water was a significant component of the Governance theme at the International Conference on Freshwater in Bonn, 2001 available at http://www.water-2001.de/outcome/BonnRecommendtaions/Bonn_Recommendations.pdf

[35] at page 331

other allocation decisions that may deal with critical interfaces as urban vs. rural, industrial vs. agricultural, and environment vs. development.

60. From a comparative analysis of water laws in Southern Africa states, Bird (2004) noted that '*Beyond an allocation for primary uses, little guidance is give [in the legislation] on how the term equitable will be applied for allocating to other users or deciding on permit applications'*. The exception perhaps is South Africa where the National Water Resources Strategy prioritizes poverty reduction initiatives.[36]

61. In this regard, it is important to understand how considerations of equity are carried through into the legal framework of the case study countries and, how they influence planning and decision-making processes, particularly in areas of potential conflict on water allocation such as in peri-urban areas experiencing rapidly changing land and water use. For instance, to what extent do former agricultural users receive any benefits from transfer of water use to urban and industrial consumers? Are their user-rights protected?

62. Other aspects of equity to be considered include inter-generational equity and how to introduce concepts of adaptive management to make provision for future generations, gender equity – of particular importance given the prominence of women in water-related tasks, and equity among regions within a State.

**Allocation systems**

63. Water allocation is a process through which a government defines how the water over which it has control will be used and under what conditions, for example the purpose, quantity and period of use. The following definitions provide some further insight into that process and the constraints that may be placed upon allocation of available resources:

- South Australia's Natural Resources Management Act of 2004 defines water allocation in terms of both the water that may be taken or held under the terms of a water licence and the maximum water that may be taken and used under a general authorization for use issued by the Minister in respect of specific bodies (section 3(1)).[37]
- In South Africa's National Water Act, the introduction to Chapter 4 on the Use of Water explains that the Act, '*is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest,'* and that, '*a person can only be entitled to use water if the use is permissible under the Act'.* Water use is given a very broad definition to include, '*taking and storing water, activities which reduce streamflow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource, altering a watercourse, removing water found underground for certain purposes, and recreation.*
- In a briefing paper on water allocation and use,[38] the New Zealand Government specifies that water allocation:

[36] In the case of South Africa, the National Water Resources Strategy requires that 'water for social needs such as poverty eradication, primary domestic needs, and uses which would contribute to maintaining social stability ' are given priority over water for 'key economic sectors and employment creation'. (NWRS available at http://www.dwaf.gov.za/Documents/Policies/NWRS/Default.htm )

[37] http://www.austlii.edu.au/au/legis/sa/consol_act/nrma2004298/s3.html

[38] Water Programme of Action: Water allocation and use, available at http://www.mfe.govt.nz/publications/water/water-allocation-use-jun04/index.html, section 3.

- *should determine the amount of water needed in rivers, streams and aquifers to sustain instream values*
- *grants legal authority to take, dam or divert water bodies up to a specified amount, sometimes subject to conditions concerning the maintenance of minimum flows or water levels in the water body, and relative priority amongst permit holders when there is insufficient water for all to exercise their legal authority in full*
- *also means the amount or quantity of water a permit holder is legally entitled to take from a water body.*

- In its 2007 paper on water rights and water allocation, WWF defines water allocation as '*a process whereby an available water resource is distributed to legitimate claimants and the resulting water rights are granted, transferred, reviewed, and adapted. Hence, water allocation processes generate a series of water rights governing the use of water within a catchment*'.

64. There is often a considerable difference in the approach to regulating groundwater and, frequently, institutional responsibility with Government is different to that of surface water. Groundwater use is closely tied to land use, is less visible and hence it is more difficult and more contentious to enforce a permitting system as noted by Bruns (see box).

> *"Water rights institutions play an increasing role in controlling surface water, but so far have had less impact on aquifer management."*
>
> Bruns, 2005 (p.290)

65. Water user rights can derive from a number of different systems:

- **Property rights** – a fundamental right as discussed in section 2.1 although no longer so relevant for regulatory systems in Asia except in relation to groundwater use;
- **Implicit allocation** – administrative systems in which the quantity of water diverted to a project (usually a public-sector development project) is considered to be an implicit right to water for the group of beneficiaries from such a project, although may not be enforceable.
- **Explicit allocation** – through a general authorization, licensing or permitting system of various levels of complexity, examples such as in South Africa, Viet Nam, and the Philippines.
- **Customary right** – basic right as discussed in section 2.1 although not always recognized in statutory law.
- **Water trading** – acquisition of water user rights through voluntary or formal trading systems as well as market systems.

66. Water trading is not covered in detail in this report as in the absence of the basic administrative systems in most Asian countries, formal trading is not considered practicable at the moment. In addition trading is a contentious subject in the context of some Asian societies although there are signs that it will play a future role. For example in China, water that can be saved by adopting conservation practices can be traded, subject to approval of the authorities.[39] Informal trading between users does exist and can be widespread in some countries, such as Pakistan where water allocations are transferred on a temporary basis and groundwater sold from farmer to neighbor. The most likely application of trading systems

[39] Order of the State Council No. 460 of 21 February 2006, including Regulations on Water Abstraction Licensing and on the Levy of Water Charges, (Art 27) reported in Burchi,2006b.

in the region will occur in times of drought. For more details on the issues surrounding water trading and water banking see WWF (2007, Chapter 3) and Burchi and d'Andrea (2003, p59).

67. The discussion here continues by focusing on the two main approaches used in Asia – the 'implicit' and 'explicit' approaches to water allocation.

***'Implicit' allocation systems – project by project***

68. Systems that implicitly allocate water to a particular use through a development project are common throughout Asia. For example, the setting of an irrigation duty for a specific irrigation command area in Pakistan,[40] the allocation of a part of a river flow to bulk water supply for urban areas and the diversion of water for hydropower generation through a concession agreement. The formality and transparency of such systems varies considerably. In some cases, the allocation merely takes the form of a planning statement with no subsequent regulatory agreement to uphold its implementation. In others, the precise details and conditions of abstraction may be set out in a concession agreement. The question of how secure such allocations are then arises when competition for water comes from other users, including the environment. Drawbacks of such implicit system include concerns over security of the water use and a lack of transparency in the decision-making process. Without secure user-rights, the climate for investment may be compromised.

***'Explicit' allocation systems – licensing***

69. More explicit systems now feature in many legislative frameworks and have been introduced in response to increased competition for water and an increasing awareness of the need to adapt to changing circumstances (whether it be related to changes experienced in the economic development cycle or due to climate change). See Table 3.1 for a summary of which of the participating countries currently operates under a licensing regime.

70. In essence, a licensing system moves away from a government driven planning system in which water allocations are directed through master or basin plans, to a more responsive system in which license applications are considered within a framework of development strategies for a basin or aquifer. Direction on priorities among sectors is clearly still needed as licensing decisions cannot be set in abstract – some ground rules are needed in the primary and subsidiary legislation and a process for determining license applications. Transparency of decision-making is a key requirement here to ensure fair treatment across applications. Similarly, some flexibility is needed to adapt to future changes in priorities.

71. Table 2.2 summarizes the basic attributes of a rights system (WWF, 2007) including the conditions that may be placed on the use and the security of tenure.

**Table 2.2: Basic attributes of a water user right**

| *Attribute* | *Description* |
|---|---|
| *Quantity* | The amount of water (volume) the holder of the right may abstract, or the amount of waste (volume / concentration or load) that the holder of the right may discharge. |
| *Quality* | The quality of the water to be abstracted or disposed of. |
| *Source* | The specific resource and location from which the right is awarded. |
| *Timing* | Restrictions on the time that the right applies, i.e. times that the volume may be abstracted or time that the waste may be discharged. |
| *Conditionality* | The conditions of use, particularly in terms of quantity and quality. Some rights are absolute – 100% guarantee of a certain quantity an |

[40] Irrigation duty is the quantity of water per hectare that is allocated for irrigation and may vary from one project to another.

| | |
|---|---|
| | quality, while other rights have variable assurance of supply and quality depending on the available resource. Other conditions can include any 'Hands Off' flow requirements to protect minimum environmental flows. |
| *Use* | The specific use for which the water is abstracted (e.g. irrigation, mining, etc.) or the specific origin of the waste (e.g. canning factory, mine process). |
| *Duration and ownership* | The duration for which the holder is entitled to the rights conferred. Some rights are permanent while other rights expire after a period of time. |
| *Transfer* | May the right be sold, transferred to another person or location, of may the right be inherited. |
| *Security and enforcement* | Details of the administrative body that has the legal mandate to award the right, including the extent of that mandate. Important here is the extent to which the rights conferred can be guaranteed to the rights holders, what measures are taken if the rights cannot be fulfilled and the compensation received if the rights cannot be fulfilled (or the right is removed). |

Source: WWF(2007)

72. Not all water use under such regulatory systems requires a license. Primary legislation may identify permissible uses for which no license is necessary, for example household use or subsistence agriculture, and also make provision for exclusions or general authorizations for particular uses or specific sub-systems. Such authorizations may be temporary or permanent and can be used to help introduce a licensing system where none previously exists. The South African Act defines both permissible uses that require no further permission and a system of general or blanket authorizations.

(i) Permissible uses include: [41]

- Household domestic use directly from any water resource to which there is lawful access
- Use on land including reasonable domestic use, small gardening not for commercial purposes, watering of animals subject to certain conditions
- Storing and using run-off water from roofs
- Emergency uses and fire-fighting
- Certain recreational uses.

(ii) General authorizations allow the regulatory agency to permit the use of water after public consultation and notification. The NWA outlines the approach as:

> '*A general authorization may be restricted to a particular water resource, a particular category of persons, a defined geographical area or a period of time, and requires conformity with other relevant laws. The use of water under a general authorization does not require a licence until the general authorization is revoked, in which case licensing will be necessary. A general authorization does not replace or limit an entitlement to use water, such as an existing lawful use or a licence, which a person may otherwise have under this Act'.*[42]

73. Licensing systems require considerable technical knowledge on the hydrology of the water resource, the level of existing use and the potential impacts of additional abstraction. Implementing licensing regimes requires considerable administrative capacity.[43] Above all,

[41] National Water Act, Schedule 1

[42] National Water Act, Chapter 4, introduction to Part 6.

[43] In terms of administrative process, the following aspects related to applying for a licensing were described by Burchi and D'Andrea (2005) and need to be covered in subsidiary legislation, i.e. the rules and regulations: filing of an application,

transparent procedures and criteria need to be put in place within which decisions on individual license applications and trade-offs between competing uses are made. These procedures may take 10 to 20 years to develop and in the intervening period, priorities need to be set, with license requirements first targeting areas under stress and major water users. As capacity is developed, the scope of a licensing system can be expanded. Using general authorizations in parallel with the emerging licensing system offers a rational approach to this progressive process.

**Water shortage**

74. Water shortages or extended periods of drought provide the key test for a water allocation system. The main question here is to what extent are priorities clearly defined for drought situations – or more specifically, which are the water uses that will be prohibited and which will be allowed to continue? (see Table 3.3 for the situation among the participating countries). For example, in Thailand's draft Water Law, priorities in the dry season will be accorded to water supply for cities and communities including domestic use and industry which come ahead of high value agriculture and salinity control. Within agricultural water use, priorities are further distinguished, in reducing level of importance, for marine animals and fish ponds, vegetable and fruit gardens, field crops and, finally, dry season paddy rice. In Cambodia, priority is given to domestic and municipal use, followed by minimum flows for ecosystems and fisheries maintenance, industry and small manufacturing systems, irrigation, hydropower, and navigation. A general requirement to 'take into account' international agreements is included.[44]

75. Developing a comprehensive drought strategy consistent with the water rights system is a major challenge for countries in the region. How the priorities are operationalized within a particular basin is an essential procedural question. In the UK which conventionally is considered a wet country, water shortages have been experienced frequently over the past few years, leading to the imposition of restrictions on water use, particularly in the south-east. The first step is declaration of a ban by the water utility on the use of domestic hosepipes and sprinklers for gardening. If projections indicate a utility will still be unable to supply its commitments, it may apply to the Environment Agency for a drought order under which a closely specified list of other water uses may be prohibited.[45]

76. Water restrictions inevitably raise the question of compensation. Loss of agricultural production due to insufficient irrigation water or lost of industrial production due to reduced water supplies will inevitably lead to calls for compensation. However, variability in the climate and hydrology is a natural phenomena and license conditions generally make it clear that although a certain amount of water is sanctioned under a licence, this does not amount to a guarantee to deliver. Introducing a water trading or banking system for drought situations does however offer the possibility of softening financial implications by transfer of resources from low to high value water use.

**Consultation procedures**

77. Issuance of a license takes place within a broader strategy setting in which the extent of available water and the needs of downstream users including the environment are

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recording of applications, review of applications, deciding on applications, formatting of permits, recording of decisions and permits, and appealing from adverse conditions.

[44] Add ref to draft Cambodian Water Law

[45] In May 2006, Sutton and East Surrey Water Company was allowed a drought order by the Environment Agency under the 1991 Drought Direction. In addition to the domestic hosepipe and sprinkler ban, the drought order empowers the utility to restrict watering of parks and recreational areas e.g. golf courses, filling of swimming pools and ornamental ponds, vehicle washing equipment, the washing of roads, vehicles, trains, aircraft etc except for purposes of hygiene, the cleaning of buildings and industrial premises, and automatic flushing toilets when buildings are not in use. The drought order does not restrict commercial agriculture or industrial use for which license conditions set out procedures for dealing with periods of shortage.

determined. Consultation processes may be required at each of these steps – during strategy development, setting of objectives for the quality of a river system, determining in-stream flows and inviting comments[46] on individual license applications. For example, rules and regulations[47] under the Philippines Water Code define the places where notification of a licence application should be posted for a period of 60 days.[48] It notes that '*Any person who may be adversely affected by the proposed appropriation may file a verified protest with the Council or with any deputized agency investigating the application…..'* (s.8)

78. Although consultation on public policy, strategy formulation and specific project proposals is becoming more widespread, some concerns have been raised that such processes do not in themselves safeguard existing water rights, particularly those of a customary nature. In a comment to UNEP's Dams and Development Forum in November 2006, the representative of the indigenous peoples groups reflected that:

> *'In too many processes, the word "stakeholder" took away the importance of fundamental human rights of people's and individuals to be part of the decision making process about their own futures' .* She noted *'that peoples and communities had ownership and prior use rights to lands and waters to be used by a dam and that at times whether affected communities were consulted or not depended on the inclinations of Governments or Developers'.*

79. At issue here is the extent that those being consulted are fully aware of their water rights and are engaging on a 'level playing field' with the developers.

**Adaptive management – change of use**

80. Burchi and d'Andrea (2003) note that water licenses or permits do not cast a water-user right 'in concrete'. Change of use or modification of an existing permit may be required to reflect changing circumstances for a number of reasons including:

- A new national, regional or basin master plan;
- Alternative higher priority uses are applied for;
- Drought or other emergency;
- Changes in available water resources due to the effects of climate change;
- A change in circumstances of the permit holder;
- Violation of terms of a permit.

81. Making provision for such changes for adaptive management in the implementing procedures is important, both in terms of review and suspension functions. The degree of uncertainty over the future pattern of water use and demands for water will, similarly, influence the choice of license period. Compensating water users for changes in terms of a license prior to its expiry may be appropriate and needs to be considered in designing a licensing system.[49]

82. The Philippines Water Code recognized the need for adaptability:
'*Preference in the use and development of waters shall consider current usages and be responsive to the changing needs of the country*'. (Art 3(e)).

[46] For example, in the South African NWA, consultation procedures for these steps are outlined in
[47] Implementing Rules and Regulations made under the Water Code, 11 June 1979.
[48] Notices should be sent to the Barangay Chairman, Municipal secretary, Secretary of the legislative body of the province (Sangguniang Panlalawigan), Public Works Department of the District or Provincial Irrigation Engineer in addition to regional offices of relevant ministries
[49] The SA National Water Act for example provides for compensation in cases where

83. International or commercial agreements may place constraints on the scope for adaptive management of a resource. For example, a transboundary agreement that specifies a division of river flows or a concession agreement that guarantees a certain discharge of water for hydropower generation. Developing a linkage between the negotiation of a concession and water licensing of such concessions is essential.

84. The changes in hydrology resulting from the effects of climate change has become an urgent issue in relation to the adaptability of water resource planning scenarios. Similarly, it will require additional flexibility in the conditions associated with water use licenses, including perhaps the use of shorter license periods, an intermediate review process and a pre-determined scaling down of abstraction amounts depending on long term trends in water availability. Without flexibility there is likely to be less capacity to accommodate future changes in water use, and increased competition and conflict. Introducing such flexibility however transfers the risk to the license-holder which may in turn limit their preparedness to invest in new technology and expanded production. Attaining the balance between the two will be an important issue for discussion at the workshop.

## 3. SUMMARY OF WATER RIGHTS AND WATER ALLOCATION IN THE PARTICIPATING COUNTRIES

85. Country presentation and discussions during the four thematic workshops on water rights and water allocation have highlighted the diversity of participating countries ranging from conditions in Laos where there is limited water shortage to Indonesia and the Philippines which experience strong competition for water in areas surrounding urban centers. Within countries there is similar diversity, not only between rural and urban industrialized areas, but due to markedly different climatic and topographic conditions such as north, central and southern Vietnam. Each country though is committed to reforms to introduce the principle of IWRM, the principle of access to water for basic human needs and to introducing a more explicit system of allocating water user rights consistent with national strategy.

86. Table 3.1 lists the status of water legislation in the six participating countries and Table 3.2 summarizes the situation in respect of fundamental water rights, the approach used for allocating water resources and water user rights, and whether there is formal recognition of customary rights in the law. Further details are provided in Annex A.3 and will be updated following inputs at the forthcoming workshop at the end of May 2007.

**Table 3.1: Primary legislation in the participating countries**

| | | |
|---|---|---|
| Indonesia | Water Resources Law No. 7 | 2004 |
| Lao PDR | Water and Water Resources Law | 1996 |
| Philippines | Water Code | 1976 |
| Sri Lanka | Water Act drafted but consideration by legislature delayed due to political circumstances | - |
| Thailand | No existing dedicated water law<br>Draft Water Law prepared | 2005<br>(draft) |
| Viet Nam | Law on Water Resources currently under review | 1998 |

**Table 3.2: Characterization of water rights and allocation systems in national legal frameworks.**
(to be completed based on inputs at the workshop)

| | Priority Rights are legislated | Approach to Allocation of 'Usufruct' Rights | | | Recognizes Customary Rights | Water rights regulations exist |
|---|---|---|---|---|---|---|
| | | 'Implicit' approach (e.g. project-based) | 'Explicit' approach (e.g. licensing system) | | | |
| **Indonesia** | To the extent that the State 'guarantees' a minimum daily amount. | Allocations determined in master planning process | Newly introduced in Water Law 7/2004. Not yet operational | Awaiting regulations | Yes, provided it is 'not contradictory to national interests and legislative regulations', Art 6(2) | Under preparation |
| **Lao PDR** | No legislated priority, but small scale uses (Art.15) are exempt from approval including family use, fishing and family based agro-forestry and livestock. | Based on water use plans. Small, medium and large uses are defined (Arts. 15-17). | No water licensing system, but approval of medium (by the agency) and large scale project developments (by Government) is required. | N/a. [Hydropower concessions vary but in order of 25 years]. | Not explicitly recognized in water law. | N/a |
| **Philippines** | No legislated priority, but hand carried water, bathing, washing and watering of animals are exempt from permit requirement . | ?? | Licensing system – estimates only 35% users are subject to licensing | XX years? | Not explicitly recognized in water law. See note on Indigenous Peoples' Act | Rules and Regulations under the Water Code |
| **Sri Lanka** | No | Project based allocations for irrigation, bulk water supply and hydropower. Seasonal planning meetings for irrigation. | No water licensing system. | N/a | Check legal framework and extent traditional rights were respected during project development? | N/a |
| **Thailand (draft)** | No legislated priority, but 3 categories – implies a priority (art 10):<br>1. living and household related uses<br>2. commercial agriculture, industry, hydropower etc,<br>3. larger or inter-basin use | Project based allocations for irrigation, bulk water supply and hydropower. | No water licensing system. | N/a | No. | Not yet |
| **Viet Nam** | No legislated priority, but Art. 1 includes State commitment to ensuring water for people's lives. | Allocations based on design of development projects modified as required in local context. | Framework for licensing in 1998 Water Law and subsidiary Decree yet to be implemented universally | XX years? | Not explicitly recognized in water law | Yes |

N/a: Not available

87. Beyond the general allocation priorities described above, Table 3.3 summarizes the priorities to be assigned in times of water shortage. Further information about how these are implemented can be raised as a point of discussion in the forthcoming workshop and case studies of good examples included in the next draft of this report.

**Table 3.3 Priorities during water shortage**

| | Priorities in times of shortage | Notes |
|---|---|---|
| Indonesia | • Domestic use<br>• Agriculture in existing irrigation systems. | Priorities to other uses are decided by the authorized level of government. |
| Lao PDR | • Drinking and domestic users<br>• Hydropower<br>• Agriculture | Not considered a major issue as levels of water stress are not generally significant. |
| Philippines | • Domestic and municipal purposes | Water Crisis Monitoring Committee established to monitor |
| Sri Lanka | • To be added | |
| Thailand (draft law) | • Water supply in cities and communities incl. Domestic and industry<br>• Agriculture using limited water<br>• Salinity control<br>• Second rice crop<br>• Water transport and sailing boats | |
| Viet Nam | • Daily life<br>• Water for cattle and poultry rearing and aquatic and marine product culture<br>• Important industrial establishments and research institutions<br>• Food security and crops of high economic value<br>• Other water exploitation and use purposes | |

(Add references)

88. Not surprisingly, 'domestic use' or water for 'daily life' is universally credited the highest priority. After that, the level of detailed guidance provided by each varies considerably. In Indonesia for example, the relatively generic use of 'existing irrigation systems' is used, whereas in Thailand's draft law, a distinction is made between food crops requiring relatively low amounts of water and a second rice crop which is highly consumptive.

### Customary rights in the six participating countries

89. As indicated in Table 3.2, there is limited recognition of customary water rights in primary water legislation of the participating countries. Only Indonesia water law explicitly protects traditional communal rights. Although other legislation in the countries may provide some protection of indigenous peoples, in for instance the case of resettlement under land laws, the lack of explicit protection to traditional water user rights in the water law tends to confirm the limited awareness of this issue and lack of influence that such groups have. The Philippines Indigenous Peoples Rights Act, 1997, does however provide greater protection by requiring indigenous communities to provide their prior informed consent to any new development proposal affecting them.[50] It is therefore essential that other relevant

[50] Republic Act No. 8371, Section 17 states '*They shall participate in the formulation, implementation and evaluation of policies, plans and programs for national, regional and local development which may directly affect them'* and Section 7(c) provides for the principle of free, prior consent to any proposal to relocate indigenous people from their ancestor domains. Other similar provisions protect their use of natural resources in such domains.

legislation is assessed, in addition to the water law of a country, when considering customary rights of water use.

### Consultation provisions

90. Participation in the decisions on how a country or basin allocates water user-rights can take place in a spectrum of processes ranging from consultation on water policy and drafting of primary and subsidiary legislation and development of national and basin water resource strategies, down to the opportunity to comment on or object to individual license applications.

91. There is a general absence of provisions for public consultation in the process of strategic planning or project developments in the laws of the participating countries. The earlier water laws of Lao PDR, Philippines and Viet Nam do not contain specific provisions on consultation during the strategy development or planning processes, although in the recently approved National Water Resources Strategy in Viet Nam, a considerable part of the implementation procedures deal with issues of public awareness, education and participation.[51] The requirement in the Lao PDR water law for any large scale river diversion to gain approval from the National Assembly should in principle place such major-decisions more in the public domain.[52] In the case of the Nam Theun 2 hydropower project, such approval was granted as part of National Assembly approval of the concession agreement.

92. In the more recently drafted laws of Indonesia (2004) and Thailand (in draft), the emphasis on participation is incorporated. In Indonesia, the law was drafted after a major shift to decentralized government that gave more control to districts and provinces. The composition of national and basin water resources councils is to be balanced evenly between government and non-government representatives. Rather surprisingly though, the emphasis in development of water resources management plans is more on people being given the opportunity to object,[53] rather than proactive engagement in the formulation of the plan.

93. In Thailand, '*participation of people at river basin level*', is included in the preamble to the draft water law and representatives of water users are included in the various governance arrangements at national and basin levels, e.g. in the National Water Resources Committee (Art. 14) and Water User Associations (Article 42).

## 4. DISCUSSION ON IMPLEMENTING WATER RIGHTS AND WATER ALLOCATION

94. In this draft version of the report, this section provides a framework for discussion on the issues of water rights and allocation at the NARBO workshop planned for 29-31 May 2007. Following the workshop, it will be revised to reflect the outcome of the discussions. In particular, it will aim to provide a focused summary of the challenges faced by the participating countries and their experiences – what works and what doesn't work in the various country contexts.

95. The diagnostic tool prepared by WWF and presented in Figure 4.1 comprises three main components and can be used early in the workshop to identify where participants see the constraining issues in their own countries. Are the issues related to:

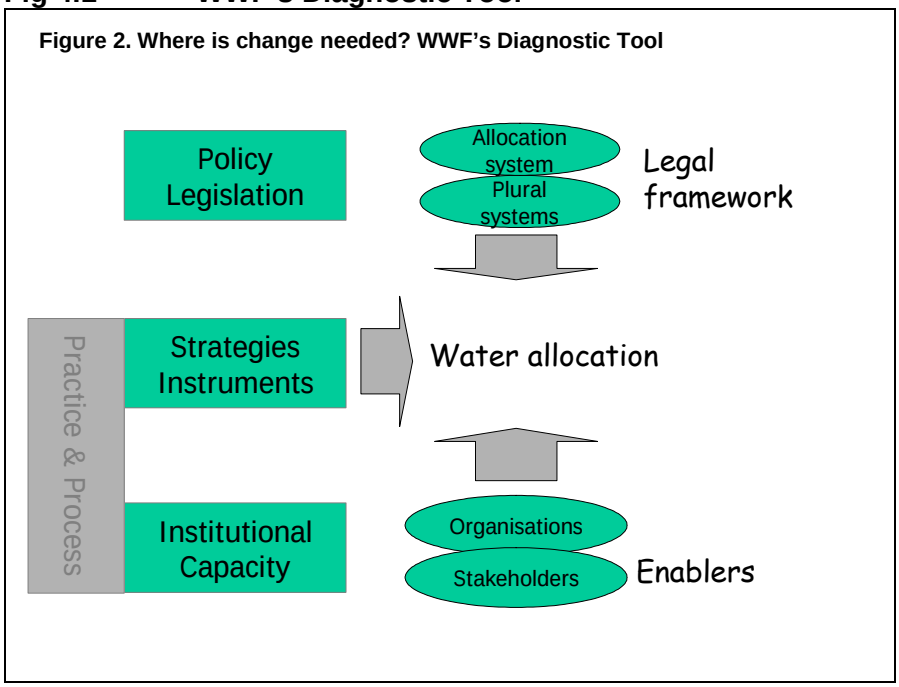
[51] Viet Nam National Water Resources Strategy – Towards the Year 2020, approved in 2006, Part 3, section 2.
[52] Article 27 of Water and Water Resources Law, 1996. For small scale diversions, approval of the provincial administration is required whereas for medium scale diversion, approval of the national Government is required.
[53] Article 62(3)

(i) **Policy/legislation:** in terms of providing the framework for recognizing water rights and providing the necessary authority to administer an effective system of water allocation;

(ii) **Strategies and instruments:** in terms of the existence of effective basin planning and management strategies that have political commitment and of the procedural framework of regulations, administrative set-ups, technical information necessary for implementation; or

(iii) **Institutional Capacity:** in terms of their jurisdiction, structure, staffing, financial resources, understanding of the wider socio-economic pressures and their ability to coordinate across the broad range of stakeholders involved?

**Fig 4.1 WWF's Diagnostic Tool**




96. This framework has been applied in Table 4.1 to some of the challenges raised in Annex A5 and the country action plans. It provides a guide to the forthcoming workshop discussions and the identification of good practice. More detailed dimensions of these questions are given in Annex A5.

**Table 4.1 Discussion points.**

| | |
|---|---|
| **Policy / legislation** | • Are rights of access to water for basic human needs recognized?<br>• Are customary rights protected and how is this done? |
| **Strategies / instruments** | • Is there a link between spatial planning, basin planning and water allocation?<br>• How are affected stakeholders involved in setting of priorities for water allocation?<br>• How are rights allocated to new users – is there flexibility to adapt?<br>• Are priorities clearly articulated for drought conditions?<br>• What methods are used to resolve conflicts between users?<br>• To what extent are the consequences of private sector concessions (e.g. hydropower) factored into the basin strategies ad allocation plans?<br>• What mechanisms are in place to encourage multiple purpose benefits |

| | |
|---|---|
| | from hydropower projects?<br>• How are environmental needs protected?<br>• Are pollution control measures linked to the protection of water-user rights?<br>• To what extent is the licensing system flexible to can accommodate adaptive management? |
| **Institutional capacity** | • To what extent are inter-agency coordination arrangements effective for setting priorities among uses?<br>• Does the technical understanding of basin water balance exist for determining consequences of alternative allocation scenarios?<br>• Is the technical capability in place to monitor and evaluate on an operational timeframe?<br>• To what extent is their capacity to implement and enforce a water allocation system?<br>• How are groundwater abstraction limits and zoning plans implemented?<br>• How are illegal abstractions dealt with?<br>• What measures can be taken during the transition period to build the necessary capacity for water licensing and does the legal framework allow such a phased approach? |

97. An alternative perspective on some of these questions is provided in Table 4.2 by considering the allocation and management process from the viewpoint of the water users themselves.

**Table 4.2 Issues from the perspective of water users.**

| | |
|---|---|
| Surface irrigators | • Are irrigation allocations afforded protection through a system of water rights?<br>• What arrangements are in place for ensuring surface irrigators are compensated / protected in the event that water allocations are redirected towards competing uses? |
| Urban and rural consumers | • Beyond basic human needs, what is the priority accorded to domestic supply over other economic uses?<br>• Are there requirements to ensure that any development of new bulk water or reallocation of water is equitably distributed across social classes?<br>• What is the process for transferring water allocations from former agricultural use to new urban use – is it fair to all parties? |
| Industrial users | • Does the reallocation of water to industry from other uses involve any form of compensation, e.g. through a share of benefits or other development trade-offs? |
| Customary users | • Are customary water uses recognized in the water law? Is there a move to formalize customary rights into the administrative system?<br>• What is implementation relationship between the water law, land law or indigenous people law in relation to protecting customary rights? |
| Hydropower developers | • To what extent is the development of hydropower projects required to compensate downstream users for any impact resulting from change in water quantity, quality or timing of supply?<br>• How are the processes of negotiating hydropower concession agreements and water allocation linked?<br>• What measures are taken in the project approval process to ensure |

| | |
|---|---|
| | the operational flow regime of a hydropower project is consistent with basin needs? |
| Environmental needs | • What formal requirements exist to ensure the needs of the aquatic environment and downstream environmental conditions are protected (aquatic ecology, water quality, salinity management, etc.) |
| Groundwater users | • How are existing abstractions safeguarded from over-abstraction by others? |

**Concluding remarks**

98. As competition for water resources grows, there is expected to be a general trend towards a more 'explicit' system of water allocation – water licensing. That then requires clearly articulated priorities and processes for deciding on the merits of individual license applications. Such clarity is needed in the primary and subsidiary legislation together with the political will at various levels for effective implementation.

99. Similarly it is clear from the slow progress in reaching the MDGs, that the fundamental rights of access to water for basic human needs is a long way from being realized despite it featuring in most of the legal and policy frameworks. This again is an issue of political commitment that goes beyond statutory provisions and policy statements.

100. With rapid urbanization, it is also clear that some additional protection to, or adaptation of, the livelihoods of existing water users in peri-urban areas is required. Although water trading is not a concept that is widely accepted in Asia, some aspects of it may be considered necessary to effectively compensate former water users. This may take the form of a transfer payment or benefit sharing arrangement.

101. Water reform needs to be recognized as a long term process. There will be need for transitional arrangements, for example making time-bound and phased general authorizations for certain classes of water use until such time as the institutional capacity for a comprehensive licensing system has been developed and fully funded.

102. Compromising available water resources through poor water quality exacerbates water scarcity. Addressing the pollution problem in parallel to water allocation will help relieve water stress in many cases, as well as lead to a healthier population and environment.

103. Finally, the rapid changes already experienced in Asia over the past thirty years and the prospect of future uncertain consequences of climate change requires any system of water allocation to take an adaptive management perspective. The question then is how is the risk managed to protect fundamental rights to water, provide confidence in water-user rights and a context conducive to investment, and to accommodate the needs of future generations?

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Add primary legislation of participating countries with weblinks:

**ANNEXES**

A.1 Summaries of NARBO Workshops 1 to 4, 2005 to 2007
A.2 Summary of Issues in the Country Action Plans
A.3 Brief Summaries of Legal Framework in Respect of Water Rights and Water Allocation in the Participating Countries
A.4 RBO Functions
A.5 Key Challenges for Water Allocation
A.6 Case studies (to be added after the workshop)

## ANNEX A1.1

Summary of Note to File: 20 December 2005

### 1st NARBO Thematic Workshop on Water Rights and Water Allocation 5-9 December 2005, Hanoi, Viet Nam

## BACKGROUND

1. The abundant supply of and low demand for water in the past contributed to the lesser concern on the aspects of water ownership, allocation, and rights. Nowadays, increased water demand and water use conflicts are occurring in many countries in Asia; and licensing mechanisms, water allocation, and water rights have become a challenge. While there has been extensive interest on these topics, there have been relatively few successful experiences so far in most Asian countries.

2. The subject of water rights and water allocation are of particular interest to the Network of Asian River Basin Organizations (NARBO), as evidenced from completed survey, evaluation and needs assessment forms from member participants in recent NARBO activities.

### NARBO Thematic Workshops on Water Rights and Water Allocation

3. The workshop in Hanoi forms part of a series of four workshops on the theme of water rights and water allocation to be held within two years (two workshops per year). The goal of the series of workshops is to come up with recommendations to address the issues related to water rights and water allocation.

4. The 1st workshop (in Hanoi) aimed to clarify water rights and allocation status in participants' countries. ADB was represented by (i) VRM's Ian Fox, Principal Project Specialist (Natural Resources); and (ii) RSDD's Dennis Von Custodio, Water Financing Program Adviser (Water Resources and Irrigation).

5. The 2nd and 3rd workshops aim to look deeper into the issues and challenges; and to plan for possible improvements. The final workshop aims to finalize the report. The 2nd workshop is tentatively scheduled May or June, 2006; with venue still to be determined.

6. In between the conduct of the workshops, participants will be requested to undertake internal country discussions to further refine their country inputs.

### Workshop Objectives

7. The workshop aims to take stock of the current status of water rights, water allocation, and drought management including legal framework, arrangements and challenges thereof in the participants' countries.

### Host Organization and Venue

8. In the NARBO needs assessment and evaluation forms, Viet Nam reflected challenges on water rights and water allocation. NARBO Secretariat thus decided Viet Nam as the venue of the workshop with the Red River Basin Organization as host agency. The workshop venue was the Ministry of Agriculture and Rural Development (MARD), Block B6, No.2 Ngoc Ha Street, Hanoi, Vietnam.

**Participants**

9. There were 26 participants representing 6 countries: 2 from Thailand; 2 from Indonesia, 2 from Philippines, 1 from Lao PDR; 15 from Viet Nam; and 4 from NARBO Secretariat (including 3 from Japan and 1 from Philippines). The workshop was designed for RBO and government member organizations of NARBO.

**Program**

10. The program consisted of (i) Day 1: opening ceremony, presentations and workshop session on water allocation; (ii) Days 2 and 3: field visits; and (iii) Day 4: workshop sessions on water rights and drought management; and closing ceremony. VRM's Ian Fox gave his presentation 'Understanding Water Rights and Water Allocation' in Day 1.

**Field Visits**

11. Day 2 field visit was at the Hoa Binh Hydropower Plant and Multi-Purpose Dam which was built on the upstream of Da River (one of the tributaries of Red River) with funding support from then USSR. Water uses in the dam are for flood management, power generation, irrigation, fisheries and water transport; and water for irrigation use has priority over other uses. No water conflicts are experienced at the moment, but can be expected in the future. There are no water rights granted for the use of the waters. Day 3 field visit was at Thac Huong dam whose waters are mainly used for irrigation, flood management and navigation.

**Conclusions**

12. It is appreciated that the workshop was hosted by Viet Nam's Red River Basin Organization which coordinates and plans the activities for the Red River, Viet Nam's second largest river. This presented a good opportunity for RRBO to share its basin activities with the participants. One of the basic principles underpinning IWRM is the need to manage water resources at the lowest appropriate level, with the increased recognition that RBOs can realize IWRM at the basin level.

13. All six countries (INO, PHI, THA, LAO, VIE, and JAP) represented in the workshop have an established framework for water rights and water allocation; however the challenges as well as the degree of experience on the implementation of water rights and water allocation vary from country to country. The case of Lao PDR is quite interesting. Lao PDR has abundant water and a small population; and therefore has little competition among the various users of water, as compared to the other five countries. While there were no reported water conflicts and no experience on water rights system, its water law (1996 Water and Water Resources Law) contains provisions on water rights and water allocation.

14. Except for PHI and THA, the countries represented have recent water laws which provide the legal framework on water rights and water allocation (table below). THA is however is working on a new water law while PHI is in the process of amending the implementing rules and regulations of the Philippine Water Code of 1976 (PD 1067). The fact that the water laws are quite recent reflects the need to have a legal framework adopting to current situation and evolving needs.

| Country | Governing Law on Water Rights and Water Allocation |
|---|---|
| INO | 2004 – Water Resources Law |
| PHI | 1976 – Presidential Decree 1067<br>1975 – Presidential Decree 813<br>1983 – Executive Order 927 |
| THA | 2005 – National Water Law (draft) |

| | |
|---|---|
| | 1962 – Field Dykes and Ditches Act<br>1942 – State Irrigation Act<br>1939 – People Irrigation Act |
| LAO | 1996 – Water and Water Resources Law |
| VIE | 1998 – Law on Water Resources |
| JAP | 1997 – River Law |

15. Except for VIE, the countries are clear on the institutional set-up governing water rights and water allocation. In VIE, there are overlapping functions still to be resolved between the lead water agencies: (i) Ministry of Natural Resources and Environment (MONRE); and (ii) Ministry of Agriculture and Rural Development (MARD).

16. Of the six countries, three (THA, LAO and VIE) share the rich water resources of the great Mekong River and are therefore prone to water conflicts with international riparian countries. The challenges on water rights and water allocation system for these countries are more demanding.

17. In PHI, it may be worthwhile to revisit the no-time-bound validity of water rights particularly with the increasing water demand.

18. The workshop was in general successful in terms of meeting the workshop objectives, but there is room for improvement organization-wise, including:

- **Providing participants with workshop certificates**. These serve as evidence of their participation and are therefore valued by many participants.

- **Increasing the time for workshop discussions and write-ups**. There was not enough time to fill-up the data sheets (matrix on water rights, water allocation, and drought management in the six participating countries). NARBO Secretariat was therefore forced to give assignments and deadlines to complete the data sheets within a week after the workshop. Since participants have other pressing work on their return to their own organizations and countries, the assignments and deadlines have proven difficult to comply with.

- **Eliciting more discussions**. There was active participation from many participants; but the discussions could have been more if not for the language barrier. Six participants from VIE, as well as officials at the site visits, can not speak English. The use of interpreters was indeed helpful and eased the constraint a little bit.

## ANNEX A1.2

Summary Note to File

### NARBO 2nd Thematic Workshop on Water Rights and Water Allocation
### La Mesa Guest House, Quezon City, Philippines, 5-9 June 2006

**Background**

1. There was less concern on the aspects of water ownership, allocation, and rights in the past because there was abundant supply of and low demand for water. But with increasing water demand, water use conflicts are nowadays occurring in many countries in Asia. A system of water rights and allocation has lately become topic of extensive interest, including for the Network of Asian River Basin Organizations (NARBO).

2. Supported by interest from its member organizations, NARBO decided having 'water rights and allocation' as the first topic in its series of thematic workshops. The design is to make these thematic workshops simple and small in scale, and targeting a few NARBO member organizations.

3. The workshop in the Philippines is the second in a series of four workshops on the theme of water rights and allocation. The first workshop, held in Hanoi in December 2005, identified the water rights and allocation situation in the participating countries.

**2nd Thematic Workshop on Water Rights and Water Allocation, Philippines, 5-9 June**

4. **Objective**. The objective the 2nd thematic workshop is to analyze the issues on water rights and allocation and their causes; and identify plans for improvement.

5. **Workshop Program**. The workshop format was similar to the one used in Hanoi. The program consisted of (i) 2-day presentation and discussion; and (ii) 2-day field visit. There were two presentations on Japanese experiences, focusing on: (i) water resources policy review; and (ii) approaching water allocation issues. There were country presentations from PHI, THA, VIE, LAO, SRI and INO on (i) water rights and allocation issues and causes; and (ii) proposed improvements to address the issues. The field visits were at: (i) the Kalayaan Pumped Storage Power Plant (KPSPP) in the Province of Laguna, whose major water source in generating hydroelectric power is the Laguna Lake; and (ii) the Angat Dam and Hydroelectric Power Plant (the waters from the reservoir are used for domestic, irrigation, flood control and power generation purposes).

6. **Host Organizations**. The host organizations were two NARBO member organizations in the Philippines: the National Water Resources Board (NWRB) and the Laguna Lake Development Authority (LLDA). NWRB is an apex body which manages the country's water resources, regulating their utilization and allocation; and issues, suspends, revokes and approves water permits. LLDA is a river basin organization which manages the Laguna Lake, the country's largest freshwater body; conserving and utilizing its resources and exercising water rights for use of surface waters within the lake.

7. **Participants**. 23 water professionals from 7 countries participated: Thailand (2), Viet Nam (3), Lao PDR (1), Indonesia (2), Sri Lanka (2), Japan (3), and Philippines (10).

**II. Workshop Results**

8. In Viet Nam, the legal framework for water rights and allocation is the Law on Water Resources of 1998. Article 20 of the law stipulates that the allocation of waters to different

uses should be based on river basin planning and actual water potential. While a system of water rights and allocation is already in place, technical guidelines for proper implementation are still needed. Two key national agencies are involved in water resources management, the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Natural Resources and Environment (MONRE). The overlapping functions of these two agencies result to inefficient and non-optimal performance of their respective mandates.

9. In Indonesia, the legal framework for water rights and allocation is the Water Resources Law of 2004. At the moment though, the government regulation to implement this law is not yet in place. This results to the inadequate enforcement of the law. At the national level, the Directorate General of Water Resources (DGWR) is responsible for water resources management; while the National Development Planning Agency (BAPPENAS) is responsible for policy research, coordination and development planning. At the basin level, river basin organizations, taking the form of public corporations, prepare water allocation plans.

10. In the Philippines, the legal framework for water rights and allocation is the Water Code of 1976 for the management of all waters of the land, except for the waters of Laguna Lake, whose management is governed by Republic Act 4850 of 1966. There is need to amend the water code in view of increasing conflicts of its provision with other water-related laws. While the system of water rights and allocation are in place, its enforcement is weak with only around 35% of water users subjected to water permits. Two key agencies are involved in water resources management, namely: the National Water Resources Board (NWRB) and the Laguna Lake Development Authority (LLDA).

11. In Thailand, water allocation specific to irrigation is provided in several laws, namely: Private Irrigation Act of 1939, Royal Irrigation Act of 1942, and the Groundwater Act of 1977. There is no legal framework for a system of water rights and allocation at the moment, however such system is provided in the draft water law. The draft water law also provides that water resources are public properties to be managed by government. The National Economic and Social Development Board mainstreams the water agenda into the national development plan; while the Department of Water Resources of the Ministry of Natural Resources and Environment is responsible for setting the policy and plan for water resources management.

12. In Lao PDR, the system of water rights and allocation is not yet practiced since water scarcity is not that severe in the country. Nonetheless, the Water and Water Resources Law of 1996 provides the legal framework for water rights and allocation. Traditional laws and customs on water use are widely observed. The Ministry of Agriculture and Forestry is responsible for agriculture water, and for preparing and updating data on water resources and river basins. The Water Resources Coordination Committee is the overall coordinating body on water resources.

13. In Sri Lanka, the legal framework for water rights and allocation is the State Lands Ordinance of 1947 and 1999b. However, the system of permits has itself remained on paper; and traditional water management practices still prevail. The use of water for irrigation is exempted from the water rights system and remains under State control. Subsequent legislations created water resources development agencies such as the Ceylon Electricity Board (CEB), National Water Supply and Drainage Board (NWSDB) and the Mahaweli Authority of Sri Lanka, which are all vested with statutory powers to abstract and use water to meet the requirements of their respective mandates.

14. Table 1 provides selected water rights and allocation issues raised by participants from the participating DMCs; including the proposed improvements to address these issues.

**Table 1 Water rights and allocation issues and the proposed improvements**

| DMC | Water Rights and Allocation Issue | Proposed Improvement |
|---|---|---|
| VIE | There is low level of awareness of the Law on Water Resources (LWR) and how it will be implemented. There is limited capacity to develop strong policy under the law. | Develop a clear program of information and awareness on the LWR and IWRM.<br><br>Have a single agency responsible for IWRM, including for an equitable and sustainable water allocation and water rights.<br><br>Adopt integrated river basin development planning as basis for water allocation and management.<br><br>Strengthen and clarify the roles of RBOs including on planning management and water allocation; degree of involvement in decision-making (e.g project or budget approval); and representation of ministers, sectors, and provinces. |
| | Water rights are in general reflected in legislation but still need technical guidelines for proper implementation. There is no official government report on the implementation of water rights. | Complete the technical guideline; and implement a system for licensing water use (surface water and groundwater). |
| | Two institutions are responsible for water resources management. Human resources on WRM are abundant and capable but scattered in different agencies. | Streamline agency functions. Undertake institutional strengthening and capacity building activities. |
| INO | Lack of clarity in terms of priority starting on the 3rd use of water. Local authority determines priority based on local needs. | Establish a procedure on priority in every local authority. |
| | Inadequate enforcement of the water right and allocation system although the system is provided in the law. | Expedite the enactment of government regulations of the water law, particularly for water right. |
| | Lack of awareness of the water law. | Promote information, education and communication campaign on the water law through banners, TV, seminars, meetings, etc. |
| PHI | Lack of coordination among water related agencies | Establish NWRB's regional presence through RBOs. |
| | Conflicts in the management of water resources. | Amend the Water Code of 1976. Execute alliances and partnerships with other water agencies and institutions. |

| | | |
|---|---|---|
| | Difficulty in the implementation of water rights and allocation system. | Institutionalize information, education and communication campaign:<br>- post information in the NWRB website<br>- conduct nationwide consultations<br>- distribute materials on water permit applications and processes (primers, brochures and CDs) in local dialects<br><br>Strictly implement laws, rules and regulations:<br>- issue cease and desist orders on violators<br>- impose penalties including cancellation of permits<br>- implement compensation schemes.<br>- anchor plans and programs on existing master plans |
| THA | No water rights and allocation system in place | At the basin level, adopt traditional water allocation.<br><br>At the national level, induce more attention and interest on water rights and allocation.<br><br>Discuss sharing of limited water<br>- negotiation for compensation<br>- water measurement, allocation, control and distribution, monitoring, data collection |
| LAO | No water rights and allocation system in place though this system is provided by the Water and Water Resources Law (1996). | Conduct regulatory gaps analysis regarding water allocation, permission, measurement and procedures. |
| | Weak coordination between line agencies and with those of other sectors and local authorities. | Conduct capacity building and institutional strengthening for the national apex body on water resources (at the time being is WRCC).<br><br>Clarify the mandates of water-related organizations. Suggest additional functions and institutions if necessary. |
| | At basin level, integrated basin plans have not been drafted and integrated river basin planning study has not been carried out. | Study the process for setting up RBC in the river basin.<br><br>Coordinate with line agencies and local authorities in preparing river basin and water resource management plans. |
| SRI | Several state organizations handle water. An integrated approach is needed. | Develop a comprehensive water policy including to establish National Water Resources Authority[54] as an apex regulating body for the water sector. |

## III. Participants' Evaluation of the Workshop

Omitted for brevity

[54] This NWRA is functioning as apex body in the interim but the law for its creation needs approval by Parliament.

## IV. Observations

24. All seven countries (INO, PHI, THA, LAO, VIE, SRI and JAP) recognize the importance of having a system of water rights and allocation. Except for THA which is awaiting the enactment of its water law, all countries have an established legal framework for water rights and water allocation. The degree of experience on the implementation of water rights and water allocation, as well as the challenges and issues, however vary from country to country.

25. Of the seven countries, Lao PDR seemingly has the least need for a system of water rights and allocation at the moment. With abundant water supply and low water demand from a relatively small population, Lao PDR has no reported water use conflicts. Interestingly, while water scarcity is not so severe in Lao PDR, its water law contains provisions on water rights and water allocation. Of the seven countries, THA, LAO and VIE share the rich water resources of the great Mekong River and are therefore prone to water conflicts with international riparian countries. The challenges on water rights and water allocation for these countries are thus deemed more demanding.

26. JAP, VIE, LAO, SRI and INO have recent governing laws which provide the legal framework on water rights and water allocation. THA is working on a new water law while PHI is in the process of amending the implementing rules and regulations of the Philippine Water Code of 1976. In PHI, it may be worthwhile to revisit the applicability of the no-time-bound validity of water rights.

27. The workshop provided the venue for learning through exchange of knowledge, information, and experiences on the relevant topic of water rights and allocation. The workshop provided an opportunity for networking and side discussions. The proposed Task Leader of the NARBO benchmarking and peer review activity attended the workshop and interviewed some participants in preparation to the forthcoming peer review activities. The workshop also provided the opportunity to discuss with participants ADB work in river basins in connection with ADB's Water Financing Program on the basin water stream. The workshop accommodated the participation of a representative from Vu Gia-Thu Bon river basin on request by ADB operations staff. His participation thus provided added value to ADB's water operations in Viet Nam.

28. It is appreciated that the workshop was hosted by the only existing RBO in the Philippines, the LLDA. This presented a good opportunity for LLDA to share its basin activities with the participants. This underscores one of the basic principles of IWRM: the increased recognition that RBOs can realize IWRM at the basin level.

29. The workshop is deemed successful. The workshop objectives were met. There is scope for improvement however in some aspects of the workshop, particularly in the area of time management and moderating the discussions. Some precious times were lost (i) in uploading the powerpoint presentations; (ii) in setting-up equipment; and (iii) in getting participants ready. Some discussions diverted from the main topic of water rights and allocation. Some questions were not fully addressed, if not at all.

## ANNEX A1.3

Summary Note to File

### NARBO 3rd Thematic Workshop on Water Rights and Water Allocation Bangkok, Thailand, 27 November – 1 December 2006

## I. Background

1. The Network of Asian River Basin Organizations (NARBO) has adopted thematic workshops on themes related to IWRM as a new attempt for: (i) sharing information on current status of IWRM in participating countries, (ii) clarifying the problems in participating countries, and (iii) approaching the way of improvement in cooperation with participants. The workshop placed great importance to the self-reliant effort of problem solving by participating countries themselves during the workshop and internal discussions in their organization during interim period between workshops.

2. The first topic in NARBO's series of thematic workshops is on "Water Allocation and Water Rights". The design is to make these thematic workshops simple and small in scale, targeting a few NARBO member organizations and to be held for a total of 4 times in two years with the following outcomes:

1st- identify issues in participating countries
2nd- analyze the causes of the issues
3rd- review the 1st and 2nd workshop and suggest the approach to improvement
4th- draft a report for plan of action

3. The first workshop was held in Hanoi in December 2005 and the second was in the Philippines on June 2006.

## II. 3rd Thematic Workshop

4. **Objective**. The objective of the 3rd thematic workshop is to review the issues on water rights and allocation, causes and proposed solutions; and identify plans for improvement.

5. **Workshop Process**. The workshop format consists of: (i) special lecture/presentation from Japan experiences; (ii) country presentation and discussion sessions; and (iii) field trips. Japan, being a developed country, shared its experiences on water allocation problems during the period of strong economic growth and how it overcame them. There were two presentations on Japanese experiences: (i) groundwater management by a Japanese government official and (ii) the Japan River Law by ADBI. The three review sessions were divided into country presentations by the core working group members, i.e INO, LAO, PHI, SRI, THA, and VIE; and discussions participated in by NARBO secretariat and observers. The other sessions were devoted to individual country internal discussions and revisions of their materials and presentation of the revised outputs. The field visits were to: (i) Prachin Buri Province meeting with Bang Pakong River Basin Sub-committee (one of CFWS PDA); and (ii) Nakhon Nayok Province Khlong Tha Dan Dam – an irrigation water supply and flood control project.

6. **Host Organizations**. The host was the Department of Water Resources, Ministry of Natural Resources and Environment, a government organization NARBO member.

7. **Participants**. About 30 water professionals from 7 countries participated: Indonesia (3), Lao PDR (1), Japan (7), Philippines (3), Sri Lanka (2), Thailand (12), and Viet Nam (2).

Of the 30 participants, there were 11 core thematic workshop working group members from 6 DMCs, 5 were the NARBO secretariat, 4 were local secretariat, 2 from the Japanese government, 8 observers. Aside from the host organization, Thailand has representatives from the Department of Groundwater Resources, Royal Irrigation Department, and The Electricity Generating Authority of Thailand.

**III. Observations and Recommendations**

Comments on workshop process have been omitted for brevity

**ANNEX A1.4**

Summary Note to File: 6 February 2007

**Subject: Network of Asian River Basin Organization (NARBO) 4th Thematic Workshop on Water Rights and Water Allocation**
**Saitama, Japan, 22-27 January 2007**

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1. Subject event is the last in a series of 4 workshops on the theme of "water rights and water allocation". The series of workshops were held in different countries with participating organizations taking turns to host and co-organize. As with the other previous three workshops, subject event: (i) was simple and small in scale; (ii) maintained a core group of participants; and (iii) had the benefit of internal discussions in participants' organizations during interim period after every previous workshop. The set of objectives of the series of 4 workshops were:

| Workshop | Objectives |
|---|---|
| 1st workshop, Hanoi, December 2005 | identified issues |
| 2nd workshop, Quezon City, June 2006 | analyzed the causes of the issues |
| 3rd workshop, Bangkok, November 2006 | reviewed the results of the 1st and 2nd workshops and suggested approaches to improvement |
| 4th workshop, Saitama, January 2007 | drafted an action plan |

2. **Program**. The 5-day program (Annex 1) broadly consists of the following activities: (i) preparatory meeting; (ii) country presentations[55]; (iii) lecture[56]; and (iv) field visits[57].

3. **Participants**. There were 9 participants (Annex 2) representing 8 organizations from 6 countries (THA, PHI, INO, VIE, LAO and SRI). The following organizations were represented: (i) Department of Water Resources (THA); (ii) Kasetsart University (THA); (iii) Laguna Lake Development Authority (PHI); (iv) National Water Resources Board (NWRB); (v) Perum Jasa Tirta 2 (INO); (vi) Red RBO (VIE); (vii) Water Resources Coordination Committee Secretariat (LAO); and (viii) Mahaweli Authority of Sri Lanka (SRI).

**FINDINGS and OBSERVATIONS**

4. **Country Action Plan**. Except for THA, all represented countries (including JAP) have an established legal framework for water rights and water allocation; however the challenges as well as the degree of experience in implementing water rights and water allocation vary from country to country. While the original design of the series of workshops

[55] The country presentations cover the (i) results of internal discussions in participants' respective organizations; and (ii) draft action plan.

[56] The special lecture on 'Case Study of the Aichi Canal' was given by Prof. Yoshida of the Tokyo University. The lecture anecdotes the success story of Aichi Canal not only in providing water for domestic, industrial, and irrigation uses, but also in providing an opportunity to enhance community's good governance and capacity to effectively respond to the changing social and economic conditions.

[57] The field visits were in (i) Tone Canal Control Center; (ii) Tonegawa Lower Reach Comprehensive O&M Office; and (iii) Chiba Canal O&M Office. These visits demonstrated JWA's technology in water resources management, particularly in the operations of its facilities for allocating water.

was to cover both water rights and water allocation, the discussions and the resulting action plans shifted more on the latter. The reason was that all the participating countries, except for PHI, have little or no experience in implementing a water rights system. While most of the proposed action plans intend to directly address water allocation issues, they can also be seen to contribute to an enabling environment towards implementing a water rights system. The following briefly describes the action plan from each of the 6 participating countries (details in Annex 3):

- In INO, the legal framework for water rights and water allocation is the Water Resources Law of 2004. At the moment, the Government Regulation (GR) to implement this law is not yet in place. INO proposes to prepare the GR which is expected to improve the system of water rights and water allocation in the country. INO also proposes the creation of a National Water Resources Committee as a policy-making body on water rights and water allocation.

- In LAO, the system of water rights is not practiced even though the comprehensive water law (Law on Water and Water Resources of 1998) includes specific provisions on water rights. At the moment, traditional laws and customs on water use (customary water rights) are widely observed. LAO proposes to strengthen the coordination body for water resources management.

- PHI is currently facing weak enforcement of its water rights system despite strong legal frameworks in the 1976 Water Code and its Implementing Rules and Regulations; and in the case of the Laguna Lake, the Republic Act 4850 and Executive Order 927. PHI proposes to improve and expand the coverage of water rights by (i) intensifying information, education and communication (IEC) campaign; (ii) strengthening institutional coordination; and (iii) strictly implementing the provisions of the law.

- In THA, water allocation specific to irrigation is provided in several laws, namely: Private Irrigation Act of 1939, Royal Irrigation Act of 1942, and the Groundwater Act of 1977. THA is awaiting the enactment of a comprehensive water law that will provide the legal framework for a system of water rights and water allocation. In the interim, THA proposes to strengthen the social process for water allocation through consultation and dialogue with stakeholders. It also plans to develop regulation for water allocation in a pilot basin, and to improve data sharing among stakeholders.

- SRI plans to address water rights and water allocation challenges through proper planning at the national. It proposes to develop a water resources master plan for SRI for the next 25 years; and to strengthen the interim apex body for water resources management through active participation from different sectors. At the local level, SRI proposes to (i) introduce bulk water allocation; (ii) motivate farmers to save water; and (iii) introduce incentive scheme for farmers.

- In VIE, technical guidelines for proper implementation of the system of water rights and water allocation are still needed. Two key national agencies on water resources management (the Ministry of Agriculture and Rural Development; and the Ministry of Natural Resources and Environment) have overlapping functions, resulting to inefficient and non-optimal performance of their respective mandates, including on implementing water rights and water allocation. VIE proposes (i) to amend the Law on Water Resources of 1998; (ii) to pass a decree that spells-out specific functions of water agencies; and (iii) to develop technical guidelines for water rights and water allocation.

**Participants' Evaluation of the Workshop**[58].
Omitted for brevity

**CONCLUSIONS AND RECOMMENDATIONS**

7. The 4th workshop is deemed successful, with lessons from previous workshops incorporated. The five-day event progressed smoothly, both on technical and administrative aspects, and resulted to the following outputs and outcomes:

**Outputs**

- 4th workshop on water rights and water allocation successfully completed;
- draft action plan to address water rights and water allocation challenges prepared and reviewed; and
- comparative data on water rights and water allocation situation in 6 countries made available.

**Outcomes**

- NARBO thematic workshop demonstrated as an appropriate activity and forum for sharing experiences and cross-learning among NARBO members;
- opportunity provided for networking and exchange of experiences on water rights and water allocation among water professionals;
- opportunity provided for participants and their organizations (through echo sessions) to have better understanding and awareness of water rights and water allocation;
- level of interest on water rights and water allocation in the participating organizations increased;
- opportunity provided for participants to learn JWA's basin operations and activities for water allocation;
- confidence in overcoming the challenges on water allocation increased; and
- ADB's collaboration with JWA, NARBO and the participating organizations continued.

**Next Steps**

8. After discussing the action plan with their respective organizations; participants will submit a final version by 14 February.

9. To better monitor the outcome of the series of workshops, the participants are expected to report the progress of implementation of the action plan at the 3rd NARBO General Meeting to be held sometime in the 1st quarter of 2008.

[58] Participants suggested the following topics for future NARBO thematic workshops: (i) hydraulic systems for water supply, drainage, flood control and environmental flows; (ii) climate change; (iii) monitoring and evaluation of water rights and water allocation proposals after one year; (iv) water quality system management; (v) water pricing; and (vi) stakeholder participation.

## Annex A.2: Summary of issues raised in the Country Action Plans

| | **Issues raised in the Country Action Plans** (paraphrased) | **Categorization** |
|---|---|---|
| **Indonesia** | 1. Unreliability of supply – lack of compensation for failure to deliver<br>2. Competition (conflict) among commercial and non-commercial users, and between non-commercial users (farmers)<br>3. Shortcomings in water management technology to support implementation of an allocation system | - Management capacity<br>- Allocation: adapting to changing use<br>- Technical capacity |
| **Lao PDR** | 1. Weak coordination among line agencies and with other agencies / local authorities | - Management: inter-agency coordination |
| **Philippines** | 1. Lack of coordination among Government and non-Government agencies in Water Resources Management, including local government<br>2. Difficulties in implementing water rights system – illegal abstractions, customary users don't recognize statutory system.<br>3. Specific issue related to need for water rights system in Laguna de Bay | - Management: inter-agency coordination<br>- Management: lack of authority<br>- ? |
| **Sri Lanka** | 1. Need to strengthen planning process to reflect changes in priority uses and avoid shortages to key sectors (urban water and power)<br>2. Poor water management technology and capacity related to irrigation use and no incentive to save water | - Allocation: adapting to changing use<br>- Management: sector specific |
| **Thailand** | 1. Open and free access to water in waterways – no regulatory system<br>2. Lack of cooperation between Government and water users in planning decisions and lack of accessible datasets as input to such cooperation | - Absence of regulatory framework<br>- Management; lack of public participation & technical capacity |
| **Viet Nam** | To be added | |

## Annex A.3: Water Rights Comparative Study - Country Summary

| **INDONESIA** | | |
|---|---|---|
| Relevant water related legislation, policy and strategy | Water Resources Law No.7/2004<br>Government Regulations on Water Resources Management and Water Use Rights (in draft).<br>Presidential Decree on Balai Besar – supersedes MPW Decree 12/PRT/M/2006 | |
| **Basic Water Rights**: | | |
| Legislated water rights | Not specific, but State makes 'efforts to guarantee' a minimum daily amount. | |
| Customary rights | Yes, provided it is 'not contradictory to national interests and legislative regulations', Art 6(2) | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | Administrative system based on master plans and annual water allocation plans. | |
| Priority for allocation | Domestic and agricultural use do not require permits. | |
| Status of licensing systems (if applicable) | Groundwater licensing is operational by districts. Surface water permit system operated by some provinces under previous law and provincial regulation – not uniform.<br>Regulation for water rights and water resources management in preparation. | |
| Environmental provision | Not explicit in the law, but stated to be included in forthcoming regulations. | |
| Water trading | Not permitted. | |
| Drought provisions | • Priority under Water Law accorded to domestic use, then agriculture in existing irrigation schemes. Priorities for other users are decided by authorized level of government.<br>• Meeting of Provincial Water Resources Committee (PTPA) that discusses drought plans – to be replaced with Basin WR Committee in cross-provincial basins. | |
| **Organizational set up:** (in relation to water rights) | National Water Resources Council; Basin Water Resources Council | (To be established)<br>Policy and coordination |
| | Directorate General of Water Resources (DGWR under Ministry of Public Works | Policy and Strategy development. Oversight of RBOs for strategic and cross-provincial basins |
| | *Balai* and *Balai Besars* (RBOs) | "In-stream" water management and licensing for cross-provincial rivers, development of strategic basin plan for long, medium and short term. |
| | Public Corporations (PJTI and PJTII) | Operators. Propose water allocation plans – situation may change once *Balai* become fully operational. |
| | Ministry of Environment and provincial, district services | Environmental planning, waste water licensing, pollution control, environmental assessment |
| | Ministry of Forestry and provincial, district services | Catchment planning, management of forest and plantation land |
| | Provincial and District Water Resources Services | Management of water resources under their jurisdiction (single province or single district) (including licensing of surface water). |

| | | |
|---|---|---|
| | District and City authorities | Regulation of groundwater |
| | Provincial and District Administrations | Issue of development licences (urban, commercial, industrial) |
| **Provisions for participation / consultation:** | National, Basin, Provincial Water Resources Committees with balanced non-government representation. Other details to be included in new regulations under preparation. | |
| **Issues raised related to water rights and allocation:** | **Institutional issues:**<br>• Coordination problems related to sharing roles and responsibilities at national and local level.<br>• Separate organizational responsibility for surface and ground water regulation and lack of coordination<br>• Lack of coordination between spatial planning and water resources planning processes<br>**Context-specific issues:**<br>• Lack of adequate hydrological data and water resources ndustri capacity<br>• Rapid urban development and ndustrialization in former agricultural areas | |

| **LAO PDR** | | |
|---|---|---|
| Relevant water related legislation, policy and strategy | 1996 Water and Water Resources Law<br>2001 Decree on Implementation of the Water and Water Resources Law | |
| **Basic Water Rights**: | | |
| Legislated water rights | No legislated priority, but small scale use (family domestic use and community requirement, cultural use and sport; fishing, fisheries and other water life; soil, sand gravel, aquatic needs situated in or nearby the water resource; basic agriculture, forestry and livestock production needs of the family. Art.15 | |
| Customary rights | Not explicitly recognized in water law – need to check other legislation? | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | Administrative allocation on project by project basis e.g hydropower concessions. Medium and large scale uses need to seek permission, Art. 18 Large scale by Government and Medium scale by concerned ministry (Art.19) | |
| Priority for allocation | No priorities specified except for drought, see below.<br>Use of groundwater must be reserved for drinking purposes (Art. 13). | |
| Status of licensing systems (if applicable) | None | |
| Environmental provision | Preservation of the environment and scenic beauty (Art. 22(ii)). Protect water resources from drying up (Art.29) | |
| Water trading | No. | |
| Drought provisions | Not a major issue for Lao PDR. Priority is:<br>• Drinking and domestic users<br>• Hydropower<br>• Agriculture<br>• | |
| **Organizational set up:** (in relation to water rights) | Water Resources Coordinating Committee (WRCCS) | Inter-agency coordination and formulation of national policy |
| | Ministry of Agriculture and Fisheries (MAF) | Responsible for water resources in agriculture |
| | Ministry of Communications, Transport, (MCTPC) | Responsible for water resources related to communications, transportation, urban water supply, and control of flooding |
| | Ministry of Industry and Handicrafts (MIH) | Responsible for water resources related to electricity including hydropower, industry, mining. |
| | River Basin Committee (RBC) | Plans to establish RBCs |
| **Provisions for participation / consultation:** | No explicit provisions | |
| **Issues raised related to water rights and allocation:** | **Institutional issues:**<br>• Lack of clarity on authority for water rights allocation<br>• Lack of secondary legislation<br>• Fragmented management of water resources<br>**Context-specific issues:**<br>• No integrated basin planning | |

| **PHILIPPINES** | | |
|---|---|---|
| Relevant water related legislation, policy and strategy | 1976 Water Code PD196<br>1991 Local Government Code RA 7160 | |
| **Basic Water Rights**: | | |
| Legislated water rights | No, but hand carried water, bathing, washing and watering of animals are exempt from permit requirement. | |
| Customary rights | Not explicit, but concept of existing water right [Art.22] and protection of third persons [Art. 23] is incorporated. Indigenous Peoples Act protects access to natural resources. | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | Licensing | |
| Priority for allocation | Prior use has priority – '*priority in time'* Article 22 of Water Code. Where priority of time in an existing use is not clear, then priority accorded to: domestic and municipal, irrigation; power generation; fisheries, livestock, industrial use and others. | |
| Status of licensing systems (if applicable) | Licensing system under NWRB with detailed provisions in implementing rules.<br>Estimates that only 35% of water users are subject to permit | |
| Environmental provision | No specific requirement for environmental flow, but ecological concerns to be addressed, Articles 72-73. Groundwater and surface water to be considered to avoid adverse consequences resulting from allocation of a water right [Article 32]. | |
| Water trading | Yes – lent or transferred with approval of Council [NWRB]. Article 19 of Water Code. | |
| Drought provisions | • Water Crisis Management Committee established to monitor<br>• Priority for domestic and municipal uses, Article 22 of Water Code | |
| **Organizational set up:** (in relation to water rights) | National Water Resources Board (NWRB) | Coordinating body among water-related agencies with responsibility for water resources management |
| | National Economic Development Authority (NEDA) | Coordinates development planning and policy formulation |
| | Dept. of Environment and Natural Resources (DENR) | Responsible for sustainable development of natural resources and ecosystems |
| | National Irrigation Administration (NIA) | Development and Operation of public irrigation systems |
| | 12 RBOs to be formed under NWRB | Mandate being considered |
| | Laguna Lake Development Authority (LLDA) | Management of natural resources of Laguna de Bay limited to aquatic resources due to overlap of responsibilities with other agencies. |
| **Provisions for participation / consultation:** | Procedures to publicize licence applications and provide opportunity for objections (Art. 16 of the Water Code). | |

| **SRI LANKA** | To be completed during workshop | |
|---|---|---|
| Relevant water related legislation, policy and strategy | | |
| **Basic Water Rights**: | | |
| Legislated water rights | | |
| Customary rights | | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | | |
| Priority for allocation | | |
| Status of licensing systems (if applicable) | | |
| Environmental provision | | |
| Water trading | | |
| Drought provisions | • | |
| **Organizational set up:** (in relation to water rights) | | |
| | | |
| | | |
| | | |
| **Provisions for participation / consultation:** | | |
| **Issues raised related to water rights and allocation:** | **Institutional issues:**<br>•<br>**Context-specific issues:**<br>• | |

| **THAILAND** | | |
|---|---|---|
| Relevant water related legislation, policy and strategy | Date, Civil and Commercial Code<br>1939, Private Irrigation Act<br>1942, Royal Irrigation Act<br>1977, Groundwater Act<br><br>2005, Draft Water Law (not yet enacted) | |
| **Basic Water Rights**: | | |
| Legislated water rights | No. | |
| Customary rights | No. | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | Currently a mixture of common access and administrative allocation through project or province. Licensing system included in Draft Water Law.<br>Groundwater use requires a permit. | |
| Priority for allocation | Definition of three categories implies a priority of use (Art.10):<br>1. living and household related uses<br>2. commercial agriculture, industry, hydropower etc,<br>3. larger or inter-basin use. | |
| Status of licensing systems (if applicable) | None | |
| Environmental provision | No formal requirement. Case by case decisions on water releases from reservoirs. Check draft law | |
| Water trading | No. | |
| Drought provisions | In dry season only, priority is:<br>• Water supply in city and community including domestic consumption and industry<br>• agriculture using limited water<br>• salinity control<br>• second rice crop<br>• water transport and sailing boats<br>In agriculture, priority is:<br>• marine animals and fish ponds<br>• vegetable and fruit gardens<br>• field crops<br>• dry season paddy rice | |
| **Organizational set up:**<br>(in relation to water rights) | National Water Resources Committee (NWRC) | Coordination across water agencies |
| | Prime Minister's Office of National Economic and Social Development Board | Responsible for including water in national development plans |
| | Ministry of Natural Resources and Environment (MONRE) | Dept of Water Resources: Setting policy and plans for national and river basin management, monitoring.<br>Dept of Groundwater: permits for groundwater use<br>Dept. of Pollution Control: setting stream and effluent standards and monitoring |
| | Ministry of Water Transportation and Marine | Responsibility for granting permission for water use from a natural river. |
| | Royal Irrigation Departments of Ministry of Agriculture and Cooperatives | Responsible for providing water for agriculture and operating reservoirs and for sanctioning water from irrigation projects to other users (municipal, industrial) |

| | | |
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| | Electricity Generating Authority of Thailand (EGAT) | Development and operation of hydropower projects |
| | 29 River Basin Committees | Body of stakeholders. Now consulted on a request to use natural surface water |
| **Provisions for participation / consultation:** | Basin committees established and consulted. Limited procedures for wider outreach. Check draft law | |
| **Issues raised related to water rights and allocation:** | **Institutional issues:**<br>• Regulation of surface water is not currently undertaken by government agencies. Conflicts taken to court.<br>• Lack of explicit policy, legal and institutional framework in basin areas<br>• Coordination of RB Committees in cases where they are sub-basins of a larger river basin (eg Chao Praya)<br><br>**Context-specific issues:**<br>• | |

| **VIETNAM** | | |
|---|---|---|
| Relevant water related legislation, policy and strategy | 1998 Law on Water Resources (LWR) No.08/1998/QH10<br>2003 Decree No. 86/2003/ND/CP on river basin management<br>2004 Decree on Licensing 149/2004/ND-CP<br>2006 National Water Resources Strategy (Prime Minister's Decision 81/2006/QĐ-TTg dated 14 April 2006) | |
| **Basic Water Rights**: | | |
| Legislated water rights | No absolute right defined for any water use. | |
| Customary rights | Not explicitly recognized under water law, but by other statutes, e.g. land law – check | |
| **Water Use Rights (Allocation):** | | |
| Approach to allocating water use rights | Mixture of 'explicit' licensing system and administrative allocation on project basis (e.g. irrigation) | |
| Priority for allocation | Ensure principle of equality, appropriateness and prioritization order in terms of quantity and quality of domestic water, (Article 20)<br>*'Water exploitation and utilization for domestic consumption is given the first priority'* – Article 22 | |
| Status of licensing systems (if applicable) | Not yet fully operational. Licenses required for major government developments and private sector operations.<br>License period: ?? years | |
| Environmental provision | Not in legislation. Ensuring minimum ecological flows is a requirement of the National Water Resources Strategy (Pt. 2 s.2.2(a)(2) and Pt.3 s1.1(d)) | |
| Water trading | No, check | |
| Drought provisions | Priority uses are stipulated in Art. 20 of LWR<br>Decree No. 179/1999/ND-CP gives following priority during drought:<br>• Daily life<br>• Water for cattle and poultry rearing and aquatic and marine product culture<br>• Important industrial establishments and scientific research institutions<br>• Food security and crops of high economic value<br>• Other water exploitation and use purposes | |
| **Organizational set up:** (in relation to water rights) | National Council on Water Resources | Policy development and inter-ministerial coordination |
| | Ministry of Natural Resources and Environment (MONRE) | Responsible for water resources management at national level and licensing transferred to MONRE from MARD in 200? |
| | Ministry of Agriculture and Rural Development (MARD) | Responsible for irrigation development and flood management. Also retains responsibility for river basin management which remains a point of dispute with MONRE. Clarification of institutional responsibility has recently been provided – check |
| | Provincial Departments of Natural Resources and Environment (DONRE) | Responsible for water licensing. – check precise delineation of responsibility? |
| | River Basin Organisations | Future role in water resources planning but not yet effective. |
| | Electricity of Vietnam, Ministry of Industry | Development of Hydropower projects |
| | ?? | Who issues development licenses for urban, commercial, industrial – MPI? |
| **Provisions for** | Mainly through the formal political and administrative structures at | |

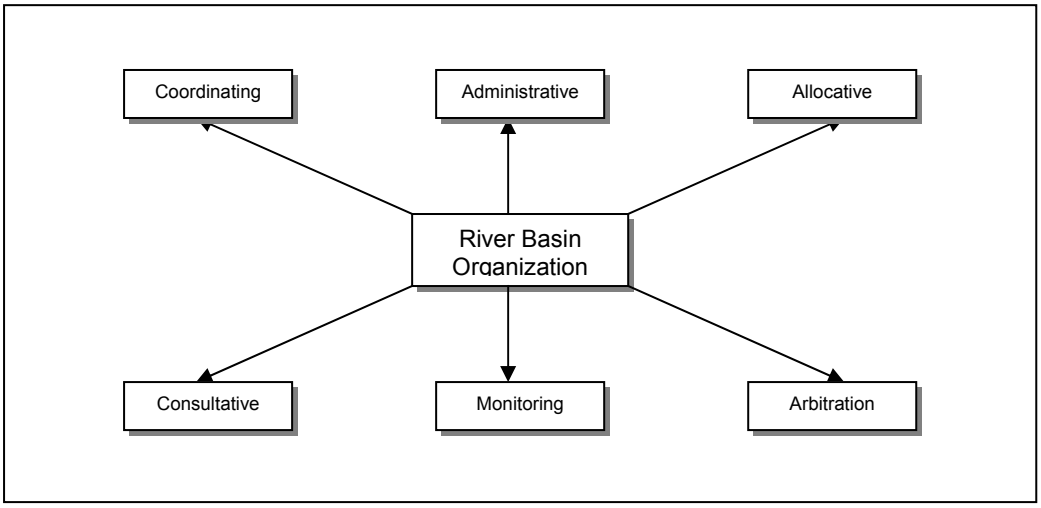
| | |
|---|---|
| **participation / consultation:** | provincial, district and commune levels. 'Councils for consideration of water use application formed' – request more information |
| **Issues raised related to water rights and allocation:** | **Institutional issues:**<br>• Lack of secondary legislation and technical guidance for implementing allocation of water rights<br>• Low levels of coordination among organizations<br>**Context-specific issues:**<br>• Deteriorating water quality affecting water availability.<br>• Increasing competition for water due to economic growth and increase in per capita consumption<br>• Increasing importance of cooperation on international rivers and on inter-provincial distribution for irrigation<br>• Increasing prevalence of natural disasters |

## Annex A4 RBO Functions

1. In general, RBOs could perform the following main functions (Dourojeanni 2001):

- **Coordinating function**: to act as a "co–ordinating forum" for water resources management. (eg. The Bang Pakong River Basin Committee in Thailand RBO facilitates coordination and agreement through stakeholder consultation and dialogue.)
- **Administrative function**: to carry out internal administrative regulations of existing laws. (eg. The Delaware River Basin Commission (DRBC) prescribes special surface water withdrawal and diversion regulations, declares drought emergencies, and enforces adoption of conservation strategies.)
- **Allocative function**: to allocate functions and responsibilities to other bodies or users with a view to improving multi-purpose water use. (eg. As an RBO itself with water user rights, the Laguna Lake Development Authority in the Philippines transfers such rights through a Memorandum of Agreement to other bodies or users – e.g. to Ayala Land Inc. to abstract waters from the Laguna Lake for domestic and commercial uses.)
- **Consultative function**: to provide advice to other bodies involved in water management at the river basin level. One essential aspect of this function consists in providing the agency responsible for granting water rights with information on the water balance in the river basin. (eg. PJT1 and PJT2 in Indonesia provide technical recommendations as basis for the issuance of water permits.)
- **Monitoring function**: to monitor water courses in the river basin from their source, over their entire length, and in respect of all their uses. (eg. The Tennessee Valley Authority in the United States has statutory authority to manage the entire multi-state basin of the Tennessee River and its tributaries for flood control, power production and navigation.)
- **Arbitration function**: to act as arbitrator in disputes that arise between actors over water use, as well as for preventing disputes. (eg. The Delaware River Basin Commission (DRBC) and Susquehanna River Basin Commission (SRBC) first address disputes over water through negotiation and alternative means of dispute resolution rather than through litigation or Supreme Court petition.)

**Main Functions of RBOs**



**Some examples of RBO Involvement in Water rights and Water Allocation**

| Issues/Challenges Related to Water Rights | Role of RBO |
|---|---|
| Fostering cooperation and avoiding conflicts among water users | **1. RBO can facilitate coordination and agreement; and foster cooperation**<br>• The Bang Pakong RBC in Thailand helps achieve effective water allocation through communication and participation among basin stakeholders; and through continuous effort in collecting information.<br>• The Delaware River Basin Commission (DRBC) and the Susquehanna River Basin Commission (SRBC) first address disputes over water through negotiation and alternative means of dispute resolution rather than through litigation or Supreme Court petition. These disputes are resolved through intensive, face-to-face negotiations on a regular basis, careful coordination, and sharing of findings.<br>• River basin committees in Brazil promote the discussion of issues relating to water resources; and arbitrate, as the first administrative recourse, conflicts relating to water resources;<br>• PJT II and stakeholders continually undertake dialogues and coordination to realize better water management in the Citarum river basin.<br><br>**International Transboundary RBOs**<br>• The International Commission for the Protection of the Danube River (ICPDR) acts as catalyst for wider cooperation among Danube basin countries[59]. The ICPDR strengthens and develops mutual understanding between and among countries, thereby reducing the likelihood of conflicts.<br>• The International Commission for the Hydrology of the Rhine Basin (CHR) promotes closer cooperation among riparian countries[60]; and contributes to the solution of cross-border problems through the formulation, management, and provision of information systems and models for water management.<br>• The Mekong River Commission (MRC)[61], an international, country-driven basin organization, provides the institutional framework to promote regional cooperation in order to implement the 1995 Agreement; and to jointly manage the shared water resources of the mighty Mekong River.<br>• The Gambia RBO (OMVG) [62] promotes the integrated development of the natural resources of the Gambia river basin (shared by Senegal and Gambia), Kayanga river basin (shared by Guinea, Guinea Bissau, and Senegal), |

[59] Countries of the Danube river basin include: (i) Austria; (ii) Albania; (iii) Bosnia and Herzegovina; (iv) Bulgaria; (v) Croatia; (vi) Czech Republic; (vii) Germany; (viii) Hungary; (ix) Italy; (x) Macedonia; (xi) Moldova; (xii) Poland; (xiii) Romania; (xiv) Serbia and Montenegro; (xv) Slovak Republic; (xvi) Slovenia; (xvii) Switzerland; and (xvii) Ukraine.

[60] The member states of the CHR are Switzerland, Austria, Germany, France, Luxembourg, and the Netherlands.

[61] Member riparian countries include (i) Thailand; (ii) Cambodia; (iii) Lao PDR; and (iv) Viet Nam. In 1996, the People's Republic of China and Myanmar became Dialogue Partners of the MRC and the countries now work together within a cooperation framework.

[62] OMVG comprise 4 riparian countries: Gambia, Senegal, Republic of Guinea, and Republic of Guinea Bissau.

| | |
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| | and Kaliba Coruba river basin (shared by Guinea and Guinea Bissau).<br>• The Kagera Basin Organization (KBO)[63] coordinate efforts to develop water resources of the Kagera River Basin.<br>• The Organization for the Development of the Senegal River (OMVS) [64] promotes inter-country cooperation and coordination on activities related to the Senegal River.<br>• The Niger Basin Authority (NBA) [65] promotes inter-state cooperation for integrated development of natural resources of the Niger river basin. It promotes cooperation and harmonization of water resources policies and programmes, and helps to minimize conflicts in the sharing of resources in the basin.<br>• The Okavango River Basin Commission (OKACOM) [66] promotes and fosters close inter-country cooperation for achieving environmental and other developmental needs of the concerned countries with particular emphasis on equitable use and sustainable development of water resources of the Okavango river. It establishes channels of communication for effective coordination, consultation and cooperation among stakeholders.<br>• The Mano River Union [67] fosters coordination and cooperation for the development of the Mano river basin.<br>• The Zambezi River Authority (ZRA) fosters cooperation between Zambia and Zimbabwe for regulating Zambezi river water at Kariba Dam for hydropower generation.<br>• The Permanent Joint Technical Commission for Nile Waters (PJTC) fosters cooperation between Egypt and Sudan for the utilization of the shared waters of the Nile River.<br>• The Lake Chad Basin Commission (LCBC)[68], fosters cooperation for the utilization of the shared waters of Lake Chad (including the Chari and the Logone rivers contributing to Lake Chad).<br><br>**2. RBO can help to establish a coordination body on water rights and water allocation**<br>• PJT1 and PJT2 helped to establish the new Basin Councils in Indonesia<br>• PJT2 can help to establish the proposed National Water Resources Committee as a national coordination and policy-making body on water rights and water allocation |
| Providing technical information and/or recommendations that can help to introduce or implement water rights | **1. RBO can gather and share technical information; and give recommendations on matters related to water rights**<br>• Following the technical recommendation from PJTI, water license is issued to applicants by the governor of the East Java Province.<br>• The International Commission for the Hydrology of the Rhine Basin (CHR) develops joint hydrological measures for sustainable development of the Rhine basin; and expands the knowledge of the hydrology in the basin.<br>• The KBO conducts studies on environmental protection, |

[63] KBO comprise 4 riparian countries: Burundi, Rwanda, Tanzania, and Uganda.
[64] OMVS comprise 4 riparian countries: Guinea, Mali, Mauritania, and Senegal
[65] NBA comprise 9 riparian countries: Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Guinea, Mail, Niger, and Nigeria
[66] OKACOM comprise 3 riparian countries: Angola, Botswana, and Namibia
[67] Mano River Union comprise 4 riparian countries: Liberia, Sierra Leone, and Republic of Guinea
[68] LCBC comprise 5 riparian countries: Cameroon, Chad, Niger, Nigeria, and Central African Republic.

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| | afforestation, soil conservation, and energy generation.<br>• The LCBC conducts studies on prevention of irrational exploitation of water resources for the Lake Chad Basin and adjoining rivers to address the gradual decrease in the lake's water volume. The LCBC also conducts studies on institutional coordination; scientific knowledge of water resources and ecosystem; and pilot or research actions on cross-sector issues.<br>• The OMVS coordinates technical, economic studies and other activities related to the Senegal River Basin development.<br>• The OMVG conducts studies for hydropower development, irrigation schemes, and prevention of saltwater intrusion.<br>• The OKACOM provides technical, advisory and other support services on environmental conservation, development and management of shared water resources. It advises on determining long-term water safe yields, anticipated demand, conservation techniques, equitable allocation, and sustainable utilization of water resources of the basin. It also conducts transboundary diagnostic assessment study of the basin to identify key areas of concerns and gaps in knowledge of the physical and socio-economic system of the Okavango river basin.<br>• The ZRA collects, accumulates, and processes hydrological and environmental data of the Zambezi river for use by the riparian countries. It gives recommendations to ensure the effective and efficient use of waters of the Zambezi River. |
| Preparing or administering guidelines, rules and regulations to properly implement the law thus help to improve the system of water rights | **1. RBO can prescribe regulations and conduct intensive social marketing and advocacy campaigns for the river basin's interest**<br>• The DRBC prescribes special surface water withdrawal and diversion regulations, declares drought emergencies, and enforces adoption of conservation strategies.<br><br>**2. RBO can assist in drafting the technical guidelines and/or rules and regulations**<br>• PJT2 in Indonesia helps to prepare the Government Regulation to implement the Water Resources Law of 2004 thus improve the system of water rights.<br>• Red RBO in Viet Nam can help prepare the technical guidelines for proper implementation of the system of water rights and water allocation, including for granting water license. |
| Implementing allocation for water user rights | **1. RBO can deliver the supply of water to match entitlements to the extent feasible**<br>• The Japan Water Agency in Saitama develops water resources for domestic, industrial and agricultural purpose through the construction of dams, canals, barrages and developing lakes<br>• K-Water in Korea develops water resources for various uses through the construction and operation of dams, and other water infrastructure.<br>• PJT1 and PJT2 of Indonesia control, develop, and utilize water resources in Brantas and Citarum river basins, respectively, to meet water requirements. |

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| | • The ZRA operate, monitor and maintain the Kariba dam complex.<br><br>**2. In some cases, an RBO is designated as the licensing authority for water user rights**<br>• In South Africa, the Catchment Management Agencies will, on transfer of powers from the Minister, become the licensing authority.<br>• The draft water law in Thailand provides for the River Basin Committee to allocate water user rights (Article 28).<br><br>**3. RBO can help to draft the water allocation plan**<br>• PJT1 and PJT2 of Indonesia draft the water allocation plan for the use of waters of the Brantas and Citarum river basins, respectively, taking into account existing water rights. |
| Transfer of water rights | **1. RBO can develop mechanisms for water rights transfers**<br>• The Murray Darling Basin Commission (MDBC) facilitates inter-state water trade by developing technical and operational mechanisms necessary to allow exchange between water entitlements.<br><br>**2. Where the RBO is itself a holder of water user rights, it can transfer such rights through a Memorandum of Agreement**<br>• The Laguna Lake Development Authority (LLDA) in the Philippines gives water rights to Ayala Land, Inc. to abstract waters from the Laguna Lake for domestic and commercial uses. |
| Conducting activities to conserve and sustain use of water resources | **1. RBO can conserve and maintain vital ecosystems of the river basin**<br>• LLDA's environmental army, consisting of basin stakeholders, undertake regular clean-up of the Laguna Lake sub-basins.<br>• The Organization for the Development of the Senegal River (OMVS) preserves the natural equilibrium of ecosystems in the sub-region and particularly in the Senegal River basin.<br><br>**2. RBO can address water quality issues**<br>• LLDA implements the polluters pay principle to generate revenues and protect water quality.<br>• PJT1 will implement the polluters pay principle and charge polluters with pollution fee and tax once the legal mechanism gets approved (being drafted).<br>• The Tennessee Valley Authority (TVA) works with local communities to improve watershed management and eliminate non-point source pollution.<br>• The MDBC manages salinity and nutrient levels to reduce algal blooms and relieve strain on the aquatic ecosystem<br>• The Yellow River Conservancy Commission, perhaps the largest RBO in the world, keeps the healthy life of the Yellow River through administrative, legal, technological, engineering, and economic measures.<br>• The Jordan Valley Authority (JVA), with a mandate to develop the Jordan Valley and the areas south of the Dead Sea, monitors water quality through regular testing of water |

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| | samples in the Jordan River.<br>• The OMVS has built a saltwater prevention barrage to control salt water intrusion during low river flow.<br>• The OKACOM has conducted studies to prevent water pollution and to identify measures to alleviate short-term water shortage problems.<br>• The ZRA conducted water quality monitoring or the Zambezi river.<br>• The PJTC combated the water hyacinth in the Nile river using biological means. |
| River basin planning | **1. RBO can assist to formulate or approve a comprehensive master plan for the entire river basin**<br>• River basin committees in Brazil approve and monitor the implementation of the river basin water resources plan.<br>• The DRBC and SRBC "formulate and adopt a comprehensive plan . . . for the immediate and long-range development and uses of the water resources of their respective basins."<br>• The OKACOM prepares an integrated management plan for the river basin.<br>• The NBA in Niger plans sub-regional and bilateral projects for the Niger RB.<br>• The LCBC prepared a master plan for Lake Chad's water resources.<br>• The KBO prepared a plan of action for the management of Kagera rb covering agriculture, energy, and environmental protection and conservation.<br>• The Mano River Union planned major projects for harnessing the Mano River water for hydropower generation and irrigation purposes. |
| Basin activities that impact on water user rights | **2. RBO can oversee and manage most aspects of the flow of water by mandating or forbidding activities that have an impact on water rights; or by requiring permits before certain actions can be carried out and by attaching conditions to such permits.**<br>• Under a 1933 Act, the Tennessee Valley Authority (TVA) has statutory authority to manage the entire multi-state basin of the Tennessee River and its tributaries for flood control, power production and navigation. With regard to surface water withdrawals, the agency has authority to approve construction of any structures on, in, or along the Tennessee River or its tributaries that could affect water flows.<br>• The International Commission for the Protection of the Rhine (ICPR) has mandate encompassing "sustainable development of the entire Rhine ecosystem". |
| Fees for water use | **1. RBO can establish help determine mechanisms for water use fees**<br>• River basin committees in Brazil establish mechanisms for the receipt of fees for the use of water resources; and suggest fees to be charged |
| Control of illegal water use | **1. RBO can detect and prosecute illegal water use** |

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| | • River Basin Authorities in Spain (namely, Duero, Ebro, Guadiana, Guadalquivir, Júcar, Norte, Tajo, and Segura) have jurisdiction to detect and prosecute illegal water use, including detecting unauthorized wells and surface water intakes, as well as identifying farms where a greater volume of water is used than had been assigned. |
| Monitoring the river basin | **1. RBO can establish a monitoring system for the river basin that can help in forecasting flow patterns useful for decision-making**<br>• The NBA has established the HYDRONIGER in 1978 for hydrological monitoring and forecasting using real-time satellite data; and the AGRYNET in 1974 for research on hydrometeorology and agrometeorology Hydroniger collects and disseminates hydrological data for west and central African countries.<br>• The PJTC monitors more than 130 gauging stations scattered along the Nile river and its tributaries. |

**Evolutionary Role of RBOs**

| Functions | New RBO | Developing RBO | Mature RBO |
|---|---|---|---|
| **Group 1:** Water (& natural resource) data collection & processing, systems modelling, water & natural resource planning | ● | ● | ● |
| **Group 2:** Project feasibility, design, implementation, operation & maintenance, raising funds | ● | ● | |
| **Group 3:** Allocating & monitoring water shares (quality and quantity and possibly natural-resource sharing), cost-sharing principles | | ● | ● |
| **Group 4:** Policy & strategy development for economic, social & environmental issues, community awareness & participation | | | ● |
| **Group 5:** Monitoring water use & shares, monitoring pollution & environmental conditions, oversight & review role for projects promoted by RBO partners | | | ● |

*Source: Millington 2000*

2. In examining the role of RBOs, Millington distinguishes between the functions of a resource manager and those of an operator or service provider. Examining and expanding on the following list of functions may help to understand the different roles of RBOs:

***Resource manager roles:***

- undertakes strategic water assessments;
- develops policies and strategies to comply with national objectives and with standards set by the regulator, and develops and oversees a strategic water research program;
- develops legislation to support regulatory standards and policies;
- plans and allocates water;
- manages quantity and quality for surface water and groundwater;
- supports inter-agency and community-driven basin co-ordination;
- develops water sector capacity-building programs; and
- promotes public participation and water awareness.

***The operator / service provider role:***

- builds and operates water supply, sewerage, drainage, and irrigation systems;
- maintains infrastructure;
- provides technical advice and assistance to others;
- charges others for services provided;
- operates under some form of contract(s), usually to the regulator for operating rights and to the resource manager for utilization of the water resource.

## Annex A5 Key Challenges for Water Allocation

Two generic approaches to water allocation exist. In this report, they are characterized as 'implicit' and 'explicit' systems:

**'Implicit' system:** Historically, allocation has been undertaken through rather top-down, government driven planning processes, in which the quantities of water for specific development projects are determined and become accepted practice.

**'Explicit' system:** Allocation through a system of time-bound licenses or permits in which the user is provided security of use for a stated period.

1. The status of water allocation processes and related roles of the participating countries are summarized in the table below.

**Summary of water allocation approaches in participating countries**

| Country | Approach to allocation | Licensing body | Role of RBO |
|---|---|---|---|
| **Indonesia** | Currently an 'implicit' system based on basin master plan allocations. Now moving towards 'explicit' licensing system to be introduced once licensing regulation approved under Water Law 7/2004. | Newly formed *Balai Besar* (RBO) for cross-provincial basins will be licensing body. Provincial RBOs for provincial basins. | New RBO is to be the licensing body. |
| **Lao PDR** | 'Implicit' project by project development approach and concession agreements for private sector hydropower. | None | Emerging role for coordination across sectoral interests. |
| **Philippines** | 'Explicit' permitting system although not uniformly applied | National Water Resources Board | ?Advisory |
| **Sri Lanka** | 'Implicit' project by project development based on overall basin plan, e.g. Mahaweli system, and seasonal operation plans | None | Preparation of overall basin development plans. |
| **Thailand** | 'Implicit' project by project development. | None | Emerging role for coordination across sectoral interests. |
| **Viet Nam** | 'Explicit' licensing system gradually being implemented | Provincial Departments of Natural Resources and Environment | Advisory for basin planning. |

2. Rapid growth, urbanization and industrial transformation has led to a number of challenges for water allocation in the major river basins of Asia. The following questions represent some of the more pressing challenges that need to be addressed by a range of agencies including the important facilitation and coordination role played by RBOs. The questions here will form the basis of discussions at the forthcoming workshop which will then be fed back into an updated version of this report.

3. **Is there a link between spatial planning (land use) and water allocation?** All too often there is a disconnect between the spatial or land-use planning processes coordinated by provincial, regional and local development agencies and water resources planning for the basin as a whole. Such a problem is not limited to developing countries. In UK for example, the institutional mechanisms for ensuring that projections of new housing prepared by the regional development agencies are adequately reflected in demand assessments of the privatized water utilities are generally not well developed. In Indonesia, the rapid growth of new urban and industrial centers has led to problems of water availability and public concern over extensive flooding.

4. **To what extent are rights of access to water for basic human needs recognized and implemented?** Although providing water for the basic needs of the population is a small percentage of the overall water resource, it presents considerable social, financial and political challenges. Yet it is commitment that governments have consistently made. To what extent is an RBO able to influence achievement of the ultimate goal of universal coverage particularly as the movement towards considering water as a human right grows? [For more on fundamental water rights, see section 2.1]

5. **How are rights allocated to new users?** The rapid pace of urbanization and industrialization of mega cities such as Bangkok, Jakarta and Manila has seen related changes in water demands that were hardly conceivable 20-30 years ago. Here the challenge often relates to a transfer of use from agriculture to municipal, commercial or industrial use. How adaptable is the system, both in cases where water-user rights exist under a licensing system and in cases where less formal allocation processes are in place? In the latter situation, long standing water use may be considered as an implied water-user right. Furthermore, if a permissible use is restricted or curtailed, does the holder of the user-right have any recourse to compensation – either from the government or the new user? [See section 2.3 for more on water allocation systems]

6. **What measures are in place to set priorities during drought and how accepted are they?** Water shortage or prolonged drought conditions intensify the challenges of water allocation experienced during normal periods. Lobbying by specific users can be intense and highly politicized. The questions then are to what extent are priorities between different uses already determined in the regulations?; are priority users with little influence protected?; what process is followed to agree on further restrictions if the situation deteriorates?; and how are those affected made aware of the restrictions?

7. **What methods are used to resolve conflicts between users?** Conflicts over scarce resources may occur at various times, for example, resulting from refusal of an application for water use; due to an imposed change or restriction placed on an approved use; due to upstream pollution; or as a result of a violation of conditions of water use by another user (see para 30). Such conflicts often come to a head during periods of shortage or drought (see para 24). Key issues here relate to the level of direction and detail provided by the legal and regulatory framework on the priorities of use within a basin and the effectiveness of conflict resolution and facilitation procedures to ensure the claims of competing users are fairly heard and decided.

> *'Disputes between water utilization permits typically place a permit holder against the government.. or against a fellow permit holder.*
> *..the speciality of water related disputes involving an unusually complex mix of questions of hydrological fact and law, may counsel the adoption of special rules for their solution, including establishment of specialized Water Courts or conferment of a quasi-judicial function to a government institution'.* (Burchi, 2004, p80)

8. A recent initiative in the Komadugu-Yobe basin in northern Nigeria saw the six States in the upstream and downstream agree to cooperate to resolve issues of over-abstraction, pollution and deterioration of extensive wetland areas. In the absence of a conflict resolution mechanism under the water law, a coordinating committee was established by an MOU signed by each of the six State Governors and the Federal Ministry.[69]

9. **How are customary water rights protected?** A particular case of conflict can arise where development proposals affect customary or traditional rights to water. Such rights may or may not be recognized in the legislation, but even if they are, the power base and influence of customary users is generally weak and their situation poorly understood. Many examples exist of major projects that have resulted in loss to indigenous people of access to water or other natural resources. What procedures are in place to make people more aware of their rights and to protect them? [see coverage of customary rights in section 2.3].

10. **How are hydropower concessions reflected in the water allocation or licensing process and how are trade-offs between hydropower, flood management and other uses determined?** The signing of hydropower concessions between government and developer represents a firm contract and may occur well before a water licensing process is initiated. What planning steps are in place to ensure there will not be a subsequent conflict with the needs of other water users in the basin, particularly where river diversion is involved. Similarly, incorporating multi-purpose objectives such as flood management and irrigation may have wider economic benefits but compromise the potential revenues from a single purpose hydro project. One of the issues raised in Sri Lanka is the competition between water for hydropower production and maintaining water for urban consumption. Therefore, what mechanisms are in place to ensure multi-purpose uses are optimized within a hydropower planning process, (either public or private sector oriented)?

11. **How are environmental needs being protected?** Increasingly the linkage between river flow patterns, the aquatic ecology and the rural livelihoods that depend on the river are being recognized in water resources planning. The concept of environmental flows is being introduced in the legislation. To what extent are environmental needs of a river system reflected in the allocation process? And what level of priority is given to environmental services? What processes are adopted to determine environmental need or river quality objectives? What redress do downstream users have if their water or fishing rights are adversely affected? [see coverage of environmental rights in section 2.2]

12. **How are illegal abstractions dealt with?** Even where a regulatory framework for water licensing is in place, there are the questions of implementation and compliance. The presentation from the Philippines suggests that only 35% of water uses are official and there is widespread illegal abstraction. What measures have RBOs taken to increase compliance with the allocation system?

13. **How is the control of pollution linked to protection of water-user rights?** There are a number of cases of major river systems that have been rehabilitated over the years from highly polluted rivers to healthy rivers that support aquatic life. Examples include the Thames in UK and the Han River in South Korea. What measures are RBOs taking to work towards similar outcomes? For example, the Ciliwung, Cisadane and Citarum rivers in Jakarta are highly polluted causing health problems and additional costs for downstream users. Establishment of a coordinating Basin Council is proposed, but what primary measures are considered feasible to address this problem? What rights do downstream users have in such cases? The Pasig river in the Philippines has recently been the focus of a river improvement initiative – what are the lessons to be learnt?

[69] Add web ref to KYJB

14. **How are groundwater levels maintained within sustainable limits?** Cities that rely on groundwater supplies have an obligation to ensure abstraction rates remain within sustainable limits. The consequences of over-abstraction include shortage, ingress of salinity, and land subsidence as in the case of Bandung. Each carries a considerable cost. To what extent can RBOs influence groundwater management that is often the responsibility of a municipality? What rights do users have where their water table is depleted by over-abstraction by others? Is there a case for compensation where land subsidence causes damage?