



***Integrated Water Resources Management in Light of
Principles of International Water Law: Sustainable
Perspectives for Solution
“A case Study of Juba and Shabbelle Basins”***

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Abstract

This article is a study analysis on the Juba and Shabbelle Basins, in light of the principles of international water law related to transboundary water resources management that has been developed at international conferences over the last three decades. The study reveals the principle of equitable and reasonable utilization, obligation not to cause significant harm, principles of cooperation, information exchange, notification, consultation, and peaceful settlement of disputes. The study also stresses that the integrated water resources management approach through effective transboundary cooperation involving the riparian countries of the Juba, the Shabbelle basins is the vital mechanism for overcoming the current water crises of Somalia as well as the whole region. Thus mitigating floods and ensuring enough water to address drought are the two major water resources management challenges for Somalia. These

principles could facilitate effective transboundary water resources management involving riparian countries of shared watercourses.

Keywords: international water law principles; transboundary water resources management; water conventions, IWRM, Juba and Shabelle Basins, cooperation

Introduction

This paper analyses the concept of Integrated Water Resources Management (IWRM) at international conferences and addresses the prospects of IWRM in resolving the current water crisis resources with a focus on the Juba and Shabelle Basins in the Horn of Africa and to analyse the resulting transboundary water management issues. This study identifies the constraints and opportunities for cooperation and regional development through integrated water development and management of the Juba and Shabelle basin.

Integrated water resources management

Since 1977, international water professionals in alliance with all concerned stakeholders persuaded IWRM to promote a holistic water management practices worldwide (Biswas, 2004).

In 2002, at the Johannesburg World Summit on Sustainable Development (WSSD, 2002), The Technical Advisory Committee of the Global Water Partnership defined Integrated Water Resources Management (IWRM) “as a process, which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems,” and emphasized that water should be managed in a basin-

wide context, under the principles of good governance and public participation.

The overall aim of integrated water development and management is to satisfy the freshwater needs of all countries for their sustainable development.

Water resources management is an art to supply the required water volume with acceptable quality at the proper place and in proper time. This is process which includes a few principal components: available water resources, engineering infrastructure, demands, allocation procedure, delivery service and finally – use of water.

Historically, we can go back centuries, if not millennia, to discover forerunners of the present IWRM

Paradigm. In a number of countries, water management has been institutionalized in an advanced and integrated way over centuries. In Valencia, Spain, for example, multistakeholder, participatory water tribunals have operated at least since the tenth Century. Embid (2003) described that Spain was probably the first country to organize water management on the basis of river basins, as it adopted the system of confederations hydrographical in 1926. Over the last several decades, there have been serious attempts to implement IWRM in different global regions.

Mar del Plata (1977), IWRM was the recommended approach to incorporate the multiple competing uses of water resources. Although in the 1980s, water disappeared, for the most part, from the political agenda, the situation changed in the 1990s, thanks to the efforts of a number of conferences and international organizations.

Internationally, 60% of all the water flows in the world's rivers. 145 nations have shared waters with their neighbours (Giordano & Wolf, 2003).

International water events

The most influential water events are listed below:

1. United Nations Conference on Water (Mar del Plata, 1977).
2. International Conference on Water and Environment (Dublin, 1992).
3. UNCED (Rio de Janeiro, 1992).
4. Second World Water Forum and Ministerial Conference (The Hague, 2000).
5. International Conference on Fresh Water (Bonn, 2001).
6. World Summit on Sustainable Development (Johannesburg, 2002) .
7. The Third World Water Forum (Kyoto, 2003).
8. The Fourth World Water Forum (Mexico, 2006).
9. The Fifth World Water Forum (Istanbul, 2009).

International Principles of Water Law

Basic concepts

IWRM in the International Agenda FROM Mar del Plata 1977 to Kyoto 2003

The international agenda, from the UN Conference on Water held in Mar del Plata in 1977 to the Third World Water Forum of Kyoto in 2003 illustrated as follows:

United Nations Conference on Water (Mar del Plata 1977)

In 1977, the UN Conference on Water was held in Mar del Plata, Argentina. Its goals were to assess the status of water resources; to ensure that an adequate supply of quality water was available to meet the planet's socioeconomic needs; to increase water use efficiency; and to promote preparedness, nationally and internationally, to avoid a water crisis of global dimensions before the end of the twentieth century.

International Conference on Water and Environment - Dublin 1992

International Conference on Water and the Environment (ICWE) was held in Dublin, Ireland to serve as the preparatory event, concerning water issues, to the Rio United Nations Conference on Environment and Development (UNCED) Conference, based on the following four guiding principles (ICWE, 1992):

- **Principle one** recognized freshwater as a finite, vulnerable, and essential resource, and suggested that water should be managed in an integrated manner.
- **Principle two** suggested a participatory approach, involving users, planners, and policymakers, at all levels of water development and management.
- **Principle three** recognized women's central role in the provision, management, and safeguarding of water
- **Principle four** suggested that water should be considered as an economic good.

Second World Water Forum & Ministerial Conference (The Hague 2000)

On 17-22 March 2000, the Second World Water Forum was held in The Hague, the Netherlands, with more than 5,700 participants from all over the world.

The participants of The Hague forum suggested applying equity criteria, along with appropriate subsidies to the poor, when systematically adopting full-cost water pricing. The Forum acknowledged that food security, ecosystem protection, empowerment of people, risk management from water-related hazards, peaceful boundary and transboundary river basin management, basic water demands, and wise water management are achievable through IWRM. (WWC, 2000)

World Summit on Sustainable Development -Johannesburg 2002

The World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa, in 2002, should be recognized as a success because it put IWRM at the top of the international agenda. (WSSD,2002)

The Third World Water Forum - Kyoto 2003

Over 24,000 people from around the world attended the third World Water Forum, held in March 2003 in Kyoto, Japan. The key issues were safe, clean water for all, good governance, capacity building, financing, public participation, and various regional topics (TWWF,2003a)

International River Basins

Globally, there are 263 rivers that either cross or demarcate the international political boundaries of two or more nations (Wolf et al, 1999). 63 are in Africa (UNEP, 2010). These shared river basins contain

65% of the continent's area, 75% of the people and 93% of the surface water (UNEP, 2010)

Principles of international water law

Several studies scrutinise the general provisions of the Helsinki Rules and UN Watercourses Convention to explain the development of international water law.

Theories and doctrines of international water law

The theoretical foundation of the principles of international water law related to transboundary water resources management evolves from different theories and doctrines. This section summarises three major ones:

1. Theory of absolute territorial sovereignty
2. Theory of absolute territorial integrity
3. Theory of limited territorial sovereignty

Theory of absolute territorial sovereignty

Every nation can utilise the waters of an international river flowing on its territory, as it likes, regardless of the consequences in other countries and without the duty to consult (Correia and Silva, 1999). According to this theory, the upstream states would be free to divert all the water from a shared watercourse without considering the need for downstream states.

Theory of absolute territorial integrity

This theory is based on the assertion that the lower riparian of an international river has the right to a full flow of water of natural quality and interference with the natural flow by the upstream state require the consent of the downstream riparian

Theory of limited territorial sovereignty

This theory is based on the assertion that every state is free to use shared rivers flowing on its territory as long as such utilisation does not prejudice the rights and interests of the co-riparians. In this case, sovereignty over shared water is relative and qualified.

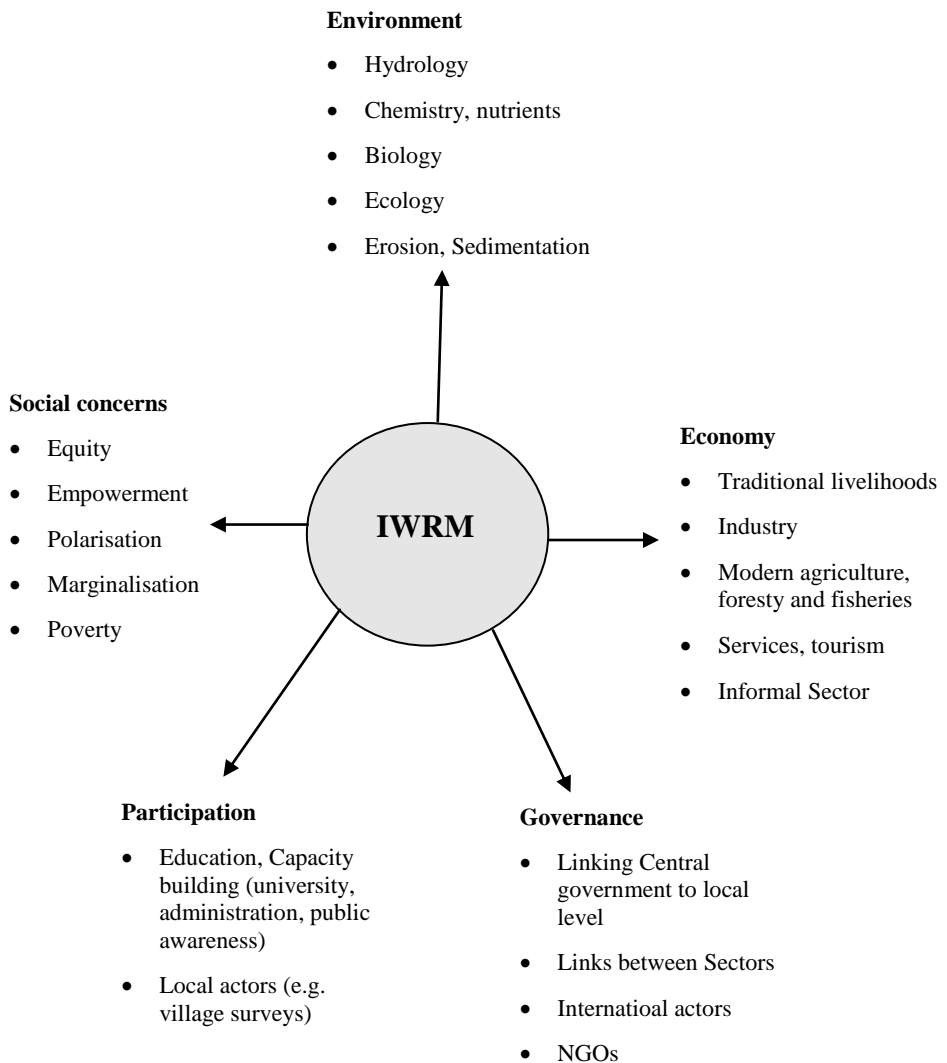


Figure 1. Integrated water resources management should occur under and enhance good governance (Varis et al.,2006)

Accordingly, waters should be used to provide economic well-being to people, without compromising social equity or environmental sustainability. This should happen in a basin wide context, with stakeholder participation and under the prevalence of good governance (Keskinen,2010)

Transboundary river basin management

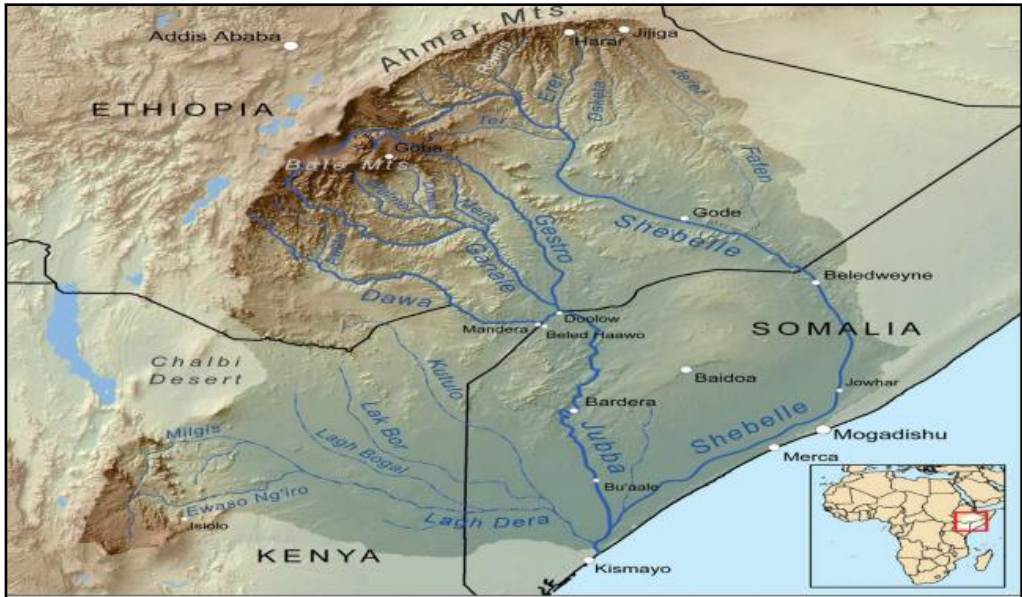
An increasing number of countries are experiencing water stress, yet in most river basins mechanisms and institutions to manage disputes over water resources are either absent or inadequate. The need for integrated, cooperative solutions is particularly urgent in the 263 river basins, which are shared by two or more states, and in which nearly half of the territory and population of the world are located.

Integrated planning for efficient watershed management is hampered by the difficulties of coordinating between riparian states with diverse and often conflicting needs (UNESCO, 2003).

The examples of inter-country conflicts include: Nile basin in Africa, Tigris and Euphrates in the Middle East, Parana Basin in South America and Ganges–Brahmaputra–Meghna basins in Asia (Petrella, 2001)

IGAD Region

The IGAD region covers an area of 5.2 million square Km and has a total population of. 240 million spread in the countries of Djibouti, Eritrea, Ethiopia, Kenya Somalia, South Sudan, Sudan and Uganda



Map-1: international watercourses in the IGAD region

Achieving food security for this huge population puts a tremendous challenge to Somali's water resources. Flooding every year during monsoon and drought during the dry season due to unsustainable abstraction of water in upstream causes socio-economical and environmental disaster for Somalia. Sustainable management of water resources is obligatory for a country like Somalia.

The Basin of Juba and Shabelle Rivers

Somalia has mainly two rivers; the Juba river and Shabelle river come from the highlands of Ethiopia and crosses south of the country demonstrated as follows:

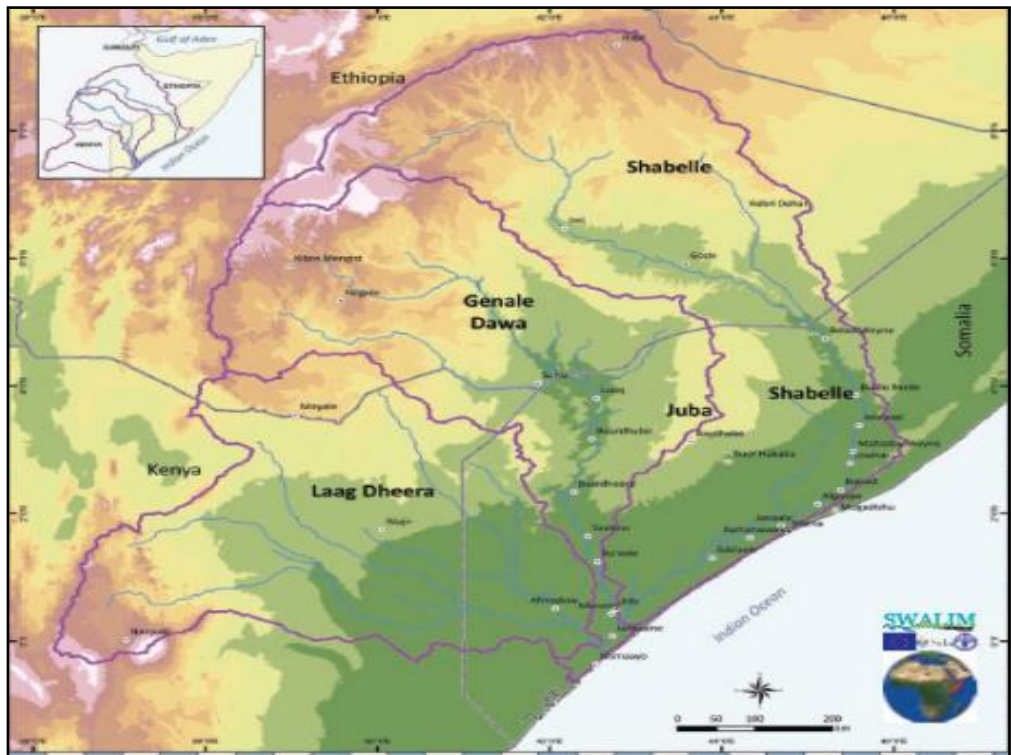


Figure 2. Map of the Juba and Shabelle basins

The Shabelle River Basin

The Shabelle river stems from Bale Mountain in the Ethiopian highlands about 4 230 m above sea level, the total catchment area of the Shabelle river basin is 297 000 km² (FAO,2010). Nearly two-thirds (63.5%) of the basin area lies in Ethiopia and one-third in Somalia (FAO,2010) With an average annual rainfall of 425 mm (over 1 500 mm in the mountain areas and 200 mm near the border), mean annual runoff of the river at the town of Gode in Ethiopia is 3 387 Mm³(M.O,2004). Due to its climate conditions, the basin is frequently affected by droughts and floods causing major problems to mainly downstream communities in Somalia.

The Juba River Basin

Like the Shabelle, the Juba River comes from the highlands of Ethiopia, where three big tributaries, the Genale, the Dawa and the Weyb (Gestro) meet to close the Somali frontier to form what is known as the Juba River in Somalia. The Dawa River is part of the frontier between Ethiopia and Kenya. The Dawa tributary also marks the boundary between Ethiopia and Somalia along its final reach. The Juba has a basin area of 452 000 km² (M.O,2004). The Juba, which enters the Indian Ocean at Kismayo town in southern Somalia, has a total length of 1 808 km, of which 840 km lies in Ethiopia and 1 004 km in Somalia (FAO,2010)

Ethiopian perspective for River Development

There are presently two significant water projects in Ethiopia's upstream fields. In 1988, 153 Melka Wakana hydropower dam with 60 m³/s discharge was commissioned MW(M.O,2004)

141 irrigation schemes (25 big, 76 medium and 40 tiny irrigation projects) with a net irrigation region of 209 310 have been recognized for irrigation growth with water consumption estimated at 2 566 Mm³ available in Ethiopia, much greater than available at the Somali frontier (2 384 Mm³)

Somalia perspective for River Development

In 1989, Somalia finished a master plan for the development of the Juba Valley in the Juba basin (GTZ, 1990), The suggested dam was 35 km upstream of the Somali town of Baardheere. This project was called "Fanole Project ", unfortunately the project was not completed.

Upstream and Downstream Water Sharing in International River Basin

There are basically two dimensions of the upstream and downstream problem; one has to do with the distinct groups and regions of the same nation, while the other has to do with the same river system between nations. Whatever happens to water and on the land in upper catchments affects the quantity and the quality of the water more downstream (Pallet et al. 1997). As water passes through the countryside, it brings downstream reactions to land use (FAO, 2000). In addition, three main issues for riparian nations are raised by global waterways – sovereignty, territorial integrity, and domestic safety (Elhance, 1999).

Conflict and cooperation: Somalia and Ethiopia

The relations between Ethiopia and Somalia are complex particularly in view of their long history of animosity, mistrust, conflict and border dispute (Elmi, 2013). Ethiopia dominates the river basins in terms of basin area, river runoff as well as geographic position and population. The Ethiopian master plans of the river basins with their large scale irrigation schemes and large dams reveal that the Somalia economy is in vulnerable state.

As Ethiopian water policy now establishes that all water resources are the common property of the people and state of Ethiopia, irrigation water is no longer a private good. With this transformation of irrigation into a common good, no one is held responsible for any mismanagement (Ravento's Vilalta, 2010). Most scenarios for water use and allocation modelling by Ethiopia shows large scale irrigation schemes with significant impacts on existing and planned downstream uses in Somalia (Elmi, 2013). The two countries are in a position negatively affecting

each other's desperately needed development of the two rivers' water resources.

The country has also decided to base all its energy production on hydropower, requiring large dam buildings on Ethiopia's major rivers. These dam developments will adversely impact on downstream uses in Somalia. Since irrigation is a major consumptive user of water, the Ethiopian irrigation plans in the very dry areas in the middle reaches of the river basins will demand a large amount of water. This causes not only a significant reduction of water flow to Somalia but also dries up the entire river flows.

In 1985, Somalia applied for funds from the World Bank for the implementation of the Baardheere dam project (BDP). The Bank informed Somalia of the need to notify Ethiopia and Kenya of the project (Elmi,2013). Ethiopia objected to the project in 1987 claiming that the dam would cause appreciable harm to their interests and they have the potential to impound all the discharges of the Juba River for irrigation and hydropower development

Research Methodology

The research focuses on Juba and Shabelle basins. The researcher used a descriptive method where the data have been collected from the relevant of various international, governmental and local organizations resources as well as published articles, books, documents, and report. For the data analysis, the author applied the content analyses on these references, in light of the principle of international water laws: Equitable and reasonable utilization and participation Consultation and negotiation Principles, Obligation not to cause significant harm. Cooperation and

information exchange Principles, Cooperation and information exchange Principles. Peaceful settlement of disputes. These principles are the standardised norm reference of the analysis as shown in the table below:

Table 1: UN watercourses convention

Article	principles	Statement
Article-5	Equitable and reasonable utilization and participation	Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse.
Article-7	Obligation not to cause significant harm	Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States.
Article-8	General obligation to cooperate.	Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.
Article-11	Principles of notification, consultation and negotiation	Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse.
Article-11	Peaceful settlement of disputes	In the event of a dispute between two or more Parties concerning the interpretation or application of the present Convention, the Parties concerned shall, in the absence of an applicable agreement between them, seek a settlement of the dispute by peaceful means in accordance with the following provision

Findings and discussions

Analysis on Major challenges of water resources management in Shabelle and Juba rivers

About 90 percent of the total annual runoff of rivers is originating from sources outside the country's territory (FAO,2010)

The following are the challenges of water resource management:

1. Ensuring food security through expanding irrigation and increasing agricultural productivity for the rapidly growing population.
2. Addressing water-related natural vulnerabilities; drought during December to May and flood during monsoon period June to September, Salinity intrusion, and climatic change, loss of navigation and transport and agricultural water due to extraction of water upstream.
3. Addressing the sedimentation and river erosion problems.

To mitigate dry season drought, monsoon floods, ensure adequate ecological flow, mitigate hunger, create jobs, provide secure drinking water for all, ensure year-round irrigation, reduce deforestation, and achieving sustainable development – all are closely interlinked with the water available from its transboundary international rivers.

Equitable and reasonable utilization and participation

Article 5(2) requires the participation and cooperation of watercourse States in the use of watercourses, Equitable, and reasonable development of and protection of the watercourse. It does not necessarily mean an equal share of waters both Ethiopia and Somalia. There are factors and circumstances should be taken into:

- ✓ Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character.
- ✓ Social and economic needs of the watercourse states concerned.
- ✓ Population dependent on the watercourse in each watercourse state.
- ✓ Effects of the use or uses of the watercourses in one watercourse state on other watercourse states.
- ✓ Existing and potential uses of the watercourse.
- ✓ Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect.
- ✓ The availability of alternatives, of comparable value, to a particular planned or existing use. The account in determining equitable and reasonable utilisation. These factors include:

Consultation and negotiation Principles

Any riparian state in a global watercourse is entitled to previous notification, consultation, and negotiation where the suggested use of a watercourse by another riparian may cause severe damage to its rights or interests. International conventions, agreements, and treaties usually accept these values. Most upstream countries often oppose this principle. It is interesting to note that during the negotiation process of the 1997 UN Watercourses Convention, these principles, which are included in Articles 11 to 18, were opposed by only three upstream riparian countries: Ethiopia (Nile basin), Rwanda (Nile basin) and Turkey

(Tigris–Euphrates basin) (Birnie, et al.2002).

The consultation among the countries include Somalia and Ethiopia will create a transparent process as a step forward to decide the benefit water allocations. Therefore, notification of dam constructions in their national territory is important to the riparian states. This mechanism also supports states which are likely to be impacted on proposed projects.

Cooperation and information exchange Principles

Each riparian state of a global watercourse must collaborate and exchange data and information on the state of the watercourse along the watercourse as well as current and future uses scheduled. It is very essential to share hydro-meteorological, physical, and environmental information between riparian nations. It would be worthwhile to make further research to provide guidelines for a data-sharing mechanism that would possibly suit and become workable in the context since the basin nations have never discussed collaboration on the waterways; there are no agreements between their riparian nations on their use.

These principles are recommended by Articles 8 and 9 of the 1997 UN Watercourses Convention makes these an obligation. Ethiopia and Somalia shall exchange easily accessible data and information on watercourse conditions periodically, in specific hydrological, meteorological, hydrogeological, and ecological data on water quality and associated forecasts.

Peaceful settlement of disputes

This principle promotes that all States in an international waterway should seek a settlement of conflicts by peaceful means if the States involved are unable to achieve a negotiated arrangement.

The two river basins cover geographically one-third of the complete land region of each riparian country. The basin regions of Ethiopia and Kenya are these countries' least advanced regions. The basins, however, occupy the most populated and significant financial regions in Somalia, where powerful future financial developments are required. Because of the absence of safety in the three countries' river basins, data collection and information are restricted and sometimes impossible to carry out any work. These principles are recommended by Articles 8 and 9 of the 1997 UN Watercourses Convention.

Obligation not to cause significant harm

According to this concept, no state in a foreign drainage basin is allowed to use watercourses in its territory in a manner that would cause significant harm to other basin states or their climate, including harm to human health or protection, to the use of water for beneficial purposes, or to the living organisms of watercourse systems. This principle is incorporated in the 1997 UN Watercourses Convention (Articles 7). Both Ethiopia and Somalia endorse the principles of cooperation, information exchange, consultation, notification, and negotiation. Both countries should prevent any alien or new species that may cause significant harm to the ecosystem and other watercourse states.

Needed river cooperation and Transboundary Basin Management

There are many issues that avoid negotiations and establish collaboration for sharing benefits through common leadership. Integrated and coordinated water resource management of Juba and Shabelle Basin provides opportunities for the entire Horn of Africa region's growth. In domestic water policies, internationally accepted principles of Integrated Water Resources Management (IWRM) must be correctly tackled.

Addressing the globally accepted values of IWRM correctly in domestic water policies could lead to the streamlining of distinct policies and IWRM-related legal, institutional, and governance frameworks and thus encourage the application of IWRM values and plans (Siddiqi et al.2004).

Internationally accepted transboundary water resources management principles, e.g., the theory of limited territorial sovereignty; the principle of equitable and reasonable utilization; obligation not to cause significant harm; principles of cooperation, information exchange, notification, consultation and peaceful settlement of disputes could serve as guidelines for the efficient integrated management of global river basins ' water resources. These principles should be included in future bilateral and multilateral treaties between riparian nations in order to decrease conflict and exploit the complete potential of integrated water resource management. Ethiopia and Somalia have no previous contracts on the common use of water resources in these two rivers, which may trigger water use disputes in the future and impact the Horn of Africa's hydro politics (Elmi et al.210). Based on the above discussions, the researcher underlines the main two factors that contribute to and transponder water resource management:

Possible benefits from coordinated development

If correctly managed, the complete quantity of water in the Juba and Shabelle basin is sufficient to satisfy the riparian countries ' social, financial, and environmental demands.

Integrated Juba and Shabelle river basin management will offer the opportunity to:

- Improve water quality
- Maintain river flow characteristics
- Sustain biodiversity
- Sediment management,
- Salinity control downstream, and
- Increase fisheries and reduce industrial pollution to the river

Coordinated management of the Juba and Shabelle basin has enormous potential to enhance the general financial condition of the three riparian nations (Ethiopia, Kenya, Somalia). Hydropower, meeting the agricultural requirements of the growing population of the basin, as well as flood and drought management is the most emerging growth area. Wise management of Juba and Shabelle water by upstream large storage dams and reservoirs would promote and guarantee water flow during the dry season, thereby increasing agricultural activity.

Sadoff & Grey (2002) mention that water has played a significant role in a number of recent and current disputes and conflicts around the world. Thus, unbundling the significance of shared waters in the dynamics between riparian nations from other contributing variables in dispute is complex. An integrated step towards water management would decrease such tensions among riparian nations.

Management of transboundary waters is always challenging, both of the third worlds and in the rich industrial nations. Water conflicts in international watercourses around the world create serious political, economic, environmental, and social instability regionally and internationally.

Considering Water as an Economic Good

In many global statements, water is acknowledged as an economic good. Water, however, is a fundamental human need, and it should be everyone's right to access minimum amounts of safe water (20 liters per individual per day). Poverty and poor health are directly related to lack of access to safe drinking water, sanitation and irrigation. The implementation of financial principles to water distribution is acceptable and offers a straightforward tool for more effective growth of water facilities.

Conclusion

Water access is a fundamental human need and should be a fundamental right. Yet more than one billion individuals in the Horn of Africa region and in the developing world are denied access to clean water (UNDP, 2006). Somalia's water mismanagement has resulted in severe social issues. These issues are caused by environmental, social, and economic reasons. Widespread pollution has led to bad health and enhanced expenses for the poor, along with the declining infrastructure. Ecological Damage to livelihoods connected with loss or damage has been caused by pollution, water shortages, and irrigation. Water conflict and bad global collaboration have resulted in water shortages, floods, and inner tensions. Poverty has resulted from many of these previous issues.

Transboundary management of water must be based on a sound global legal framework. In the case of Juba and Shabelle River, it needs the creation of sustainable inter-state legal collaboration based on international water law principles and tools.

Water management in Juba and Shabelle Basin shall consider the creation, use, security, distribution, regulation, and control of water in terms of the quality and the quantity. The most important of them are (i) principle of equitable and reasonable utilization of waters, (ii) principle of "no significant harm," and (iii) principle of cooperation. The water of Juba and Shabelle rivers is now seen as a factor that may be used to threaten the security of the region. The issue of water distribution is part of the general political security view. Delays in its solution can put the region under critical circumstances for inter-state collaboration, as water availability impacts financial and political growth. The duty of the States to collaborate is a prerequisite for implementing the equitable, sensible, and harmless management of transboundary water.

Recommendations

The author suggests making sure that water resources evaluation technologies are accessible to both countries (Ethiopia, Somalia) for effective management of water resources. It also proposes the establishment of databases on the availability of all forms of hydrological data at the national level and the assurance of data quality. These two water-related agreements are a significant development regarding the effective application of these principles and thereby promoting water management throughout the Horn of Africa.

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