

RIVER BASIN MANAGEMENT FOR ENHANCING THE REGIONAL CARRYING CAPACITY IN WATER RESOURCES

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Abstract

The world's population is very high, and then the world population has now reached more than 7 billion people. High number of people cause heavy burden to the regional carrying capacity, so it can lead to vulnerability that threaten water supply, food security, etc. Susceptibility to water security poses many problems such as lack of water, pollution, salinity, siltation, the increasing threat of drought and floods. To increase the regional carrying capacity on water resources it is required "the good governance" in water resources management. Accordance with law 7/2004, water resources in Indonesia based on River Basin authority, not on Administration authority. Stepped up this law, Government of Indonesia established several river basin organizations for managed 133 river basin in Indonesia. Broadly speaking there are three models of river basin management, namely: the council, the public and corporate River Basin Organization (RBO), each of which has some strengths and weaknesses. This paper makes a distinction between three models consist of the characteristic of each model and its strengths and weaknesses in order to be used as a reference in the selection of a suitable model to apply in certain area.

Keywords: river basin management, water security, regional carrying capacity, water resources.

INTRODUCTION

The world's population is very high. Based on United State of Census Bureau (USCB), the world population has now reached more than 7 billion people. According to the United Nations (2012), the 7th billion baby was born **on October 31, 2011**. High number of people cause heavy burden to the regional carrying capacity, especially in urban areas, so it can lead to vulnerability that threaten some problems on water supply, food security, etc. Susceptibility to water security could be poses many issues such as lack of water, pollution, salinity, siltation, the increasing threat of drought and floods. Figure-1 shows the headlines of water resources issues.

Water resources Management have a lot of problems, many challenges - and new opportunities - enhance the need of good basin-level governance: Water security, food security, and water-dependent livelihoods must be supported on a background of urbanization and new lifestyles, not to speak of a changing climate.

The Integrated Water Resources Management (IWRM) process is imperative in this connection, with its inter-sector perspective, its emphasis on balancing the diverse present and future needs of water, its orientation towards the '*triple bottom line*' of economic, social and environmental benefits, and its active stakeholder participation. The IWRM process provides a shift from fragmented and sector-based project planning to a cross-sector, long-term process that is holistic and inclusive.

IWRM at the basin level is best provided by a River Basin Organization (RBO), which can, from case to case, facilitate and/or implement the various development processes.

To increase the regional carrying capacity on water resources it is required "the good governance" in water resources management in accordance with the law No. 7/2004. Based on that law, there are three main activities in water resources management, namely: (i) Water Utilization, (ii) Water Conservation, and (iii) Water induced Disaster Management.

Accordance with law 7/2004, water resources in Indonesia based on River Basin authority, not on Administration authority. Stepped up this law, Government of Indonesia defined 133 river basins in Indonesia which are managed by several River Basin Organizations (RBOs).



Figure-1: Headlines of Water Resources Issues in Indonesia

River basin management can comprise any or all of the tasks, but they require different institutional capabilities and different professional skills, and they can take place at different management levels. Some tasks can be undertaken by private utilities, while others are more suited for the public sector. Based on administration and authorization system, there are three different models on River Basin Management, namely the council, the public and corporate River Basin Organization (RBO), each of which has some strengths and weaknesses.

RIVER BASIN MANAGEMENT

River basin management is management of water resources, water-related resources and water-related development in river basin. Where as River Basin is an area that drains via a specific river or an area where the surface runoff flows toward and passes through the mouth of the specific river, for example, the Solo River basin, the Citarum basin, etc. River basin management can from case to case involve a variety of tasks, depending on the geographic, social and economic context and the surrounding institutional landscape. Examples of such tasks are

- supplies:** Safe water and sanitation to households, water for production, hydropower, etc., as well as wastewater and solid waste disposal (possibly on a commercial basis);
- resource allocation:** Water allocation and water-sharing (preferably IWRM-based);
- related services:** Reservoir operation, flood and drought management, management of aquatic habitats and water quality, morphological management, navigation, ...; and
- water-related development** (sector-wise or integrated).

The distinction is a question of ends and means - the supplies represent a major objective and justification of the resource management.

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Some tasks must, by necessity, take place within hydrological boundaries - at the river basin level. These include: (i) over-all water allocation; (ii) water quality management; and (iii) flood and drought management. Other tasks can equally well (or sometimes even better) be undertaken at a higher (national) level or at a lower level.

Three Models of River Basin Management

River basin management can be formed as, for example councils, committees, authorities, commissions, agencies, corporations, and water boards. The terminology is not stringently defined, but is related to the status of the RBO. Name shifts from committee to commission to water board to authority indicate a higher formal authority. . Based on administration and authorization system, there are three different models on river basin management, namely the council, the public and corporate River Basin Organization (RBO) with the simple distinction are as follows:

- a. **The council (or committee)**, providing guidance on for example water-sharing and water-related development. Secretariat functions can be provided externally (for example by a public RBO).
The council is a body of members that can represent various stakeholders from within and outside the government system, institutional as well as individual. Its tasks can include guidance on basin-level water sharing and coordination of sector planning within the basin.
- b. **The public RBO (or river basin office)**, with the status of a government body, often placed under a ministry, and managed and staffed by government employees.
The public RBO is an integrated part of the government system. It may liaise with or involve a variety of stakeholders, governmental as well as non-governmental, but its authority is a part of the authority of the government. Its operation can be affected by institutional implications, given that much expertise will be located outside the RBO, and that implementation (and financing) of many development initiatives will best be undertaken by sector agencies other than the mother organization.
Needs of institutional bridging can exist in connection with joint management of water quantity and quality (if placed under different ministries); or groundwater and surface water; or irrigation and agriculture.
- c. **The corporate RBO**, owned by the state, but operating as an independent legal entity.
The corporate RBO is owned by the state but has the status as a legal entity. Hereby, its operation becomes separate from the government system. Subject to government control and agreed statutes, it can make its own decisions. It can manage its own finances, buy and sell, retain its revenue, borrow money, and employ and lay off staff. It is financially autonomous, but not necessarily financially independent, since part of its funding can come from the state, depending on its responsibilities and the scope for cost recovery.

Actual RBOs can be somewhat in between these models, or they can operate side by side in the same river basin. Councils (or committees) can have technical and administrative support from a public RBO (or river basin office). Typical mandates are listed in the table-1

Table-1:Examples of Typical RBO Mandates

<i>Mandate</i>	<i>Council</i>	<i>Public</i>	<i>Corporate</i>
Guidance			
Development planning, guidance on water-sharing, guidance on regulation	✓	✓	✓
Regulation and enforcement			
Water allocation within the basin (including operation of weirs and reservoirs); permits to withdraw surface water or groundwater; sewage discharge permits; hydropower concessions; sand mining licenses; land use; permits for physical interventions such as bridges, embankments and dikes; related dispute resolution		✓	
Implementation			
Development planning		✓	✓
Services (flood forecasting, monitoring, surveys, studies, knowledge-sharing)		✓	✓
Physical infrastructure (construction and operation)		✓	✓
Water supplies (to water utilities, irrigation operators, and/or households and industries), sanitation, sewage treatment, power generation; related fees			✓

RBO CHARACTERISTICS

A comparison between the different RBOs is shown in the table-2 as follow.

Table-2: Comparison Between Different Types of RBO

	Council	Public RBO	Corporate RBO
Ownership	Autonomous; reporting to a ministry	The state	The state
Governing board	None	Single ministry	Representatives of several ministries
Legal basis	Law and ministerial decree	Law and ministerial decree	Government regulation; formal registration
Operation	Based on specific assignment of the ministry	Government regulation formal registration	Based on specific by laws; independent from the government system; flexible mobilization of resources
Management	Council head, serving as a facilitator	Government bureaucratic approach, mostly hierarchical in decision making, non flexible system of management, physical project focus	CEO-style director with high autonomy, responsible to the governing board or shareholders, tailor-made management systems, customer focus, quick response to new challenges and opportunities
Staff	No staff; secretariat services provided by the government	Government employees, centralized salaries and in line to the government terms of conditions.	Employed directly, independent on capacity and HRD; own salaries and benefits system (talent based human resources management and performance based salary system)
Budget	Governmental funding, approved by parliament, consistent with government budgeting rules, limited flexibility	Governmental funding, approved by parliament, consistent with government budgeting rules, limited flexibility	Prepared autonomously, approved by the ministry, flexibility in utilization inline with general policy and rules, approved by the board
Financing	Revenue solely from governmental funding	Revenue solely from governmental funding	Revenue from operation (user fees); government transfers; performance contracts; loans; bonds; grants

Adapted after Tjoek Wahyu Subjanto (March 2011): Towards excellence in river basin organization (RBO) Performance: The case of PJT-I, Indonesia. Slide presentation at International Seminar on River Basin Management, Vientiane.

FINANCING

Revenue streams for a public and corporate RBO are illustrated in figure-2. They can from case to case include taxes (including green taxes); fees (water, sewage disposal, electricity, various services and resource utilization); and subsidies and cross-subsidies. Payments from the state to the corporate RBO can be linked to actual public services, such as flood protection and morphological management of the river network. The corporate RBO may share a part of its revenue with the state, for example if it manages a large hydropower potential.

Apart from cash flows, the state can support the corporate RBO by loan guarantees

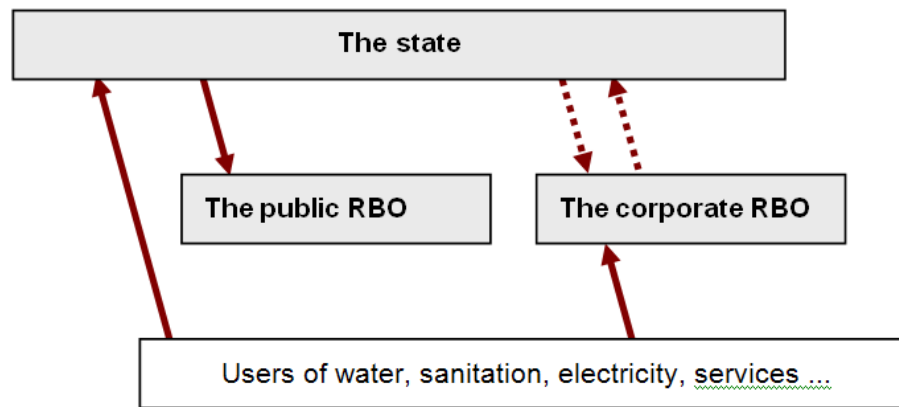


Figure-2: Revenue Streams for a Public and a Corporate RBO

STRENGTHS AND WEAKNESSES

The strengths and weaknesses of an RBO must be considered in relation to its mandate - which, in turn, must reflect the hydrological, geographic, socio-economic, institutional and political context in which the RBO operates.

The Council

The strength of the council type of RBO is related to its purpose: To serve as a platform for collaboration between (governmental and non-governmental) stakeholders that represent a broad range of interests in water-related management and development.

When it works well, this can add a substantial value to development planning, not to speak of the subsequent implementation. Depending on its membership, a functional water council can provide:

- a. knowledge and ground-truthing about water-related concerns and development needs;
- b. smooth interfacing of planning at different levels (national, province, river basin) for different sectors;
- c. sector expertise, thematic expertise and local expertise;
- d. other expertise, including experience from elsewhere and technological innovation, and
- e. the private sector perspective, with its own development agenda (and financing options) that can be complementary to the public sector, and providing ground-truthing to initiatives that are oriented towards economic development and livelihoods.

Furthermore, a water council is in a position to make valuable recommendations on water allocation - always a potentially sensitive issue - whereby it can take a heavy load off the shoulders of the decision-makers.

The strengths depend on the ability to make timely and appropriate decisions, and to the confidence (or informal authority) the body enjoys from the various stakeholders.

The Public RBO

Being a part of the executive branch of the government system, the public RBO is covered by the governmental routines, not only for resource allocation and inter-agency relations, but also for national policy formulation and development planning.

In principle, at least, this would assure good links between the national and the basin level of management, for example in connection with investment planning. Such links are important for assuring consistency between the management levels. In reality, however, interaction between two agencies, perhaps under different ministries, can be quite distant.

The particular strength of the public RBO is its legal authority. It is in a position to implement policies and plans that require regulation, for example of surface water and groundwater withdrawals, or sewage discharges.

Enforcement of regulation also requires a clear legal authority (but does not necessarily need to take place at the basin level).

The Corporate RBO

There are the particular strengths of a corporate type RBO (as experienced by PJT-I), as follows:

- a. flexible mobilization of resources;
- b. quick response to new challenges and opportunities;
- c. free to implement its own, tailor-made management systems; and
- d. free to implement required capacity and human resources development.

There are three distinct features of the corporate RBO, as follows:

a. ***Good performance:***

The public corporation has particular strengths in terms of for example formal status; governance; human resources, technological development; organizational adaptation; cost recovery; and financial efficiency. Among the reasons is a better ***ability to adapt*** to new needs and new knowledge. It is easier for a public corporation to re-define responsibilities, hire new staff, or create a new department if the need arises

b. ***A much shorter way from decision to implementation:***

Once an investment (or other development) need has been identified as useful, it can be promoted by in-house capacity, rather than by some line agency (or agencies) that can be external to the RBO that has raised the need. Subject to satisfactory financial feasibility and acceptable impacts, the investment can be financed in different ways, including loans - separate from a lengthy public investment planning procedure

c. ***Better basis for IWRM-based, multi-sector, basin-level development:***

Development initiatives can be promoted as entities, rather than being split into different sector components as a practical precondition for promotion by line agencies during their (sector- based) investment planning. This reduces the need of an inter-agency synchronization of priorities, and allows for investment priorities being made in an integrated perspective rather than as a combination of segregated sector priorities.

DISCUSSION: STRENGTHS AND CONSTRAINTS TO OPERATION

Strengths and constraints can be independent on the type of RBO, or they can be related to it in some way. For the models outlined above, the following aspects apply:

- a. The ***council or committee*** is established for the sake of inter-agency coordination and stakeholder collaboration, and has its strengths accordingly. Its value is related to its ability to make joint, broadly accepted recommendations. If it performs well it can have a high informal authority, for example in connection with water allocation and development planning.
- b. The ***public RBO***, being an integrated part of the government system, has a strong legitimacy, which plays a role if it is involved in water-sharing, regulation and enforcement. If placed under a ministry, it will be in a good position to liaise with that ministry in connection with policy formulation and planning. At the same time, inter-ministerial relations can be indirect and perhaps somewhat remote, which can be an impediment to multi-sector (IWRM-based) water resources management. "*Water does not fit under one roof, and turf battles are a fact of life*". An important aspect is that development investments must be channelled through the public (government or de- central) investment planning procedure, which can be time-consuming and subject to various filters.
- c. The strengths of the ***corporate RBO*** are derived from its autonomy, which can vary from case to case, depending on the adequacy of its financing and on the actual involvement of the state in its day-to-day operation. To the extent that it is in a position to implement its own plans and development initiatives (within its mandate and financial capacity), it is able to respond faster to needs and opportunities. Also, it can provide a relative strengthening of the basin-level perspective as compared with the public RBO (where funds are allocated in a broader perspective).

In general, constraints to operation can exist on the day the RBO was formed, or they can emerge in the course of time. Inherent constraints can be for example:

- a. overlap of mandate between the RBO and existing agencies, or an incomplete transfer of mandate when the RBO was formed (for example if a responsibility is relocated without the supporting

- b. expertise and capacity). This can happen if some tasks are well undertaken by existing agencies but are shifted to a new RBO, perhaps under a different ministry;
- c. the absence of a water law that defines water as a public good (preventing orderly water-sharing);
- d. institutional barriers-for example if different ministries are responsible for irrigation and agriculture, or for surface water and groundwater;
- e. rapid and forced staff rotation between a (public) RBO and its sister agencies (according to government practice) (whereas a gradual and voluntary staff rotation is an advantage);
- f. imperfect interaction with the water users and/or the private sector and/or the academic society and/or the NGO community; or
- g. if the RBO is assigned tasks that can be difficult to combine, such as regulation and implementation, or structural development and environmental preservation.

Constraints that develop over time can occur for example:

- a. if funding becomes inadequate;
- b. if the political support becomes inadequate;
- c. if the confidence of decision-makers, water users and other stakeholders for some reason becomes inadequate (for example in connection with a serious and unusual water shortage);
- d. if council members or board members for some reason become unable to agree on important negotiated decisions (perhaps in connection with reallocating a finite amount of water or distribution of finite funding);
- e. if basin-level, inter-sector (IWRM-based) development planning does not link up with national or province-level sector planning; or
- f. if the mandate of an RBO simply '*outgrows*' its authority and capacity, so that it is no longer in a good position to perform according to expectations.

Some of these constraints can be mitigated by IWRM principles, such as balancing immediate and long-term benefits, and active stakeholder participation.

CONCLUSION

Good water resources management is a precondition for improving: water security, food security, livelihoods, and a healthy environment. River Basin level of Water Resources Management – river basin management in other words – can provide substantial support to economic growth, social welfare and environmental quality. And then, it will enhance the regional carrying capacity.

The RBO is an important platform for River basin-level IWRM. To assure that it performs according to expectations, a balance must be maintained between its mandate (geographic coverage and tasks), its (formal and informal) authority, and its capacity (resources and financing).

Everywhere in Asia, the agenda for water-related development is changing, and the RBO must adapt to many new, imperative concerns and opportunities. This may well require an upgrading of its mandate, and consequential upgrading of its authority and capacity.

Observations from many places and beyond demonstrate that the corporate/quasi-corporate RBO has a particular potential for adding momentum to water-related development. The benefits include (i) good performance; (ii) a much shorter way from decision to implement; and (3) a better basis for IWRM-based, multi-sector, basin-level development, activating synergies between, parallel, related sector development efforts.

Characteristics of the corporate RBO - a certain autonomy regarding operation and financing - must be kept in mind and promoted in connection with basin-level IWRM.

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