



Water Governance, A Panacea for Water Crisis; Denotations, Provocations, Principles, and Pre-eminent Practices

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One of the critical points that are being faced by world population is water crisis. Almost every second individual is unable to have access to clean water. Flooding and drought, on the other hand, provokes wreckage to most of the regions. This crisis is mostly contemplated as governance crisis. That's why to vanquish this crisis, good water governance is mandatory. In this paper we tried to explore denotation of water governance, principles, provocations, and pre-eminent practices. This will help to understand the concept in better way and will steer to facile implementation.

Keywords: Water Governance, Denotations, Provocations, Principles, Pre-eminent Practices

INTRODUCTION

Denotations

The term water governance got noticed in water management in start of the century. To attain the effective, well organized and sustainable water management, water governance is being focused as obligatory part to be accomplished. Water crisis like water pollution, flooding, unavailability of clean water are not possible to be controlled without water governance. In 2002 HRH the prince of orange described the importance of water governance in these words, "the world water crisis is a crisis of governance, not one of scarcity" (William 2002 [1]).

Water governance is associated with gamut of political, social, economic, and administrative

systems that are in lieu of development and management of water resources and the delivery of water service to different level of society (Roger & Hall, 2003). In simple words Water governance is a combination of systems that administer decision-making related to development and management of water resources. Water governance is a course of action to make decision and to define the methodology, authority, and circumstances of decision (Moench et al., 2003) [2].

Water governance is all about the process and means by which statecrafts make use of management related to water and other natural resources and predominately cuddle the departments by which power is exercised. Water

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governance includes the entire stakeholder in decision-making to revamp the outcomes.

“The exercise of political, economic and administrative authority in the management of a country’s affairs at all levels. Governance comprises the complex mechanisms, processes, and institutions through which citizens and groups articulate their interests, mediate their differences, and exercise their legal rights and obligations. Governing water includes the formulation, establishment and implementation of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation water resources and services. The outcomes depend on how the stakeholders act in relation to the rules and roles that have been taken or assigned to them.” (UNDP 2007) [3].

Governance is a procedure through which authorities for decision-making are selected, stakeholders (citizens and interest group) communicate their interest, and decisions are made with accountability options (Linda & Karen 2007)[4]. Water governance and water management are two different concepts. Water governance refers to the procedure of decision-making followed by authorities whereas water management is related to operational approach. Governance is method of making decisions, management are models, principles and information used to make those decisions (Bakkar, 2006)[5].

Provocations

To be prepared for the crisis is about half of the solution. In order to overcome the issues we must be aware of real picture of the issues. So if water crisis is focused to be solved, the challenges that are being faced must be explored. In this section we described the water related challenges and the gaps that prevail in water governance.

Water Crisis

There will be 55% increase in demand of water by 2050. This will be because of enlargement of manufacturing industry, thermal electricity generation and high level of demand of water domestically (OECD 2015)[6]. Almost 2.4 billion people globally use unimproved water sanitation facility, among those 946 million people had no access to any facility and defecate openly. This unsafe management of waste and waste water proves as hazard to public health. (UNESCO 2016)[7]. Despite improvement in drinking water

facility, still 663 million people are not able to use a source of clean water facility. Moreover the facilitated areas are also not up to the mark, for instance almost 1.8 billion people who have access to clean water, using low-stander means of clean water (UNESCO 2016)[7]. Another problem being faced in water management is “water stress”. More than 2 billion people are being affected by water stress, and this number is expected to rise (UNESCO 2016)[7]. Stakeholder participation is also an important part in water and sanitation management. So it should also be must focused to have better outcomes. Most of the countries are still not focusing on this strategy.

Gaps in Water Governance

Gaps identification helps out to bridge the gaps. In 2016 Van leeuwen explored major challenges of water governance. According to his study rapid population growth, movement of majority to urban areas, contamination, and climate change are major challenges of water governance (V. Leuwen et al, 2016)[8]. Here gaps in water governance are discussed that were explored by a report published by the Organization for Economic Co-operation and Development (OECD 2011)[9]. These are major obstacles that are most of the nation are facing in water governance.

FIGURE 1 HERE

Major Obstacles Faced by Nations in Water Governance

Source: OECD (2011)[9]

These are multi-level gaps that are proved to be major obstacles in water governance.

Further expansion of OECD (2011)[9] water governance gaps.

TABLE 1 HERE

Challenges Pointed out by United Nation

More than 40 percent of world population is affected by scarcity of water. More than 1.7 billion people are living in river basin where water use exceeds recharge (UN). 70 percent of all deaths related to natural disasters are caused by flood and water-related disasters (UN). Almost 1000 children expire

daily to diseases caused by contaminated water (UN). Above 80 percent of used water by human discharged into river and sea without contamination removal.

Principles

Principles provide key guidance map to be followed for better outcomes. According to OECD principles on water governance enlighten the direction for public sectors departments to make institutions more powerful implementing process. This makes it more facile to acquire the economic, social and environment advantages of good governance, while making stakeholder participants (OECD 2015)[10]. In this section we provide must to do principles for effective and efficient water policies and further for its implementation.

In 2015 OECD developed 12 principles using multi-stakeholder approach.

FIGURE 2 HERE

OECD Principles on Water Governance
Source: OECD (2015a) [11]

Enhancing Effectiveness of Water Governance

Clear definition of water policy goals and objectives at all levels of government is effective. Furthermore implementation of the policy and obtain the targets is also part of this principle (OECD 2015)[10]. These principles are helpful for enhancing effectiveness of water governance.

Clear role and responsibility

Descriptions about the duties should be clearly defined among the entire departments. Planning, implementation, regulation and coordination among the entire authority is a key to better water governance (OECD 2015)[10].

Appropriate scales within basin systems

While keeping in mind future hazards water resources ought to be used in better way (OECD 2015)[10]. Local environment, weather condition

and resources should be kept in view while water management.

Policy coherence:

Communication is a vital part for success of any strategy and governance is also useless without coherence and coordination between all policies of all key departments (OECD 2015)[10].

Capacity

Adopt the level of capacity by identifying the capacity gaps, hiring of water professionals on merit, and by promoting capabilities of water professionals by training to meet the challenges of water complexities (OECD 2015)[10].

Contribution of Water Governance Principles in enhancing Efficiency of Water Governance

Efficiency is related to contribution of governance to enhance the output performance of water management and to choose the least cost option for betterment of society (OECD 2015)[10].

DATA AND INFORMATION

Establishment of a system to updated timely, consistent, and policy-related information and data. This will be helpful in maintaining coordination among the entire level departments of government (OECD 2015)[10].

Financing

A combination of governance tools that help to enlarge financing of water governance. Furthermore management of resources in such a way that is efficient and transparent (OECD 2015)[10].

Regulatory Framework

Water governance in such manner that is that is accordance to public interest. Effective implementation of sound water management is part of this principle (OECD 2015)[10]. Rule and regulations related to job description should be clear and well defined.

Innovative Governance

Promotion of research related activities via experiments and pilot testing. By this principle organization should use of media, including social media, for promotion of social-learning (OECD 2015)[10].

Enhancing Trust and engagement in water governance

It is contribution of governance to make the public confident and to engage stakeholder through adoption of democratic legitimacy (OECD 2015)[10].

Integrity and Transparency

Institutions and personnel of the departments should be accountable via promotion of legal and institutional framework. The principle makes sure mainstream integrity and transparency practices across the entire policies and departments (OECD 2015)[10]

Stakeholder Engagement

This principle focuses on contribution of stakeholder to enhance the outcomes of water governance. Under representative like women, children, and youth should have special attention to participants those in the activities related to water governance (OECD 2015)[10].

Trades-off across user's rural and urban areas and generations

Non-discriminatory participation in decision making and empowering local authorities to identify the local barriers, area parts of this principle (OECD 2015)[10].

Monitoring and Evolution

Monitoring and evolution is vital part of strategy. Promoting dedicated department for this responsibility and development of reliable mechanism are considered in the principle (OECD 2015)[10]. OECD principles on water governance provide an insight of 12 dominant frameworks for

government to formulate policies, keeping in view the goals and targets, with involvement of all stakeholders.

Pre-Eminent Practices

In this section we will try to explore the best practices done by the authorities that are renowned and exemplified in water governance. This will enlighten the gaps that are being ignored by the most of the countries and this ignorance proves as a bearer in meeting the sustainable goal in water and sanitation. Netherland is considered as best example in good water governance. As according to OECD Secretary General Angel Gurría "Tell the Dutch what is water governance is like tell the Eskimos about ice..." In the Netherlands management is responsibility of all levels of government: central government, provinces, regional water, and municipalities. Task is distributed is as follows ways.

National water policy is sole responsibility of central government and the management of hydrological main system is managed by a public agency. This agency is also responsible for major rivers and canals. Provinces are responsible for regional water policies and for issuance of permits three categories of a big water extraction. Regional water authorities have duties related to water safety, quantity and quality. Municipalities manage sewerage systems with additional duties of care of rain water run-off and urban groundwater levels. Most important task of water management, public drinking water supply, is responsibility of water supply companies. These companies are semi-public organizations. So by a view of this structure we can understand that Netherlands has a water management that is entirely public but decentralized system (Herman et al, 2016)[12].

In Calgary, Canada main actor is Municipalities that are responsible for all management of water, for example, water and waste water service, Financing, regulatory functions, policy making and implementation, information, monitoring, and evaluation. Federal and Provincial government are also equally responsible for all the above cited tasks except first two tasks. And other partners like Bow river basin council, Elbow river watershed partnership, and nose creek watershed partnership share duties with municipalities of information, monitoring, and evaluation.

FIGURE 3 HERE

Water governance structure of Calagary, Canada

Source: OECD

New York City USA has a different structure of water governance. United States Environmental protection Agency is federal department that governs all the sub-ordinate departments. Health department deals with sensitive issue of legal work related to safe drinking water, It oversight the drinking water facilities with joint responsibility of New York State department of Environment conservation. Water supply and distribution and waste water collection is duty of three local authorities and this is called Tri-part organizational structure operates and fund system.

FIGURE 4 HERE

Water governance structure of New York City, USA

Source: OECD

DEDUCTION OF DISCUSSION

By overview of denotation, principles, provocations, and pre-eminent practices it is finally conclude that for good governance coordination, communication among entire level of government are vital parts. Moreover stakeholder participation and other principles of good governance are mandatory for efficient and effective outcomes. The nations who are still in journey to meet the sustainable development goals of water and sanitations are required to follow the practices the nations that have achieved targets and goals. This paper was an attempt to summarize-up all the above cited aspects and provide guidance for better governance.

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APPENDIX

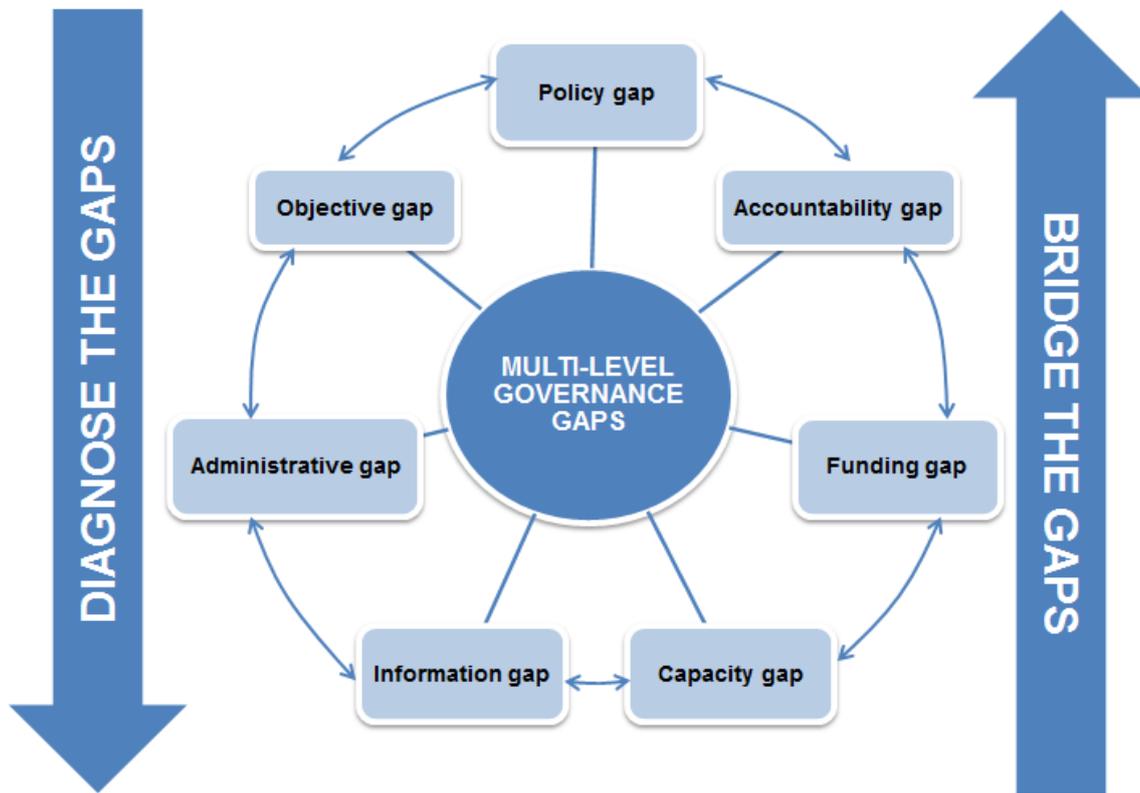


TABLE 1

Policy Gap	To meet the zenith of efficiency, targets should be in written form. Policies guide the institutions to maintain and attain the targets. Who will do what is important question and policy answer this question. Water governance can't be considered good unless policy gap is bridged. There should be a strategy at national level and staff should have commitment to face the water challenges.
Accountability Gap	Trust in the government is a vital part of good governance. Transparency and accountability develop trust on government. So the gap of accountability should be managed and this is possible only if there is a well defined accountability procedure.
Funding Gap	For availability of clean water and sanitation to the nation huge funding is required. Tax network and bill collection system should be well organized in order to achieve better results of water governance.
Capacity Gap	There should be proper means available to water management staff to meet the targets. Proper training and financial assistance is obligatory for water governance.
Information Gap	Information is precious part of any system. Without information flaws can't be identified and this non-identification makes organization weaken in improvement.

Administrative Gap	Administration of resources and service is vital part of water governance.
Objective Gap	What we want is basic question in any strategy. Without identification of the objective, planning and implementation are futile activities.

FIGURE 2

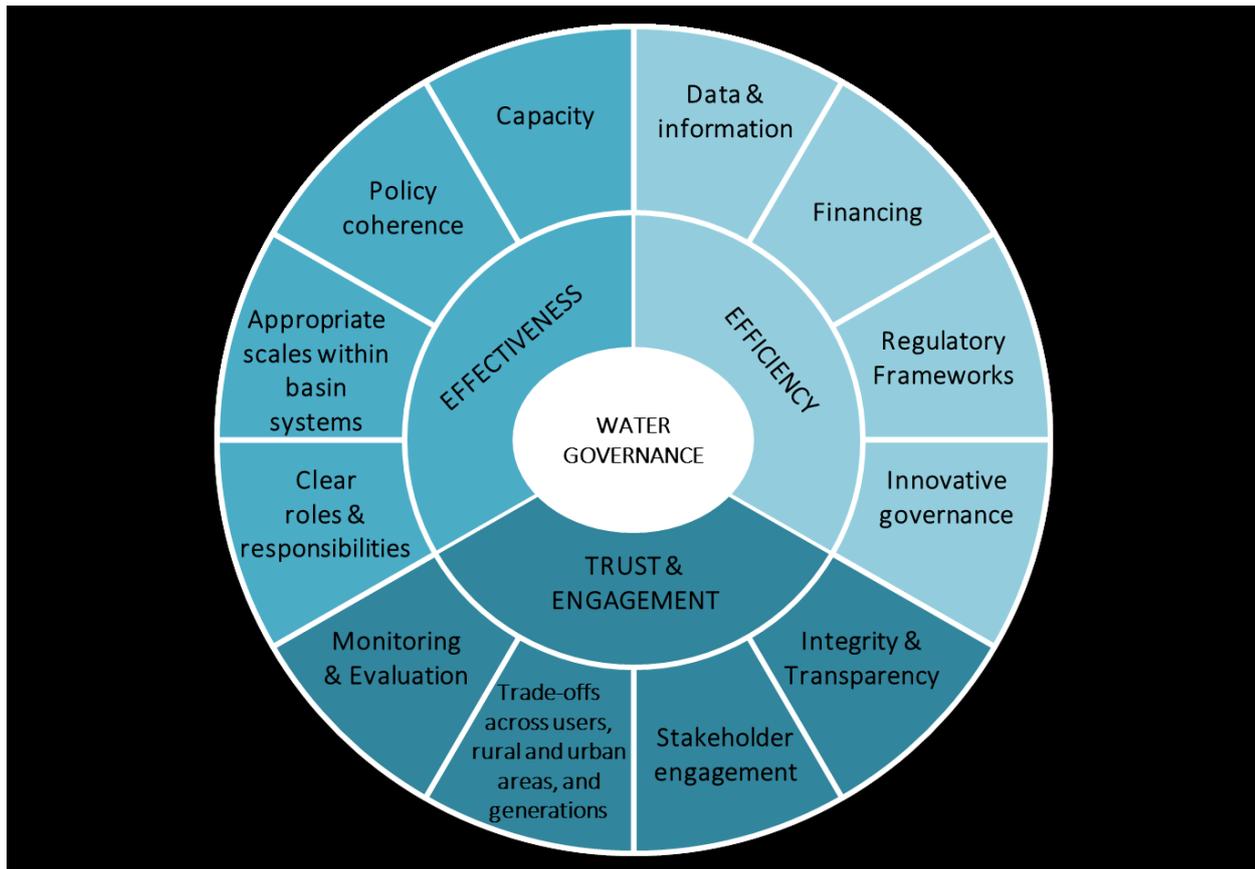
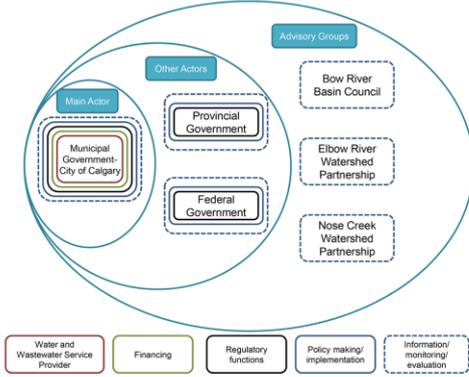


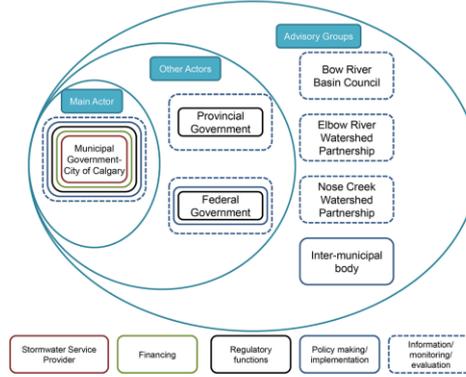
FIGURE 3 HERE

Who Does What?

Water and Wastewater : responsible authorities in Calgary, Alberta, Canada



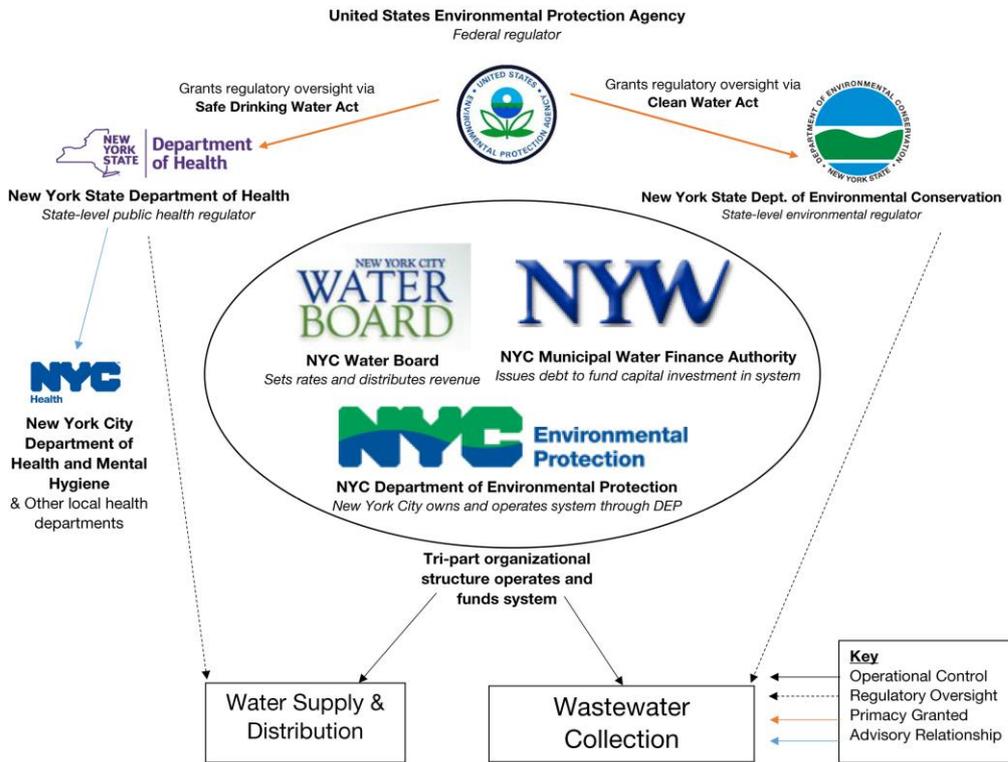
Stormwater: responsible authorities in Calgary, Alberta, Canada



Institutional map provided by City of Calgary, Water Resources.

FIGURE 4

Who Does What?



Institutional map provided by New York City Department of Environmental Protection.