

Institutional Capital Stock Required for Water Resources Management in Developing Economies

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Abstract: This paper illustrates the institutional capital stock required for the developing economies by analyzing effectively the objectives of human rights and basic tree elements of water resources management. Issues of human rights to water are to realign the riparian water rights of land owners to the public right for reasonable and equitable allocation of water, to indemnify the human right of equality of opportunity to access to safe water and to indemnify the regional equity to re-allocate water resources not equally distributed geographically. The three elements of water resources management are securing safe water supply to various uses, securing water quality for sanitation and ecology, and securing safety against flood. This paper clarifies in details the missing institutional capital between the developed and developing economies which should be filled with. It also suggests that development of the extensive institutional capital stock for water resources management should come first before the Integrated Water Resources Management (IWRM) approach in the developing economies. International donor communities will be required to provide their extensive technical and financial support consistently to develop sufficient institutional capital stock.

Key words: institutional capital stock, equality rights, water security

1. Introduction

There is a big difference in levels of providing water resources management services in the developing economies and the developed economies at present. The water resources management framework of the developed economies had been built up on the firm basis of various institutional capitals which had been brew up in the process of establishing the State over the centuries. Further it has been improved in response to the current prevailing needs. On the other hand only a few years have passed since independent as a nation for the majorities of the developing economies which are now rapidly developing policies of localization, privatization, and rationalization of government in the current of globalization. The developing governments are perplexed with the newly emerged institutional reform one after another while the institution for the State governance and socioeconomic system is still at developing stage.

Though international donors recognize the significant gap of the available institutional capital between the developed and the developing economies, the capacity development of water resources management for the developing economies argues that the provision of or empowerment toward an ideal management system without verifying in details the degree of maturity of the whole stock of institutional capital of the subject nation. The stock of institutional capital is different nation by nation. Are there any basic laws and institution which are available in the developed but not in the developing?

This paper deals comprehensively with the three issues among the institutional capital with reference to the international dialogue and actual cases in the developed and developing economies.

- 1) Institution to achieve Human Right to Water,

- 2) Institution to achieve the Mission and Functions of Water Resources Management with Scientific and Credible Data Base, and
- 3) Institution to practice Water Resources Management based on River Basin Unit.

Three key issues of human right to water are i) realignment of riparian water right to public water right, ii) equality of opportunity to access to safe and reliable water for both the rich and the poor, iii) regional equity to access to safe and reliable water.

The mission of water resources management is to provide adequate water resources services to the public by integrating the three key inter-active elements; water, land and environment which form a broad aspect of sustainable development in long-term. The three key management elements are i) securing safe water supply to various uses, ii) securing water quality for sanitation and ecology, and iii) securing safety against flood (flood control).

The human rights and three management elements are the basis for the necessity to regulate by the national government or regional government.

Baseline data are not available for water resources management in most developing economies. Two key concepts to be shared in the developing economies are that scientific and credible data is the basis of government as a policy, and that it should be the basis for the accountability and transparency in its operations.

Five elements hampering effective and efficient water resources management are i) vertically segmented administration system, ii) conflicting functions with integrated area/regional development, iii) localization policy, iv) privatization policy, and v) rationalization policy of government.

2. International Dialogue

Before addressing the issues mentioned in the Introduction the international dialogue concerning water resources management issues is as listed below. Comparative studies and researches on the four issues have been done among the developed economies, but those are not sufficient enough for the developing economies. This paper also intends to verify necessity of comparative studies and researches on the institution between the developed economies and the developing economies in line with the international dialogue.

- Water has an economic value (1992 Dublin Statement on Water and Sustainable Development),
- Integrated management of water resources for sustainable use of water, preserving or restoring ecosystems and their functions, with human, domestic, industrial and agriculture needs (2002 Johannesburg Plan of Implementation of the World Summit on Sustainable Development),
- Sustainable Improvements in the fight against poverty through Millennium Development Goal (MDG) targets derived from the Millennium Declaration introducing international values: MDG 7 to have by 2015 the proportion of people without sustainable access to safe drinking water and sanitation,
- Human rights for water as global values, and
- Orienting cooperation with development partners along the 2005 Paris Principles on Aid Effectiveness: ownership, alignment, harmonization, managing for results, mutual accountability.

3. Human Rights Issues

3.1 Equality of Opportunity versus Equality of Output

Human rights issues in water resources management are three folds. One is to realign the riparian water rights of land owners to the public rights for reasonable and equitable allocation of water. Second is the human rights of equality of opportunity to access to safe water regardless of the rich and the poor. Third is the regional equity to re-allocate safe water which is not equally distributed geographically.

Equality

What is equality before God? What is equitable? Is equity different from equality? Equality is interpreted, at present, as equality of opportunity in particular by libertarianism in the USA. A different meaning of equality has emerged – equality of outcome. Everyone should have the same level of living or of income. Equality of outcome is in clear conflict with liberty (Friedman 1979). Equality of outcome coincides approximately with equity.

Utilitarianism versus Libertarianism

The goal of utilitarianism is to maximize utility, or collective happiness for the greatest number of people according to the principles of utility (Bentham 1789), but the collective happiness may come at the expense of violating individual rights. By utility Bentham means whatever promotes pleasure or prevents pain. In his Utilitarianism, John Stuart Mill (1863) argues that respect for justice and individual rights as “the most sacred and binding part of morality” is compatible with the idea that justice rest ultimately on utilitarian consideration (Sandel 2007). No one, Locke insists, has the right to alienate his natural rights (life, liberty, and property) by selling himself into slavery, or placing his life or his property under arbitrary power of someone else (Locke 1690).

To what extent will the national and regional policy be allowed to re-allocate the limited amount of public funds for the personal and regional equity violating individual rights?

3.2 Constitution, Laws and Institutional Capital

Separation of Water from Lands

Water Resources are national or state assets, public goods, or private assets depending on the Constitution and the Water Law. Water resources are national assets as part of natural resources in Indonesia, the Philippines, China, Kenya, etc. It is public goods in Japan under the Rive Law. England, Australia and Malaysia have each long history of trying to separate riparian water rights from the private lands to govern water resources by the national government instead of the state governments in order to exercise the nation’s public rights for reasonable and equitable allocation of water which is not equally distributed geographically inside the nation.

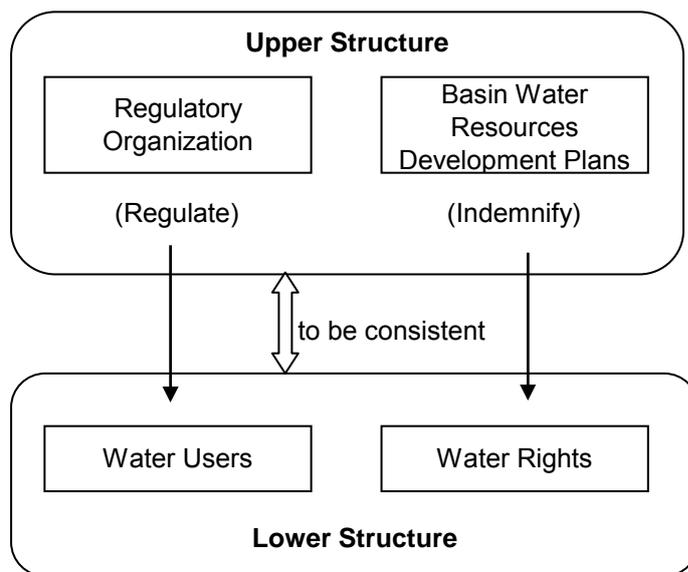
Water resources is vested in the State by water law (act or code) but this basic institutional capital is not effectively used in many developing economies. It implies that good governance of water resources is not able to be achieved only by the excellent Constitution and water law. A set of institutional capital stock is necessary for water resources management in practice from policy making to implementation and monitoring through project cycle: namely, planning, design, construction, operation and maintenance, monitoring, and

feedback.

Upper and Lower Structures for Water Rights Regulation

Water Rights regulation is a conflict management and resolution between human rights and equity (personal and regional). Equal opportunity to access safe water as a basic human need is the domestic water supply commitment to the poor and socially weak people and concerned with the equal access and poverty orientation of the Millennium Development Goal. Regional equity requires nations to re-allocate safe water not equally distributed geographically to address conflict between national interest and regional interest relating to regional income disparity.

Water rights institution is composed of the upper and lower structures. The upper structure is composed of regulatory organizations and river basin water resources development plans. The lower structure is composed of water users and water rights. The apex regulatory organization manages the whole upper and lower structures and water uses. The river basin water resources development plans indemnify water rights and also support regulation of water users together with the water rights. The upper structure is deliberately and generally under the jurisdiction of the national or regional governments (JICA 2006).



Source: Sambongi (2005)

Upper and Lower Structure for Water Rights Regulation

In the case of China the ownership of water right includes regulatory organization and river basin development plans, and thus it corresponds to the upper structure. The water use rights and transfer of water rights, which includes regulation of water users, regulation and indemnification of water rights, corresponds approximately to the lower structure. In China the primary water rights allocation (water use rights) and water rights transfer (re-allocation) is at the same level.

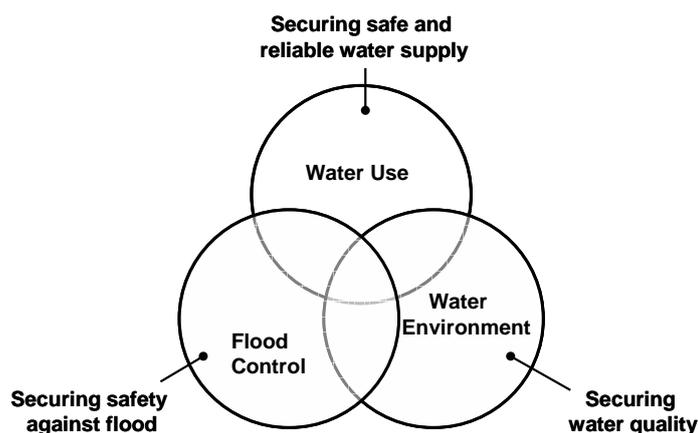
Though the type and content of water rights are varied due to differences in historic background, water rights (water use rights) are vested to main water users at present in the countries practicing the water rights institution such as the EU countries, the USA, Latin American Countries and Japan. In many countries the

upper and lower structures are not well institutionalized yet. In China water rights are not vested to water users yet, and thus the lower structure is in process. In Kenya and the Philippines river basin water resources development plans linked with water use rights are not available, and the upper structure is still in process. It is desirable for the developing economies to keep the functions of the upper structure under the national government in order to practice effectively and scientifically planned regulation of water rights allocation.

4. Institutional Development for Key Water Resources Management Elements

4.1 Three Level of National and Regional Security for Water

In spite of the greatest effort by the State and the donor’s support i) securing safe water supply to various uses (domestic, municipal and industrial water supply, agricultural water supply, hydropower generation, etc), ii) securing water quality for sanitation and ecology (effluent control and waste water treatment), and iii) securing safety against flood (flood control) are not yet sufficient in many developing economies. Water law/act/code and its implementing rules are available in most of the developing economies. Capacity development of personnel and organization and financial and technical aid programs has been provided consistently by international donor communities. What is the problem? Is it originated from laws, organization or financing?



Three Basic Elements of Water Resources Management

4.2 Securing Safe and Reliable Water Supply

Water Rights Regulation with Target Risk

To secure the rational, equitable, efficient and ecologically sustainable allocation of water, and to secure seasonal and long-term reliability of water supply are the core objectives of water rights regulation of a nation. There are two types of planning criteria in terms of water supply security level. One is for a single purpose and/or a multiple purpose dam project. The other is for a river basin master plan and/or a regional master plan. It is generally very costly to establish a low risk water supply security level in the arid areas where dry season water demand is much higher than the bulk water supply capacity. Appropriate combination of water supply

security level, emergency intervention/salvation programs, crop insurance is generally sought out to determine the target water supply security level taking into considerations local conditions including cost, benefit, natural and social environments.

In most of the EU countries, the USA and Japan a river basin water resources development plan is a technical and legal basis of water use rights allocation. Reservoir storage allocation for water users (stakeholders) is also the legal basis for water use rights including customary water rights.

However, there is still no institutional linkage between the reservoir storage volume of the existing dams and the existing water use right in many developing economies.

The common institutional shortfall is identified in the existing institution of the developing economies such as the Philippines, Kenya and Indonesia as set out below.

- There is no national or regional target or standard to guarantee the security level of water resources supply and to control aggregated quantity of water permit within the target guarantee level in a region or a whole river basin;
- The present quantitative monitoring system is very weak at cross-checking the regional water balance and regulating the aggregate rate and quantity of more than two water permits in a region where hourly, daily or seasonal water diversion conflict is expected;
- The present enforcing power is not effectively functioning to regulate over issues or to control of the aggregate rate and quantity of water permit;
- The regulation by the water law does not function against the regulation by the existing other competing laws; and
- The existing water law or the implementing regulations and rules for licensing water permit do not meet the field regulation and enforcement of the hourly, daily and seasonal fluctuation of water uses.

Examples of planned and actual security level of water use for major river basins and cities in Japan, USA and England are shown below. The planned target is not high in Japan, 1/5 (80%) ~ 1/10 (90%), but difference between planned target and actual risk of supply failure is relatively small. The planning target is high in USA and England, but the difference from reality is very large.

Source: JICA 2009

River Basin/City	Planned Security Level (target)	Present Occurrence Probability
Tone River-Arakawa River (Tokyo Region)	1/5 (80%)	1/2 ~ 1/3
Kiso River (Japan)	1/10 (90%)	1/3
Yodo River (Japan)	1/10 (90%)	1/3
Chikugo River (Japan)	1/10 (90%)	1/2
San Francisco	Recorded Maximum	1/3
New York	Recorded Maximum	1/11
London	1/50 (98%)	1/15

It is necessary to establish the fast-track regulation of water rights linked with river basin water resources development plans (called the Basin Full Plan in Japan) by unique organization under which the existing and new storage dams (all small and large), irrigation facilities, and water supply facilities are all registered, regulated and enforced through the process of granting water use permit. This institution is widely adopted in the developed economies such as the EU Countries, Australia and Japan. However, a set of institutional development will be required to resolve these issues: namely, amendment of the water law and its implementing rules, regulations and guidelines, organizational capacity strengthening of the regulatory body of water rights, establishment of reliable monitoring system of surface water discharges and groundwater specifically for water right enforcement, provision of technical guidelines and standards for the Basin Full Plan, strengthening of the financial capacity of the regulatory body, etc. These developments require long term and high cost, and thus international donors generally hesitate to provide extensive technical and financial aid program on this agenda.

Technical and Financial Aid Programs for Water Rights Regulation

The international financing organizations, such as the World Bank and Asian Development Bank (ADB) have provided technical and financial aid programs for the institutional development of water sector to the developing economies based on the respective sector aid policy, country programs, strategies and impacts, targets for activities, inputs and outputs. In the period 1998 to 2002 the World Bank and ADB provided technical and financial aid programs to Indonesia to develop over one hundred documents such as laws, presidential decree, regulations and guidelines including revision of Water Law of 1974 as part of Water Resources Sector Adjustment Loan (Government of Indonesia 1994). Japan Bank for International Cooperation (JBIC) also contributed in the period 2000 to 2001 (Government of Indonesia 2001). Even this extensive program failed to cover and to define the basin water resources development plan in the upper structure of the water rights regulation. The revised bill of the Water Law (UU No. 11/1974) did not pass through the Parliament as expected by the World Bank and ADB due to the different view of the Government of Indonesia in terms of historic and cultural perspectives and national and regional interests and yardstick.

The technical aid programs by Japan International Cooperation Agency (JICA) have been provided to many developing economies as part of water sector program to prepare comprehensive national water resources development plans (NWRDP) and specific river basin water resources development plans. NWRDP is policy instruments to implement the national socio-economic goal in line with the targeted national vision. However, the institutional development to legalize the Basin Full Plan within the upper and lower structures for water rights regulation (refer to Section 3.2) has not been provided yet.

Economic Incentive for Water Saving

Sustainable water resources and responsive services for present and future needs (Loucks 1999) is an objective of water resources regulation of a nation. However, the public and user base allocation system of water rights results in wasteful consumption of water and spawns the growing scarcity of water in both the developed and the developing economies. Reduction of non-revenue water including leakage reduction has been achieved dramatically by Manila Water Company (MWC) owing to high incentive to increase its profit in the Philippines. However, there is no incentive for water users in particular irrigators to save water or to increase water use efficiency in the Philippines. Irrigators using the national irrigation system have no

incentive to save their water use. Irrigation facilities fee is accounted by the unit of irrigation land area instead of the unit of used water quantity (m³). The water right title holder is government instead of irrigators and thus water saving does not result in reduction of annual water charges. The national government irrigation systems do not pay the water use permit charges both in the Philippines and Kenya. Saving of irrigation water does not result in income increase of irrigators. Best practices in re-allocation of water rights such as water transfer with incentives or trading of water rights are also anticipated. Trade of water rights is in practice in Australia, Chile, the USA, China, etc.

4.3 Securing Safety against Flood

Extensive Institutional Arrangement for Rational Flood Control

Managing and mitigating risk from climate change events and flood and other water-induced hazards is one of the objectives of water resources management of a nation in particular in the monsoon areas. Extensive institutional developments have been done to materialize rational flood control in the EU countries, the USA and Japan. A flood control basin plan represents the national and regional flood control policy. It will require a comprehensive approach to establish a rational approach and method for flood control planning and management. Approach of the rational flood control generally deals with the following subjects:

- i) Appropriate combination of structural measures and non-structural measures (zoning for flood prone areas, flood forecasting warning system, flood fighting program, flood insurance),
- ii) Appropriate flood control level to protect people and assets in flood prone areas from damages: it depends on the level of regional economic development,
- iii) Appropriate economic evaluation of planned flood control measures,
- iv) Appropriate hydrological indices for flood scale (the highest flood water level, flood duration, river channel discharge capacity, flood peak time, statistic recurrence interval), and
- v) Impact of human activities on the flood scale and occurrence frequency inside a river basin (human activities include construction of water and river facilities, roads and bridges).

The rational flood control is closely tied with administrative organization, laws and regulations covering flood control level, land use policy of flood prone areas, flood insurance, and trans-boundary treaties/agreements. Examples in the developed economies (JICA 2009) which are introduced hereunder, and are adopted with some supplement from United Nations (1976).

Type of Administrative Organization

There are three types of administrative organization to manage flood control: organization with limited functions, specific public corporation and specific administrative organization. Those organizations are established as permanent.

Type of Administrative Organization	Countries
1. Administrative organization with limited flood control function	France, Germany, Greece, Romania, Switzerland
2. Public corporation specially established	Austria, Finland, England, Netherlands, USA
3. Relevant administrative organization	Russia, Czech Republic, Italy,

(ministry, department, etc.) plus permanent flood control committee	Portuguese, Japan
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Type of Law

There are three types of basic laws for flood control administration: water law, river law and specific laws.

Type of Law and Related Regulation	Countries Concerned
1. Water law/Water code, or Water Law + Regulations for flood control	Finland, Hungary, Portuguese, Russia Germany, Czech Republic, Spain
2. River law + Domestic navigation law, or River law + Technical guideline for river and sabo works	France, Netherlands Japan
3. Specific law (flood control for navigable rivers, Hurricane, insurance), or Land drainage law + Regulations	USA (1936) England

Target Flood Control Level

There are two types of security criteria for flood protection level. One is the design high water level (or design flood hydrograph) for river basin flood control plans to protect people and assets in the flood prone areas. Second is the design flood for safety of dam body, the design flood discharge for spillway and /or outlet facilities. Some European countries establish a fixed target flood control level for different land uses such as urban area, industrial area, rural area or agricultural land. In Japan the rivers are divided into five classes (A~E) depending on the size of rivers and degree of their importance. A rough reference guide for the target flood control level (the criteria of scale of design rainfall) ranges from more than recurrence interval of 200 years to 10 years depending on the class. Some countries have no target flood control level but the flood control level and the feasibility of structural flood control measures is determined based on a cost benefit analysis: i.e., flood control benefit shall be at least larger than project cost. At present Czech Republic applies cost benefit analysis but the historical target flood control level for large towns 1/100 is also kept.

Fixed Target Flood Control Level	Countries Concerned
-Urban 1/100~1/1,000 -Industry 1/100~1/500 -Rural/Agriculture 1/10~1/50	Russia, Finland, Greece, Turkey, Hungary, Czech (Large town min. 1/100)
-Class A river < 1/200 -Class B river 1/100~1/200 -Class C river 1/50~1/100 -Class D river 1/10~1/50 -Class E river >1/10	Japan

Comparison of Cost and Benefit	Countries Concerned
Benefit > Cost + importance of socio-economy	France, Netherlands, USA, Portuguese, Czech

Design Flood Standards for Safety of Dam Body

Each national congress on large dams establishes respective design standard for safety of dam body

(spillway design). International Congress on Large Dam (ICOLD) introduced an example in 1988:

Category	Hazard	Design Flood Range
A	High	PMF to 10,000 year
B	Significant	10,000 to 1,000 year
C	Low	1,000 to 100 year

Type of Land Use Policy

Before 1970s land use in flood prone areas (FPA) was enhanced with combination of flood control structural measures in the USA and some of the EU countries to meet the demand of population and economic growth. However, increase of flood damages predominated in spite of a huge amount of investments to the structural measures. Zoning of FPA with classification of risk of inundation has been introduced in some countries at present. Restriction or prohibit of land use is a type of zoning.

Type of Land Use Policy of Flood Prone Areas	Countries
1. Enhance Land Use in Flood Prone Area	Finland, Japan
2. Restrict/Prohibit Land Use in FPA	Restrict: Portuguese Prohibit: Austria, Switzerland
3. Zoning of FPA with risk of inundation	Russia, USA, Czech Republic

Flood and Crop Insurance

Flood insurance is practiced in Russia, Portuguese, France, the USA, and England. Insurance conditions are different in each nation. Example insurance conditions are set out below.

Assets Insured	-Coverage for damages on houses and properties of residents -No coverage for industrial and agricultural products and assets
Fund and Reinsurance	-Governmental base of flood insurance fund and or reinsurance system
Premium and Risk	-Higher premium in the areas with higher flood risks with reference to flood zoning -Fixed premium for the residents in the specified flood risk areas,
Public Guarantee	-Flood reinsurance guarantees payment by the public to support insurance companies in case of extreme large damages
Crop Insurance	-Coverage for both draught and flood damages -Crop insurance is better in case large impacts on regional socio-economy

International Agreements/Treaties

There are various international agreements or treaties for flood control of the shared river basins (trans-boundary rivers).

Type of Agreement	Countries Concerned
Special Commission for River Basin established by multiple nations	-Water Use Commission for the Rhine River (France, Austria, Switzerland, Germany) -International joint commission + legislative organization (USA-Canada)
Treaty/Agreement/ Convention	-Treaty for international waters (Austria-Hungary- Czech Republic-etc.)

	-Agreement for flood control (Germany- Czech Republic) -Treaty for international waters (USA-Canada) - Treaty for flood control (USA-Mexico)
International Coordination	-Proposal Directives of the European Parliament and of the Council on the agreement and management of flood control (2006): coordination within shared river basins

Rational flood control management through integrating and harmonizing measures in strategic river basins, high-risk principal and small rivers is still not in practice in many developing economies. Flood control basin plan (FCBP) is not institutionalized even in the countries in the monsoon areas like the Philippines. There is also no specific target flood control level for the serious flood plain lands. This is partly originated from the fact that there is no legal basis to define the responsibility of the national and local governments to mitigate risks from floods of each of the water users concerned. Legalize government responsibility to prepare FCBPs for the strategic river basin or river stretches, and establishment of a flood control account for dam reservoirs will provide a clue to resolve the flood risk management. Implementing rules and regulations and technical standards for the flood control plan, flood control target level, reservoir operation rule, and maintenance of the river facilities will be also necessary.

4.4 Securing Water Quality

Effective protection and regulation of ecosystem is one of the objectives of water resources management of a nation. Most of the EU countries, the USA and Japan have a planning criterion to allocate the minimum amount of river maintenance flow in river basin water resources development plans. It is called as essential flow, environmental flow or ecological flow depending on nation’s water environment management policy. The amount of flow varies depending on the local conditions.

However, in many developing economies no concessionaires comply with the required discharge of the minimum flow or environmental flow, which is the responsibility of the concessionaries as in the condition of water permit. Even there was no concept of the minimum maintenance flow in some countries such as Tunisia (JICA 2009). Definition of the present minimum flow is not well comprehended among water users. The water managers argue that lack of scientific technical tools and data and information for setting the standard minimum flow is a challenge.

4.5 Scientific and Credible Data as Policy

In addition to the three water resources management elements scientific and credible data is the forth important element. The water resources management at any level is made functional when provided with an essential support system of monitoring system and database system for scientific and equitable coordination and management. However, baseline data are not available for water resources management in most developing economies. Two key concepts to be shared in the developing economies are i) scientific and credible data should be maintained as the basis of government policy, and ii) as the basis for accountability and transparency.

The basic data set for water resources management includes not only meteorological and hydrological data, water quality, but also detailed socioeconomic data by region, municipality and poor and socially weak group.

In spite of the extensive support by the international donors to fight against poverty through Millennium Development Goal detailed social and economic profile data of poor and socially weak groups are not available yet in many developing economies. Prioritization of water resources development projects and programs requires policy analyses of beneficiaries and social class distributed geographically, but such analyses aborted in many cases due to shortage of the data.

**5. River Basin Organization for Implementing Water Resources Management
Possibility of Integrated Water Resources Management (IWRM)**

In Sections 2, 3 and 4 the necessity of institutional capital to materialize scientifically the human rights and three basic elements of water resources management are dealt in details. This section assumes that those fundamental elements are to be integrated or if they can be practically integrated by analyzing the cases of the river basin organizations (RBOs), the minimum unit of water resources management at the national and local level in the Philippines, Australia and Japan.

Type and Functions of RBOs

The existing, planned and studied RBOs in the Philippines and two practices in Australia and Japan are classified into five types.

Type	Case of Philippines		Case of Australia and Japan
	Existing	Studied/Planned	
1. Statutory body for integrated area development and management of all infrastructures	LLDA(1966/ amended 1975)	Ifugao-Isabela River Basin Development Authority(House Bill)	
2. Statutory body for policy making, planning, coordinating all inter- agency activities	Bicol River Basin Council (1973), Implementation by Bicol River Basin Management Office EO No. 359 (2004)		
3. Statutory coordination body for advocating IWRM and monitoring watershed environment	Bohol IWRM Board (2008), PCEEM-Davao Inc. (2002)	Agusan River Basin Authority	
4. National agency for water resources management for the specified basin			Murray-Darling Basin Authority, Australia (2008)
5. National agency for construction and O&M of the facilities in the specified basin			Japan Water Agency (2003)

Source: JICA 2011

The functions or authority of these RBOs as briefed below.

Functions/Authority of the River Basin Organization	Type	1	2	3	4	5
To make policy, plan, coordinate, implement all projects concerned		○				
To make policy, plan, coordinate, implement river-related projects together with River Basin Management Office			○			
To regulate and monitor water rights		○	○	○	○	
To prepare water resources development plan for the basin's water rights					○	
To advocate IWRM and monitor water and watershed environment		○	○	○	○	○
To operate and maintain river and hydraulic structures		○			○	○

○: Function included. Source: JICA 2011

Type-1 and Type-2 RBOs in the Philippines are basically different from those which have been operated in the developed economies in particular Australia and Japan. Type-1 and Type-2 will create a new layer of authority due to their broad functions which overlaps the functions of Regional Development Councils (RDC) or Regional Offices of National Economic Development Authority (NEDA) or other national government agencies (NGAs). Type-3, Type-4 and Type-5 do not create overlapping authority with the NGAs in principle.

The water rights administration has been linked with a Basin Water Resources Development Plan (the Basin Full Plan) in Type-4 and Type-5. There is no such legal arrangement in the Philippines. For example, the Basin Full Plan, which is linked with water rights of a river basin for both existing and planned, is under the mandates of the national river administrator, Minister of Land, Infrastructure, Transport and Tourism, Japan. The micro and macro framework of water rights is not delineated well by a river basin unit in the Philippines. The micro framework of water rights is a management framework to issue respective water permits, while the macro framework is a management framework to regulate water rights allocation and conflicts in a region from a part of the basin to the whole basin between more than two water rights based on the water resources policy. Allocation of the function of operation and management of the river and hydraulic structures is also not well defined between the national government and local governments in the Philippines, and this underlines a basic difference of the functions of RBOs.

The Murray-Darling Basin Authority (MDBA) - Type-4 was transferred to a national agency for water resources management in 2009. Its mission as noted is to aim at the most advanced water resources management but its functions are limited to manage the river basin's water resources including water-related environment and the river basin water resources development plan. Reallocation of water rights is facilitated through water rights trading to achieve reasonable, efficient and equitable allocation of water rights among water users. Japan Water Agency (JWA) – Type-5 is a national agency for IWRM, but its functions are limited to only construction and operation and maintenance of the river facilities within the specified river basins. For both Type-4 and Type-5 operation and management of the river and hydraulic structures is a key basic function.

Issues in IWRM and RBOs in the Philippines

The National Water Resources Board (NWRB), the apex regulatory body of water resources envisages that the creation of the RBO would materialize IWRM by a river basin unit and positive effect to reinforce water resources management including water rights would be gained. On the other hand the NEDA

Region III have apprehension that creation of new agencies is not encouraged in Region III because the existing instrumentalities of the bureaucracy are very capable and in better position to implement IWRM initiatives. New entities may only be created out of the abolition of existing ones or merger of two or more government organizations under scrap-and build principle with reference to the rationalization policy of the government. The role of RDC is the policy coordination and decision-making body in the region. The functions of RDC are formulation of development plans and investment programs, project monitoring, and budgeting and investment programming. Integration and prioritization of development projects can be handled by RDC. The Provincial governments and the stakeholders in Region III accepted to establish the River Basin Committee under the existing RDC without overlapping authority, while the implementation of the project plans and programs remains under the jurisdiction of concerned local governments, regional line agencies or government owned and controlled corporations (JICA 2011). In the Philippines the definition of IWRM is very broad like in some developing economies. Its management functions can be extended to the integrated area development and management of all infrastructures within a basin boundary like Laguna Lake Development Authority (LLDA). On the other hand, water resources management covers basically the three elements of water resources management only in Australia and Japan like in the other developing economies. Anticipation of very broad integration (integrated area/regional development) might be one of the causes of hampering IWRM in practice in the developing economies. Other elements hampering IWRM might be vertically segmented administration system, localization policy, privatization policy, and rationalization policy of governments.

6. Conclusion

Good governance and management of water resources is a challenge both in the developed and developing economies. This paper illustrates the institutional capital stock required for the developing economies by analyzing effectively from the points of view of human rights and three basic elements of water resources management. It suggests that development of the extensive institutional capital stock for water resources management should come first before introducing the IWRM approach in the developing economies. International donor communities will be required to provide consistently their extensive technical and financial support to develop effectively the institutional capital stock through bottom up approach: in particular, for the three basic elements and scientific and credible data system to support the accountable and transparent management.

By analyzing the basic functions of river basin organization it also illustrates the prevailing argument on IWRM such as Biswas (2008): the amorphous definition of IWRM concept, not an universal solution, unlikely to work in the future, the results of its application in a real world at macro-and meso-scale have left much to be desired.

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