ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

WATER GOVERNANCE IN THE AWASH BASIN, ETHIOPIA: ACHIEVEMENTS, CHALLENGES, AND FUTURE OPPORTUNITIES

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DOI:10.5281/zenodo.19596410

Abstract

Water governance encompasses the political, social, economic, and administrative systems that guide the development, allocation, and management of water resources. It involves both formal and informal institutions, including government agencies, municipalities, civil society organizations, and other stakeholders that influence decision-making processes related to water use. This study reviews the concept of water governance with particular emphasis on its application in the management of water resources within integrated frameworks.

The study identifies key components of water governance, including water law, water policy, and water organization. Water law defines water rights, mechanisms for conflict resolution, and the extent of private sector participation in water management. Water policy focuses on strategic decisions such as prioritization of water use, project selection, cost recovery mechanisms, water transfers, privatization, and technological advancement. Water organization, on the other hand, deals with the institutional structure of water administration, financial sustainability, staffing, pricing systems, and technical capacity.

Findings from the review indicate that effective water governance is essential for the successful implementation of Integrated Water Resources Management (IWRM). It ensures coordinated and sustainable use of water resources while balancing competing demands across different sectors. However, challenges such as weak institutional coordination, inadequate financing, and limited technical capacity continue to hinder effective governance in many water systems.

The study concludes that strengthening legal, policy, and institutional frameworks is critical for improving water governance outcomes. Enhancing stakeholder participation, improving administrative efficiency, and investing in institutional capacity are key strategies for achieving sustainable water resource management.

Keywords: Water Governance; Water Policy; Water Law; Water Management; Integrated Water Resources Management

INTRODUCTION

Water governance refers to the political, social, economic, and administrative systems in place that influence the use and management of water (Batchelor, 2007). Processes and institutions, both formal and informal, used by citizens, organisations, social movements, parliaments, and municipalities can be perceived as being included in the definition (Haque, 2017). Water governance is about the way in which decisions are made and implemented regarding water resource development and management. According to Saleth & Dinar (2005), the key components of water governance are water law, water policy, and water organization.

Water law addresses water rights, conflict resolution, and scope of private participation, while water policy refers to matters such as setting priority for the use of water resources, how water projects are selected, and cost recovery for investment in the water sector, water transfers, privatisation, and technology policy. Lastly, water organisation

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

is concerned with the structure of water administration, adequate financing and staff, pricing and fee collection, and technical capacity, among others. Water governance provides the administrative (institutional), economic, and legal framework for managing water resources in an integrated way. Effective water governance is in turn required for the success of Integrated Water Resources Management (Smith and Clausen, 2018).

Water governance appeared in the scientific literature with the evolving nature of natural resources management approaches. Pahl-Wostl (2017) provides a clear distinction between the two, where water management is described as the activities to analyse and monitor resources along with measures developed and implemented to keep the resources within a desirable condition. Water governance is a social function that helps regulate development and management of the water resources and services along with providing guidance towards a desirable state and away from an undesirable state. Water governance is a combination of functions, performed with certain attributes, to achieve one or more desired outcomes, all shaped by the values and aspirations of individuals and organisations. Water governance functions are the key processes performed, in various forms and to varying extents and quality, for the organised development and management of water resources and services (Jiménez et al, 2020).

Many developing nations, like Ethiopia, are restructuring their water sectors in accordance with the Global Water Partnership's initiatives to incorporate water management, decentralization of authority, user participation, prioritization of domestic use, and environmental improvement (Jordana and Shah, 2014). Ethiopia has designed water policy, institutions, rules, legislation, and strategy as the cornerstones of effective water management within the context of global water policy (Jembere, 2009). Optimization is currently concentrating more on enhancing water productivity through water management as water becomes scarcer. To this end, a river basin is a good unit for managing land, water, and other natural resources in an integrated manner (Shah et al., 2005; FDRE, 2007).

Though the subject of governance has been given more attention in literature since the 1980s, it has only recently in Ethiopia become a key focus of water resources. As stated by the Global Water Partnership, "the spectrum of political, social, economic and administrative institutions that exist to develop and manage water resources and deliver water services at different levels of society" (Rogers & Hall, 2003) is the essence of water governance. As a result, river basin organizations

(RBOs) are essential to water management (Schmeier 2013).

Studies done on water governance tackling water challenges and transforming water management under the increasing pressures of competing water uses has increased since the 1980s (Özerol et al, 2018). However, there is lack of comprehensive synthesis on water governance particularly on the issues of justice, equity, and power (Alamerew,2015; Hailu et al,2017). Therefore, this paper adopted the systematic review approach on water governance in Awash basin with particular focus on the achievements, challenges, and opportunities of water

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

resource utilization. The specific objectives of the paper are to: (i) synthesize findings of on factors that contribute to the effectiveness of water governance, (ii) identify the major challenges and opportunities of water
14 governance and (iii) identify research gaps and the way forward for researchers to set a research agenda and address the gap.

MATERIALS AND METHODS The Awash Basin Location and topography

Ethiopia's Awash River Basin is situated between latitudes 7°53′N and 12°N and longitudes 37°57′E and 43°25′E. (Figure 1). The river rises in central highlands of Ethiopia on a high plateau near Ginchi town, west of the nation's capital Addis Abeba, making it the sole interior basin among the major river basins in the nation. It subsequently empties into salty Lake Abbe, which borders Ethiopia and Djibouti, by flowing north-eastward through the rift valley's valley bottom into the Afar triangle. The Great East African Rift Valley contains the greatest portion of the basin. The Eastern Catchment, which comprises the remaining area, is mostly made up of desert land, where most runoff is exhausted before joining the main river for direct flow input (Berhe et. al., 2013, Halcrow, 2008). It is obvious that altitudinal variation has a significant impact on the biophysical, socioeconomic, and water demands and practices of the basin because the elevation of the basin ranges from 210 to 4195 meters above sea level (m asl) between the valley and highest points along the origin and western escarpments. Based on biophysical criteria, the Awash Basin is usually divided into the Lower
Valley (500 -1000m asl), Middle Valley (1,000 1,500 m asl) and Upper Valley (all regions above 1,500 m asl), and Eastern Catchment closed subbasin (Tadesse et al, 2015).

Climate The Awash Basin's climate is impacted by the larger altitudinal range in several ways. It is primarily divided into two climatic zones: the highlands, which have a tropical humid to dry subhumid climate, and the lowlands, which have an arid to semi-arid environment (Mulugeta e tal., 2019). The two main climatic seasons are a spring with a comparatively brief rainy season from March to May and the heaviest summer rains in June and July that reduce through August to September as a transition to a dry season from October to February (Kerim et al., 2016; Mulugeta et al., 2019). The highlands west of Addis Abeba exhibit a gradual rise in rainfall from spring showers to summer peak rainfall at the source of the Awash River. The highlands receive fluctuating rainfall patterns that lead to a very variable monthly and yearly rainfall distribution because of the great range of altitudinal variation.

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

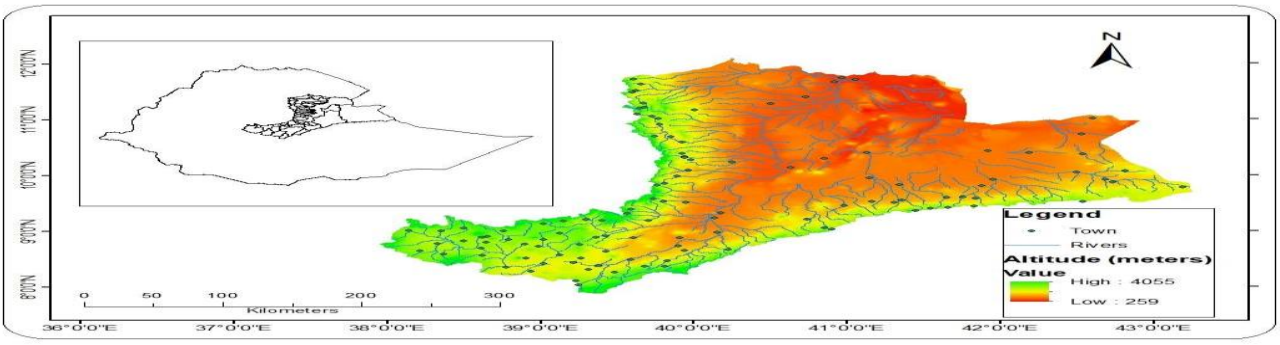

Figure 1: Map of Awash basin

Annual rainfall, with a mean of 850 mm, varies from around 1600 mm in the highlands near the river's source to about 160 mm in the northern edge of the basin (Kerim et al., 2016; Mersha et al., 2016; Mulugeta et al., 2019). Between May and

June, the highest mean monthly temperatures— 23.8 °C near Koka and 33.6 °C in Dubti, respectively—occur. The upper lands have a mean annual temperature of 20.8 °C, whereas the valley area has a mean annual temperature of 29 °C (Mulugeta et al., 2019). Because the mean annual potential evapotranspiration (PET) varies from 1810 mm in the uplands to 2348 mm in the lower Valley, rain-fed agriculture cannot be implemented in the middle and lower Valleys (FAO, 2013). Only in the peak months of July and August, particularly in the Upper Awash areas, where the average annual PET is more than quadruple the average annual rainfall, can the average monthly rainfall exceed the average annual PET.

The mean annual PET may be ten times greater than the mean annual rainfall in the basin's lower regions (FAO, 2013). A wide diversity of conditions in the basin makes it possible to grow a variety of crops. However, rain-fed farming is often only possible in upland regions above 1500 meters above sea level. Agricultural cultivation below this height requires either additional irrigation or full irrigation due to the low levels of rainfall, which range from 800 mm to as low as 200 mm annually.

Land use

Awash Basin's land use is dominated by exposed rock, which occupies roughly 35% of the total area, followed by rain-fed agriculture (27%), and open shrubland (21%) (Deche et al, 2023). With a minor quantity of water bodies and irrigated land, the remaining land is mostly made up of grassland and forest (about 3 percent and 1 percent respectively). The proportions of land use have been constantly changing because of a significant growth in arable land, urbanization, deforestation, and land degradation. Irrigated agriculture has gradually supplanted rainfed agriculture as the most significant change in land use whenever sufficient water and land resources are available at the same time. Additionally, there has been a large increase in cultivated area at the expense of shrub and grazing fields in the middle Awash Basin regions. The two biggest irrigated crops in the basin are vegetables

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

and cereals, which account for around 31% and 29% of the total area farmed in the basin, respectively. Cotton (14%), sugarcane (12%), and vegetables are the next three main irrigated crops (Yibeltal et al., 2013). The remaining major crops are fruit trees, roots, and pulses. Onions and maize make up around 34% and 27% of the total cropped area cultivated by small-holder farmers, respectively, and are the two principal crops grown by these farmers.

Water resources

The hydrology of the Awash Basin is defined by the main Awash River and a number of hydrologically connected tributary streams that join the main river at various points throughout its 1200 km journey towards the northeast. The basin also contains a number of surface springs, wetlands, and groundwater reservoirs. The large Awash River receives its surface runoff primarily from catchments near the western escarpments. The huge catchment area to the farthest east of the river, which makes up around 40% of the whole drainage basin, does not contribute enough surface runoff to the river due to the arid climate (Tadesse et al., 2015).

Awash River is the life of the Afar people and their herds. In addition, most of the commercial farming in the Afar region and sustenance irrigation crop farming have been possible due to the Awash and other rivers in the region. Natural resources such as water and forage vegetation play a key role in providing fodder and water points for livestock production in the region. The wetlands, which are found along the Awash River, are classified as seasonal swamps and marshy areas (Hailu et al,2017).

The geological and geophysical characteristics of the rifts have a significant impact on the distribution and quality of the groundwater resources in the Awash Basin. The local aquifers' properties have changed spatiotemporally because of the rift system's dynamic tectonic history, making them extremely complex (Yitbarek et al., 2012). As a result, it is understood that aquifer units are only loosely connected, and that groundwater is a much-localized phenomenon. The groundwater component of the catchments' hydrological systems contributes differently throughout time and space to the overall water balance (Deche et al, 2023). As a result, it is understood that aquifer units are only loosely connected, and that groundwater is a very localized phenomenon. As a result, the groundwater component of the catchments' hydrological systems contributes differently throughout time and space to the overall water balance (Tadesse et al., 2015). It is typical to randomly take water from aquifers based on brief tests because the basin's groundwater storage, recharge, and withdrawal rates and volume of flows have not yet been established.

Review Methods

To obtain comprehensive overview of comparative studies of water governance, a social science systematic review was conducted (Petticrew and Roberts, 2008). Systematic reviews are useful for synthesizing trends and abstracting findings from large bodies of information. The review used a survey of scholarly writing on water governance with a focus on achievements, challenges of water governance in Awash. Renowned scientific

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

databases (i.e., SCOPUS®, Publon®, and Google Scholar®) were utilized to perform the review analysis with the relevant keywords. SCOPUS® was used as its contents are more globalized as compared to other databases with more comprehensiveness. For further comparison, Google Scholar® was used as it can identify a large amount of grey literature that is not found in other databases, in addition to its ability to find specific literature. With that, the more recent publications were focused to examine the status and research studies on the topic of stakeholder engagement in river basin management. As a result, a total of 43 publications were found to be related to water governance in Awash basin.

The study further used the reviewed literature to discuss the historical circumstances and the implementation of Ethiopia's National Water Policy in order to gather insights on critical areas of water governance in the Awash basin. Furthermore, documents on environmental policy, water governance, IWRM, and the National Water Policy of Ethiopia were assembled from books, journal articles, working papers, technical reports, and authorized web pages. The Global Water Partnership, the OECD, the UNDP, and other organizations' reports on water-related issues were also consulted. To learn more about the difficulties the Water Resources Commission is currently facing, a thorough interview with the commission was also undertaken. Data analysis was influenced by the research purpose, the water governance framework, and readings and interpretations of pertinent documents. Reading through documents helped us spot themes and patterns of meaning. The analysis uses excerpts from the several pertinent texts to paint a detailed picture of each subject and subtheme. The topics are interconnected and work to tell a cohesive narrative about the water governance situation in the Awash basin.

RESULTS AND DISCUSSION The status, challenges, and opportunities of water resources in Awash basin

Historical water resource governance in the Awash Basin

The Awash River Valley's water resource governance can be categorized historically under three institutional frameworks that date back to Ethiopia's Imperial Government. To start, the Awash basin was the first basin to adopt modern agriculture in the early 1950s. Accordingly, the Awash Valley Authority (AVA) was founded in 1962 with the goals of managing water use and rights, building water infrastructure, carrying out water allocation, and obtaining water fees (IGE, 1962).

A new institutional organization was developed in accordance with the Ethiopian Water Resources Development Authority of 1975, which was supported by the Agrarian Reform, to plan the transformation of the agricultural and agro-industrial operations in the Awash valley. As a result, the Dergue regime intended to prioritize state agricultural development above smallholder agriculture and pastoralists (Hailu et al, 2017). By proclamation No. 118/1977 issued by the former Water Resource Development Agency, the Awash Valley Authority (AVA) had essentially become the Awash Valley Development Agency (AVDA). Its goals were like those of AVA, but it also had some other duties like doing research and organizing water resources—even in other

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

Ethiopian river basins. However, in both forms, the regime's water management favored state farms, which led to conflicts between the farms and the surrounding communities as well as other drawbacks (Hailu et al, 2017).

The Ministry of Natural Resources and Environmental Protection was founded in 1993. The Ministry of Water Resources (MoWR) was subsequently established in 1995. Following that, related water declarations, rules, laws, and policies were published in the context of the new political decentralization plan (Ooterloo, 2014). As a result, the policy statement views the creation of river basin organizations (RBOs) gradually as one of the guiding principles of IWRM. The Ethiopian Water Resources Management Policy envisions the creation of river basin organizations in this vein (in the form of councils and authorities). Therefore, one of the key techniques to execute integrated water resources management through river basin plans and efficient and sustainable joint management by relevant stakeholders—which is the foundation of the policy—is the establishment of river basin councils and authorities (FDRE, 2007). This suggests that there are gaps in allocating and regulating the water resources for different sectors in Awash basin.

Present water resource governance in Awash basin Establishment and Functioning of Awash Basin Authority

Integrated Water Resources Management is one of Ethiopia's national water policies that is based on the Dublin-Rio declarations (1992), and the policy acknowledges the hydrologic boundary or basin as the primary planning unit of the water resources management domain. Consequently, Ethiopia's water resource policy includes clauses that must be considered for efficient management of the nation's water resources, including the creation of RBOs (Tamrat, 2013). River basins should be regarded as the fundamental planning unit for the development and management of water resources, Ethiopia's national water management policy asserts in a forceful manner (MoWR, 1999).

In this sense, the Water Resources Administration Agency's establishment by Proclamation No. 129/1998 marked the beginning of the current administration of the Awash River basin, despite the absence of any notable changes being noted. The Awash basin's surface water resources were to be used in a coordinated, manageable, and regulated manner, according to the proclamation. A decade later, the Council of Ministers Regulation No. 156/2008 re-established the AwBA with administrative and regulatory responsibilities. The Proclamation calls for the establishment of a twotier organizational structure for the RBOs, with River Basin High Councils (BHCs) serving as the top policy and strategic decision-making body and River Basin Authorities (RBAs) serving as the administrative and technical wing of the corresponding BHCs (FDRE, 2007).

RBOs have varying degrees of effectiveness in resolving water-related issues or enhancing cooperative water resources governance among various sectors and users across basins and institutions (Scheiemer, 2013). Water users typically have no idea that RBOs exist or have any purpose outside of the agriculture industry (Smith and Clausen, 2018). As a result, while the 2007 Proclamation was unambiguous about the duties of RBOs in

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

connection to irrigation in Ethiopia, it did not define those in relation to electricity, industrial water usage, animal watering, or urban water utilities, which leaves an institutional gap in the other sectors of water use.

Status of the Awash basin Authority

Based on the river basin governance processes, the condition or level of effectiveness of river basin organizations can be assessed (WGC, 2013; Schmeier, 2013). These include the rules for running a basin that the RBO establishes once it has been established, as well as the various tools the RBO has available to ensure cooperation, shared management, and the development of the water resources. Monitoring actors' behavior to determine whether they are acting in accordance with the values, standards, and laws that govern how water resources should be used and/or protected is known as compliance monitoring. On the other hand, environmental monitoring describes activities that aim to document the state of the river basin and its environment at a specific point in time and over time. These activities are frequently connected to the influence of stakeholders' actions and are consequently linked to compliance monitoring. RBOs can anticipate that both types of monitoring will be crucial to their efforts to manage the basin sustainably (Schmeier, 2015).

Additionally, a river basin organization should help the basin's control of its water resources in areas including land, soil, and climate change. This would be made possible by coordinated efforts with other institutions in the river basin, including those dealing with water resources and those that go beyond water administration (Schmeier, 2013).

However, the AwBA's power to watch over the actions and behaviours of the many participants is rather constrained (GWC, 2013; Hailu et al, 2013). For instance, it ignores the administrative connection between land management and spatial planning and water resources, even though this has a significant impact on the quantity and quality of water resources within a specific basin. Awash River's primary irrigation projects are the only ones for which the authority now oversees, licenses, and collects water permits and fees. Additionally, due to a lack of automatic recorders, the collection of water consumption fees and charges is based on estimates of the volume extracted (or demanded) by the respective irrigation (Hailu et al., 2017).

Furthermore, the organizational side of water politics is crucial to the control and access to water. Water politics can be broadly categorized into four categories: local water politics, state-level water politics, interstate hydro-politics, and international water politics. These interactive water politics layers function in a mutually adaptive manner (Mollinga, 2008). Regarding the AwBA, there isn't much contact between the local community's daily water politics and the basin authority's water management system. For instance, an irrigation manager in the AwBA claimed that "farmers, let alone other users, do not know about the AwBA; they do not pay water fees to it therefore they feel entitled to divert water for their own purposes" (Mossello, et al 2015)

Mechanisms for collecting and exchanging data and information are another factor that we consider when evaluating the AwBA's success. In this regard, river basin organizations are more successful if they provide the

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

formal and coordinated transmission of data and information to the river basin's stakeholders (WRC, 2013). Contrarily, the AwBA is characterized by inadequate public awareness generation, poor communication/cooperation with stakeholders, and lack of a platform for stakeholders' involvement/engagement and communication strategy (Ooterloo, 2013). As a result, one of the guiding principles of Ethiopia's water resource policy is that the development of water resources must be supported by rural-focused, decentralized management, participatory approach, and integrated framework (MoWR 2001). To achieve this, RBOs are anticipated to make it possible for the epistemic community to contribute knowledge to activities involving river basin governance (Scheier, 2013). The AwBA has some restrictions because of this idea. For instance, there is a shortage of skilled labor, scientific community participation in decision-making is uncommon, and only a small number of well-known stakeholders are involved (Hailu et al, 2017).

Water use and Management the Awash Basin, which contains Ethiopia's main cities, including Addis Ababa, is home to about 19 million people (AwBA, 2017a). Numerous open water reservoirs are present across the basin as a source of water storage to meet the demand for water for various uses, such as irrigation, hydropower (Koka dam), and urban water supply (e.g., Gefersa reservoir for Addis Abeba) (Tendaho and Kesem reservoirs). The greatest blue water user in the basin, primarily from surface water sources, is irrigation, which accounts for more than 80% of all water abstractions (AwBA, 2017a). The summer months, when water flows are abundant, are when water shortages are most common, especially during the low flow period from April to June.

The basin has a low water use efficiency, with unregulated surface irrigation typically being the norm and having an estimated efficiency as low as 35 to 40%. (AwBA, 2017a). One of the main issues with water management in the basin is water pollution caused by untreated wastewater discharge from industries, urban drainage systems, and agrochemicals from the widely prevalent poorly maintained irrigated farms (Adey Nigatu Mersha et al., 2016). The Basin is also home to about 200,000 hectares of irrigated farmland, two-thirds of national industries, and more than 34 million animals. In sum, water resources of the Awash River Basin are the most utilized of all the river/lakes basins the country is of all the river/lake basins the nation has access to, the Awash River Basin's water resources are the most heavily used. The basin includes a portion of Addis Abeba's capital city, two of the nation's major industrial centers (Dire Dawa and Kombolcha), as well as several smaller heavily inhabited communities. Meanwhile, sedimentation and eutrophication are being brought on by agricultural activity throughout the Rift Valley's reservoirs, lakes, and wetlands. Flood hazards may rise due to climate change, especially in the Awash Basin, which will experience greater rainfall.

Challenges of water resource governance in the Awash basin Organizational Challenges

As was already indicated, the Council of Ministers recently created a specific RBO for the Awash Basin, and the MoWE gave the Awash Basin High Council and Authority (AwBA) a sizable amount of its administrative authority there (FDRE,2007). The RBOs' main goal is to "promote and monitor the integrated water resources management process in the river basins falling under their jurisdictions" to use the water resources of the basins

ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

Research Article

for the socioeconomic welfare of the people in an equitable and participatory manner while maintaining the sustainability of the aquatic ecosystems (WGC, 2013; Hailu et al, 2017).

The Proclamation calls for the establishment of a two-tier organizational structure for the RBOs, with River Basin High Councils (BHCs) serving as the top policy and strategic decision-making body and River Basin Authorities (RBAs) serving as the administrative and technical wing of the corresponding BHCs (FDRE, 2007). Despite the proclamation being expressed in the policy, it does not address the necessity of cross-sectoral coordination and co-creation at various levels, ignoring the idea that successful implementation is heavily reliant on such harmonization (Tamrat,2013; Alamirew, 2015). The Council of Ministers has complete discretion over the BHC's makeup because it is not specified by law.

Moreover, the AwBA has insufficient capacity both in terms of trained man-power and financial resources as well as logistics to carry out its functions adequately (Oosterloo, 2013; Tamrat, 2013). For example, the authority has not yet been able to implement a basin-wide permit system for allocation of the water resources of the basin and for waste (water) discharge to the river. Finally, changes in the organizational structure and naming within a short period of time make some stakeholders found themselves in dilemma (Chéné,

2009). For example, when the former Awash Basin Water Resources Administration Agency (ABWRAA) was reshaped to form AwBA, some stakeholders remained confused on the role of the Basin Authority with the former role which was primarily operational and maintenance of waterworks (Mossello et al, 2015).

Policy related challenges Water governance must have a strong water policy. Information on (a) water ownership and entitlements, (b) users' access to affordable clean water, (c) organizations and laws responsible for the water policy, and (d) the financial worth of water and taxation must all be covered by water policies. The primary goal of Ethiopia's water resources management strategy is to strengthen and advance all national initiatives aimed at making the best use possible of the country's water resources for significant and sustainable socioeconomic growth (FDR 2001). What's more, the policy highlights the requirement of an IWRM strategy, including the management of surface and groundwater resources as well as difficulties with water quantity and quality. The policy also indirectly acknowledges the management of water resources in concert with other natural resources within a river basin. Although this has significant effects on the amount and quality of water resources within a specific basin, it does not address the administrative coupling of water resources to land management and spatial planning. As a result, there are two categories of obligations in the Awash basin: intraregional responsibilities that define the functions and connections of districts within a certain region, and interregional responsibilities. Therefore, the national government must maintain interregional coordination regarding surface and ground waterways, environmental concerns, water quality, and pollution control (Tamrat, 2013).

Because of this, even while the legal framework appears to be appropriate, there is a lack of coordination between regional and federal responsibilities regarding co-creation and co-management. This is one of the major obstacles

to the AwBA's ability to execute the IWRM effectively. Additionally, even when laws, rules, and strategies are comprehensive, action plans for implementing the strategic plan are still insufficient (Alamirew, 2015). The policy gaps in land use development, the impact of climate change on water resource management, the lack of an action plan to execute IWRM, the low level of stakeholder knowledge, and decentralization without strengthening local level capability are the obstacles (Oosterloo, 2013). Utilizing water resources is hindered by the absence of legislation to manage demands and conflicts, as well as by the minimal participation of the private sector (GWP, 2015). Overall, however, the Awash basin still lacks both an approved water policy and a follow-up procedure for a policy regarding the management of water resources.

Institutional Challenges

By creating a stable framework for human interaction, institutions act as tools for fostering human collaboration and lowering uncertainty (Mersha et al, 2017). In this regard, research on institutions involved in river basin management is particularly important since coordination of human efforts to utilise the water resources within a river basin is the most important aspect of integrated water resources management. Exploring this coordinating role of institutions is thus the most important component of institutional analysis in the context of river basins (Bandaragoda, 2000).

Conflicts over water allocation and management arise between different water use sectors, geographical units within the basin, and water users both inside and outside of each sector in many river basin contexts. A basin-wide organizational system may make a significant contribution to settling such issues. Understanding the degree to which water resource management in the basin considers the environmental implications of development would also be aided by institutions connected to the basin. Therefore, focusing on basin-wide institutional structures is a key method for increasing environmental protection (Hailu et al, 2017).

Finally, the level of responsibility of water policymakers, allocators, regulators, and users is ineffective, and the officials' accountability for water sources, usage categories, and user categories is still nebulous. In conclusion, the Awash basin's water institutions are characterized by an ineffective institutional structure and recurrent coordination issues that put the water sector at risk. This mostly resulted from a lack of appropriate institutions or from an incapacity to carry out the laws and regulations governing water resources (Hailu et al, 2017). This implies that water management organizations to fulfil their objectives, they must be outfitted with the appropriate equipment. Institutions must have legal support for their operations to operate efficiently. To enhance compliance and enforcement of water regulations, cooperation between water authorities and other pertinent entities is also required.

Opportunities of water resource governance the Awash Basin Authority

Although there are abundant water resources in the Awash basin, they are unpredictable, sparse, and changing rapidly as the local economy grows. The basin's plentiful water resources seem to indicate that it is not overly

vulnerable economically to hydrological issues. Current consumptive withdrawals, which are estimated to be 2.8 billion cubic meters (BCM) per year, are far outweighed by the total supply of "blue" water, which is roughly 4.9 BCM annually (Tiruneh et al, 2013). As a result, although though the Awash basin is the most industrialized and developed basin and has a total GDP that accounts for around 30% of the country's production, its economy is very susceptible to hydrological unpredictability.

Through improved data collection, evaluations of groundwater sustainability, more precise supply demand forecasts, and the development of tariff and permission schemes for water abstraction and wastewater discharges, the AwBA works to improve water resource management in the basin (Tamrat, 2013). All of these will enhance the authority's decision-making processes for investments and resource allocation, greatly enhancing the basin's economic resilience. Given the growing economic significance of water in the basin, Mosello et al. (2015) argue that it will take time to establish sufficient ability to implement effective water resource management policies. There are numerous options to manage water resources sustainably despite the issues that have been raised. These possibilities can be considered in relation to the Ethiopian water resources management problem's organizational, policy, and institutional elements. This paper's concentration is on AwBA, thus a study of the complete difficulties surrounding the establishment of RBOs at the national level would take up too much room. To understand the AWBA, it is crucial to first make a few general observations.

However, in my opinion, instead of "waiting and seeing" whether the river basin organization that has already been established will succeed or fail, it would be possible to draw lessons from the history of AwBA, which has a lengthy history, particularly since 1962; despite the different institutional and organizational structures and processes that are in line with the various regimes. Abay, Awash, and the rift valley basins are the only three river basin organizations in Ethiopia currently out of the twelve major basins listed (FDRE, 2007). On the other side, Ethiopia's strategy is to delegate RBOs at the basin level responsibility for planning and managing water resources. The need for river basin organization as a strategy for integrated water resources management therefore outweighs the method (phase-by-phase) of their formation.

CONCLUSION AND RECOMMENDATIONS

Ethiopia has an abundance of water resources and is home to many transnational rivers. However, regular variations in the spatial and temporal availability of water as well as catastrophic events have resulted in water stress throughout the nation. One of Ethiopia's most water-stressed basins is the Awash basin. The Awash Basin's water management agencies were implemented, as well as historical and modern water management practices, in-depth evaluation of these practices was done in this study.

The overarching finding of our systematic review is that there is organization, policy creation and regulation, institutional capability, and coordination were essential components of governance. The water policy implementation in the Awash basin has difficulties, as this paper's assessment of water governance practices in

the basin demonstrates. The Awash basin's previous water management system was based mostly on the IWRM idea and safeguarded the limited available water. A national water policy has been created through IWRM, and it is being implemented with the help of supporting laws and action plans.

In water governance, the development of policies and institutions to tackle water problems and the subsequent implementation of the water policies are both crucial and indicative of governance practices. In this vein, future directions of steps to be done should include developing a strong relationship between land and water in the policy document and alignment with watershed management improving cooperation with all stakeholders with adequate information management. AwBA's organization needs to be set up properly to support the implementation of IWRM, and the creation of strict enforcement standards is another area that has been identified as a priority for efficient water resources management in the Awash basin. However, more investigation is required into the role of IWRM in general and its guiding principles, such as the creation of RBOs for efficient basin water resources. For instance, criticisms of IWRM generally and its principles suggest that the IWRM obscures practical answers to problems with water resources and that developing nations are pursuing them to appease donors' interests rather than serve their own needs. The study makes recommendations for measures to support the effective execution of the water strategy, including the development of institutional and human capacity and elevating environmental concerns to a top government priority.

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ISSN: 3065-0542

Journal of Human Resource and Organizational Behavior

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