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MINISTRY OF WATER AND ENERGY

የኢትዮጵያ ፌዴራላዊ ዴሞክራሲያዊ ሪፐብሊክ | Federal Democratic Republic of Ethiopia

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Bulletin of Water, Hydro-Diplomacy and Communication Forum

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This Bulletin contains papers presented during the 6th and 7th Water, Hydro-Diplomacy and Communication forums.

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FOREWORD

The Ethiopian government has an ambition to eradicate poverty by creating wealth and transforming the country's economy. Considered to be an important milestone towards prosperity, the government has developed a 10-Year Development Plan. In this context, the Ministry of Water and Energy has been contributing to the country's effort in realizing this vision through the provision of drinking water supply and sanitation and sustainable energy supply and thus contributing to economic growth. The overall vision of the Ministry is to Envision Ethiopia on the path to prosperity through ensuring integrated water resource management and ensuring access to drinking water, sanitation and energy supply to citizens by 2030. And its mission is to Ensure access to water and sanitation supply, energy demand and all over improvement of citizens' lives by developing and managing water and energy resources equitably, sustainably and in an integrated manner.

The country has the necessary natural resources, land, and water, for its overall development, although most of the water resources are transboundary. Nevertheless, the resources are not well studied and documented in a way the development endeavors can be supported, particularly when it comes to groundwater resources. Although not systematically designed and coordinated, several studies have been done in most of the basins and their sub-basins. Consequently, the Ministry of Water and Energy intends to establish network of professionals to facilitate exchange of available data and information, provide inputs to studies, advice on project formulation for common agenda of promoting development, management and governance of water resources in Ethiopia. The water, hydro-diplomacy and communication forum (WHDCF) is established to bring together different professionals, technicians, researchers and others working in the water sector for achieving such goals.

The forum was first initiated by the Ministry of Water and Energy. Later, four (4) national universities of Ethiopia namely Arba Minch University, Bahir Dar University, Adama University of Science and Technology and Addis Ababa Science and Technology University have officially established a consortium with MoWE and the forums have been conducted at their premises. The papers published in this bulletin are outcomes of those forums and the Ministry believes that this will be a valuable document serving as the basis for future initiatives.

H.E. Dr. Ing. Habtamu Itefa
Minister; Ministry of Water and Energy

Contents

THE HYDRO-DIPLOMACY AND THE HYDRO-JOURNALISM OF THE NILE RIVER BASIN

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Abstract

Ethiopia is endowed with 122BCM annual falling water, which when clustered, creates 12 river basins. It is accounted that 97% of the available resources flow out of the country annually in every direction to the neighboring countries and merely 3% remains inland. Nile is the making of the main Abbay River and its other two sub-systems that all originate on the highlands of Ethiopia. The main Abbay River and the other sub-systems cumulatively contribute 86% water to the Nile River. The Abbay River is the umbilical cord of the Nile and without it, there is no Nile.

The Nile is shared among 11 countries and the first amongst others in Africa in having numerous riparians. The larger the number of the riparian's, the complex the hydro-political relations become because of contending water interests. Nile is one of the most contentious basins in Africa. The hydro-political relations between Ethiopia, Sudan, and Egypt have been always at loggerhead for many decades now. Hence, to bring cooperative hydro-political relationships amongst the riparian's in sustainable manner, several bilateral, tri-lateral and multilateral hydro-diplomatic moves, including the involvement of external actors were undertaken.

The establishment of the NBI and its resultant CFA was regarded by many as an end of confrontation and transcendence and transformation to the establishment of all-inclusive River Based Organization (RBO). The CFA cannot be claimed to be a panacea for all the ills of the basin; however, it is surely a correct roadmap to cooperative development in the basin as a heel where the hydro-doctors drawn from all riparians operate on.

Media are powerful institutions of communications and the media outlets of Ethiopia, Sudan and Egypt have immense power to positively promote the hydro-political and hydro-diplomatic negotiations of the basin and the GERD. However, the hydro-journalists of the riparian countries reported the hydro-diplomacy of the basin in conflictual manner. The hydro-journalists of Egypt in particular went to the level of declaring "war" on Ethiopia violating ethical standards and basic principles of journalism. Hydro-diplomacy is an instrument of hydro-politics with which riparians settle their differences through barraging of interests and reach a win-win maxim. Hydro-journalism is the systematic reinforcement of the process of hydro-diplomatic negotiations employing all its arsenals of communication. The positive working of hydro-diplomacy and hydro-journalism is sine qua non and a pathway to closer mutual understanding and the establishment of cooperation institutional framework.

Key terms: bilateral or multilateral riparianism, Nile, hydro-political, NBI, CFA, win-win maxim, hydro-diplomacy, hydro-journalism.

1. Introduction

Water is one of the most precious substances needed by all living creatures on earth to survive. Biswas (1998) wrote that "water is the best of all things". Water and humans are inseparably interlinked since the beginning of life on this planet. It is assumed that "around 2.5 billion years ago, life on earth began. And it began, almost certainly, in water" (Villiers, 2000).

Ethiopia annually gets relatively sufficient rainfall. However, the spatial and temporal variability of the rainfall is challenging the country making it vulnerable for recurrent drought and flooding. The country has to harness efficiently and effectively her water resources. Otherwise she may confront serious water induced challenges. The country's population is speedily growing. Every newly born mouth demands additional food and feeding stomach is mandatory for the state.

Besides, major rivers of Ethiopia are transboundary. Transboundary waters create riparian relationships of cooperative or conflictual types that require tiresome hydro-diplomatic negotiations.

Media are institutions of hydro-communication that play significant roles in teaching and raising the awareness of internal and international publics and contribute their part in promoting hydro-diplomatic negotiations of the riparians in transboundary river basins.

2. Resource potential of Ethiopia and development of water infrastructure

Ethiopia annually gets 122 BCM falling water when clustered create 12 major river basins, 11 fresh water lakes, 9 saline lakes, 4 creator lakes and over 12 major swamps or wetlands (Yacob, 2007; MoWE, 1999). Hence, the country is nicknamed as "Water Tower". However, 97% of the annual runoff is taken to the neighboring countries and only 3% remains inside (Yacob, 2007). Ethiopia is water donor but not recipient from her neighbors.

Waterbury (1986) also similarly states that "Ethiopia's annual surface runoff is impressive". In a very vivid manner, he notes that "9 to 11 rivers annually discharge across Ethiopia's border…to its neighbors"(Ellipsis mine).

Ethiopia is food insecure and asks for food aid. Aid is "Trojan Horse". Wheat that we are aided is virtual water. Having relatively sufficient falling water annually from sky for wheat production, begging for virtual water is disgusting.

Expounding this grimy situation, the Ethiopian Foreign Affairs and National Security Policy and Strategy (MoFA,2002) boldly expounds that "We cannot even feed ourselves and have to beg annually for food aid. Nothing has as much humiliating effect on the pride of a nation as having to beg. … Under such circumstances, we cannot proclaim that we are free in real terms. This is a major source of national humiliation and shame"(Ellipsis mine).

This heart-breaking dictum alarms Ethiopia to undertake aggressively the development of modern infrastructure of water storages to fight food and water insecurities or continue as an eternal beggar. For a people who has conceitedly defended its sovereignty and lived in independence food handouts is more than shame in IRs.

Ethiopia's hydropower potential is estimated to amount to 45,000 MW (FDRE, MoWE, 1999). However, "only a fraction of this tremendous potential has been harnessed for any meaningful contribution to the socio-economic development of the country"(FDRE, MoWE, 1996). Her rivers fall from high to low geography and snake through stupendous gorges, thus naturally created conducive environment for hydro-electric generation with cheaper cost of production in relative sense.

The largest sections of our society either live in dark or struggle with unhealthy and environmentally unfriendly energy sources. Wood, animal dung, residues, leaves etc. are the major sources of energy in rural and in several urban homes. We see with our naked eyes women carrying on their backs leaves and running down the streets of Addis Ababa from Entoto Hill on their backs. The neighboring farmers loading short cut wood on donkey backs for fuel move inside the town to supply to their clients.

Not only energy sources, leaves are also sources of income to augment poor family households. Many households in Addis Ababa sustain their living by selling leaves as well as educating their children up to degree level. The picture herein below shows a woman who has educated her son by selling forest leaves from the surrounding hills in Addis Ababa and enabled him graduate. She is dressed in her son's graduating gown and her son carrying the leaves.

Figure 1: A woman who educated her son by selling forest leaves from the surrounding hills in Addis Ababa and enabled him graduate

In many literatures we read that Ethiopia is water "abundant" country. This is misleading and what the Egyptian media employ to argue against Ethiopia. The Ethiopian Water Resources Management Policy in vividly expounding the fact witnesses that:

> "ይህ ሞጠን (122 BCM) ለአገሪቱ ዜጋ በነፍስ ወከፍ ቢካፈል ዉጤቱ ብዙ ዉሀ አላቸዉ ከሚባሉ ሌሎች አገሮች የነፍስ ወከፍ ድርሻ ጋር ሊወዳደር የሚችል አይደለም።በሌላ በኩል ግን ከፍተኛ የዉሀ እጥረት ካለባቸዉ አገሮች የነፍስ ወከፍ ድርሻ አንጻር ሲመዘንም ዝቅተኛ የሚባል አይደለም" ።

Falkenmark's divided countries into four categories in order to know water per capita. Her four categories are presented herein below and where does Ethiopia fall?

Water sufficient countries= >1700m^3/yr
Water stress countries= 1000m^3/yr - 1700m^3/yr
Water scarce countries= below 1000m^3/yr and
Absolute water scarce countries= below 500m^3/yr).

The presently estimated population of Ethiopia is 120 million and if we divide the total annual runoff by population, the water per capita of Ethiopia is 1006 m^3/yr that makes the country fall into a category of water stress in the world. In vibrantly augmenting this argument Swain (2004:8-9) categorizes "Ethiopia among countries failing to meet basic water requirement".

2.1. The Abbay River Basin

The Abbay River (Blue Nile) originates from the Gishen Abbay in Gojam that tribute to Lake Tana. The Abbay River drains through deep gorges not conducive for irrigated agriculture as well as Marin transportation. Of the entire basins in Ethiopia, Abbay is the biggest with 90 tributaries. Its estimated annual runoff is 52.62 BCM. It is nicknamed as "Father of rivers".

Its estimated hydropower potential is 78,828 GWh/yr and 132 identified hydropower sites (Semu Moges, et al. in Worku & Helmut Kool, 2010). The basin has an irrigable land resource of 2.2 million hectares. Abbay is the making of three sub-systems, viz. the Abbay sub-system, the Tekeze-Atbara sub-system and the Baro-Akobo sub-system. The three sub-systems together contribute 86% water to the Nile: Abbay subsystem (59%), Baro-Akobo subsystem (14%) and Tekeze-Atbara subsystem (13%).

2.2. The Nile River Basin

The Abbay River that originates from the Ethiopian highlands and the White Nile that originates in Equatorial Lakes regions and adjoin in Khartoum and create the river Nile. The name Nile came from a Greek word "Nelios" meaning "River Valley". The Nile River is 6695 km long and flows through numerous fauna, flora and countries with diverse cultural heritages in central, East and North Africa.

It covers an area of 2.9 km2, covering about 10 % of the African continent and is home for 18 % of the African population. The Abbay and the White Nile Rivers contribute 86 % and 14 % water to the main Nile River respectively. Without Abbay, the White Nile would have reached Egypt not in meaningful quantity and quality because of high evaporation in its downward journey. Hence, Abbay is the blood vein of the Nile and precious gift of Ethiopia.

The Nile is shared among 11 riparian countries, which is the largest number of riparians in Africa. The more the number of the riparians, the more the hydropolitical relations becomes due to divergent interests of the riparians. Egypt is the furthest downstream riparian of the basin. Sudan is in the middle and Ethiopia is in the upstream including the Lake's Region riparians.

2.3. The upstream-downstream hydro-political tension in the Nile River

The hydropolitical relationships among Ethiopia, Sudan and Egypt is always at loggerhead from past to present. Egypt's foreign policy is based on realist and absolute territorial integrity doctrines that are self-centered and opponent to cooperative hydropolitics. Power is might and might as right has guided Egypt's Nile policy and this has been root cause for conflictual hydropolitics.

In 1929 the first apportionment treaty was made between Egypt and Sudan (Anglo-Egyptian Condominium). The agreement was named as "the full utilisation of the Nile" (Aron, 2008). It allocated "48 BCM for Egypt and 4 BCM for Sudan" (Aron, 2008). Ethiopia was not at all included in this treaty although she was a sovereign nation. This treaty was "time bomb in future regional partnership relations" (Petros, 2010). The "accord was a colonial construct and as such should be discarded to the dustbins of history" (Aron, 2008).

In 1959, the second apportionment treaty was made between Egypt and Sudan. Now 55.5 BCM (75%) was given for Egypt and 18.5 BCM (25%) was allotted for Sudan. Ten percent is left for evaporation and 6 BCM is for Mediterranean Sea. Ethiopia was not included as a sovereign nation to negotiate for her water interest while other upstream riparians were under colonial domination.

Egypt regarded this agreement as determinant for its national interest because it gave Egypt "the right to investigate" the whole length of the Nile to its sources and tributaries and considers any projects that reduces water flow as a thereat to its national security" (Aron, 2008).

Aron(2008) also contends that the two accords proven "the disunity and powerlessness of upstream states and their leaders. But it also speaks volumes about influence of Egypt and its backers in diplomatic, financial, and international corridors of global power". Both colonial and bilateral treaties "have weakened the capacities of the upper riparian states by discouraging and impending their water resources development and thus hampering their progress"(Petros, 2010). He further illustrates that "inhibited by these treaties directly and indirectly, all the upper riparian states have thus far harnessed an insignificant portion of their vast water resources potential" (Petros, 2010).

Egypt claims that the Nile water is her mere supply source and divinely given for her alone and others do have no water rights, although she contributes zero water to the Nile. Hence, it pursues "fear-ridden diplomatic moves and unwise remarks of its journalists and intellectuals which has often exasperated" and "complicated more than ever" (Petros, 2010) the hydropolitical relationships in the basin in general and has polarized Ethiopia's image.

2.4. Hydro-diplomacy and attempts at regime building in the Nile River Basin

2.4.1. The hurdles at institutional building in the Nile Basin

Like any international basins in the world and Africa, in the Nile basins also there were attempts "initiated by downstream nations, and oriented towards their interests" (Yacob, 2007). The downstream riparians took the lead with a motive "as a delaying mechanism to prolong the life of the status quo. Hence little achievement has yet been made to establish a comprehensive and all-encompassing institutional framework for the basin" (Yacob, 2007). Of the several attempts made, a few are selectively presented succinctly herein below:

2.4.2. Hydro-met

It was established in 1967 by Egypt, Kenya, Sudan, Tanzania and Uganda. Its chief objective was to study, analyse, and disseminate metrological data to the signatory countries and to the donor organizations (UNDP &WMO).

Ethiopia became an observing member in 1971. The Hydromet contributed in gathering useful metrological data of the basin. However, it died "without having any substantive impact on harmonizing the upstream-downstream polarization of interests" (Yacob, 2007).

2.4.3. Undugu

Its objective was to foster cooperation and its name is derived from Kiswahili and to mean "brotherhood". Ethiopia, Kenya, and Tanzania became the observer members. An action plan for the Nile basin development was proposed by the UNDP as a donor. A meeting in Addis Ababa in 1993 discussed over the proposal and Ethiopia opposed to it and was not accepted.

2.4.4. Nile basin integrated development (NBID)

The NBID initiated for the establishment of a basin wide commission in 1989. With the auspices of the NBID, a commission was established. The commission conducted a study as assigned to do so. The commission conducted a study and a workshop was held in Addis Ababa in order to adapt its report. The report was biased and it "mainly addressed the needs of additional water supply for the downstream countries" (Ethiopia, MWR, 2000).

Ethiopia proposed for unbiased proposal that took into consideration the water interests of all riparians of the basin. All delegates of the commission accepted this. The Sudan and Egypt rejected Ethiopia's proposal.

2.4.5. TECCONILE

Its long-term target was aimed at conservation and equitable entitlement of the water resources. Ethiopia and Kenya became observer members. However, the TECCONILE did not fulfill its objectives except its modest contribution for the development of "Nile Basin Action Plan". Ethiopia critiqued it strongly stating that "establishing a legal and institutional framework should be given top priority rather than putting this as a vague long term objective" (Yacob, 2007).

2.4.6. The Nile Basin Initiative (NBI) and the CFA

The NBI was established in 1999 in Dar-es-Salaam in Tanzania and sponsored by WB, CIDA, and UNDP. All riparians except Eritrea signed the agreement in an effort to enhance cooperation on the use of the "common Nile Basin water resources."

It had four objectives: building confidence among the basin states, changing perception on the issues of the Nile waters, realizing that cooperation is more beneficial than confrontation and knowing the extent of the water resource potential for the state-collaboration.

Hence, a Cooperative Framework Agreement (CFA), document was prepared. The CFA document is an important document in the history of the Nile. The CFA was made ready for signature beginning May 10, 2010. Burundi, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda have signed it; and in 2013 the Ethiopian parliament has ratified it.

Egypt and Sudan immediately registered their intention not to sign the agreement because they objected to the wording of Article 14(b) that reads the "Nile Basin States therefore agree, in a spirit of cooperation not to significantly affect the water security of any other Nile Basin State."

Sudan and Egypt opposed and proposed for an alternative wording for Article 14(b): "Nile Basin States therefore agree, in a spirit of cooperation not to significantly affect the water security and current uses and rights of any other Nile Basin State".

The establishment of the NBI was a turning point in Nile hydropolitics. Ethiopia played significantly major roles for its inception by undertaking aggressive diplomatic moves for its actualization. The NBI is an all-inclusive institutional framework and is the highest level of unity of riparians though challenged by Egypt and Sudan i.e. obviously expected. It is the outcome of several decades of Ethiopia's individual resistance to the hegemonism of Egypt and the collective struggle of the upstream riparians. It has buried without funereal ceremony the obsolete colonial period treaties and ushered the new era of collective management of the Nile basin. Herein after no go back to old hydropolitics.

The NBI's "ultimate goal was to provide a peaceful means to reduce conflict in the Nile Basin. Addressing the challenges of moving towards greater cooperation and joint development has central to a basic underlying set of enabling relations between states and willingness of key basin states to move from "unilateralism" to "multilateralism" in resource development, need to "level the playing field" through building national capacity and identifying national priorities, as well as correcting what it saw as "information asymmetry" (Petros, 2010).

3. The negotiation strategies of the three riparians as a predicament to cooperation in the Nile basin

3.1. Egypt's negotiating strategy

Egypt is the furthest downstream riparian that always employ a multi-layered negotiating strategies which are unacceptable by upstreamers. Its negotiating strategy clings on theory of realism and absolute territorial integrity theory as well as the obsolete treaties. All are unacceptable by the upstream riparians. Egypt's negotiation strategy anchors on the above doctrines and treaties. It is briefly presented herein below (Yacob, 2007):

- Egypt always fights to bring the upstream riparians in its own line and manipulate according to her interest
- If the strategy does not work, Egypt pursues a policy of divide and rule the upstream riparians or avoid them all and pursue with her unilateral water development policy
- Egypt likes to internationalize the basins hydropolitics and prefers to invite external actors like WB, IMF, US, etc. to support her because of her closer partnership
- Egypt takes part in Nile negotiations and does not avoid. She was the imitator of Hydromet, Undugu and others. However, its motto to use the fora to sustainably promote its hidden and obsolete status quo of "prior apportionment", "historic and natural rights" doctrines.

3.2. The Sudan's negotiating strategy

Sudan is geopolitically located in the middle of the basin. Its fundamental interest is that "each country in the Eastern Nile basin specializes in what they are best at, where they have a comparative advantage. Hence, "Sudan in irrigation, Ethiopia in hydropower generating and Egypt in industry and know how" (Yacob, 2007). Sudan struggles to get an increased water supply for its development purposes. Sudan unlike Egypt has her own rivers and gets high rainfall. It supports the upstream-downstream cooperation in watershed, flood, and silt control.

However, Sudan is in dilemma because of historical and cultural affiliation with Egypt. Egypt is powerful neighbor of Sudan that many times in invisible way creates commotion in the internal politics of Sudan. Sudan swings between Ethiopia and Egypt like pendulum largely serving the interest of Egypt as its messenger lacking firm stance.

3.3. Ethiopia's negotiating strategy

Ethiopia consistently articulates her water development interest on different fora expressing transparently that it is obligatory for the government to develop with priority the available water resources of the country by building water holding infrastructures over its major rivers under threatening cyclical drought, famine and to mitigate poverty.

The Ethiopian Water Resources Management Policy in this light states that "In order to alleviate the problems on agricultural outputs and other water users, sustainable and reliable development becomes an imperative" (FDRE, MoWE, 1999). Ethiopia's strategic negotiating principle rests on internationally adhered principles of "equitable and reasonable" and "judicious" use of waters that are transboundary.

Ethiopia in several fora made clear unequivocally that neither obsolete water agreements reached with the colonial rulers, nor the bilateral agreements reached between the two downstream countries concerns her and void.

Thence, Ethiopia shall not stand still until all inclusive water institution is framed. Hence, to reduce her poverty she followed "absolute territorial sovereignty" doctrine and has taken best alternative in negotiated agreement (BATNA) to invest on her Abbay River.

4. The Ethiopian Grand Renaissance Dam (GERD)

On April 2, 2011, the then Prime Minister of Ethiopia, Meles Zenawi, unveiled the foundation for the commencement for the construction of the Grand Ethiopian Renaissance Dam (GERD). The development of the water sector is "a pre-condition for the acceleration of the development of other sectors…as well as cater for external markets to earn foreign exchange" (FDRE, MoWE, 1996).

The construction of the dam coincided with the upheaval of the "Arab spring" in Egypt. That was a mere coincidence. President Mubarak was ousted in 2011 and Egypt was in turbulence. An Egyptian diplomat in Addis Ababa defined the situation that "Egypt did not have state at that time".

However, Premier Meles exploited the situation and increased the reservoir size more than previously envisaged. He "doubled, tripled, and quadrupled the size of the reservoir". The downriver riparian began vehemently opposing the GERD. The GERD is the biggest in Africa and the 8th in the world. It is under construction on the river Abbay close to the Sudanese border in Guba in Benshangul-Gumuz Region. Its reservoir impounds more than 70 BCM, i.e. closely equal to the annual flow of the Nile River. It was planned to have an installed capacity of 6,450MW but recently the installed capacity was revised to 5,150 MW as power jackpot that would boost the country's aspiration to satisfy power demand that grows by 30 percent a year.

The water after turning the turbines continues flowing downward. The dam is located relatively in cooler geography in contrast to Aswan Dam of Egypt where much water is lost through high evaporation. Presently the second turbine has started generating power.

The two turbines together generate 750 MW that will boost the power supply of the country. The third round reservoir filling has been successfully accomplished and gradually the dam will graduate. It is a flagship project that has brought in unison Ethiopians in home and abroad that satisfied centuries old dream of our forefathers to tame the Nile. It is the symbol of the victory of the upstream riparians who have struggled for fair, just and reasonable share of the Nile water that they have been seeking for as their rights.

5. Media and the hydro-journalism of the Nile River

5.1. Hydro-journalism of Egypt

All Egyptian media (print, broadcast and online) frame the Nile water and the GERD agenda from year to year. The Egyptian mass media are the front fighters in the water field. They are the armed wing of the government (fourth estate) to defend and attack the national interests of their country.

They teach their own people and the world public at large communicating fake stories of the Nile hydropolitics. The Egyptian media teach the population about water, its significance for life and its necessity for Egypt to sustain as a nation. The Egyptian media present the hydropolitics of the Nile in a very sensational way to gain supports and sympathy from partners and friends. The cartoon herein below vividly speaks volumes of the subject.

Figure 2: Egyptian representation of the GERD

Egypt's media lie to her domestic population as well as to the world public in disseminating in different languages and programs. This is why many countries support her. Egypt's journalists are politically active and they are well versed in making media hyperbole and hype. They use very powerful and mind catching words in order to manipulate the minds and brains of people by releasing fake propaganda.

The Egyptian journalists vehemently fight against the GERD since the day of the unveiling of its foundation in 2011. For the purpose they have several channels working with different languages in print, broadcast and online media. Egypt's media outlets disseminate war mongering stories which journalistically is unethical that reads "Egypt's media policed by the military and security apparatus continue to suggest that military option could stop the dam's completion. Opinion in Egyptian press and on social media boast of the size of the nation's military and its ability to project force upstream, while they amplify the national security threat posed by the GERD".

Using cartoon as a tool of communication the Egyptian media represent the GERD negotiation in the following way.

Figure 3: Egyptian representation of the GERD negotiations

5.2. Hydro-journalism in Ethiopia

The Ethiopian media outlets worked fairly in regard to the hydropolitics of the Nile and the GERD. In contrast to the Egyptian media, the Ethiopian media have been communicating news stories to reflect the truth on the ground in a positively balanced way minimally one can say. The Ethiopian media positively disseminated the GERD negotiation. In 2015 the three riparians met in Khartoum and signed an accord. The picture herein below shows a cooperative hydro-diplomacy after the accord was signed.

Figure 4: Ethiopian representation of the GERD negotiation

The Ethiopian print medium discuss that Egypt is the major riparian which nipples the Nile water and pictorially represented as follows. The picture communicates that Ethiopia is denied water right to sustain as a nation and Sudan benefits a little from the water.

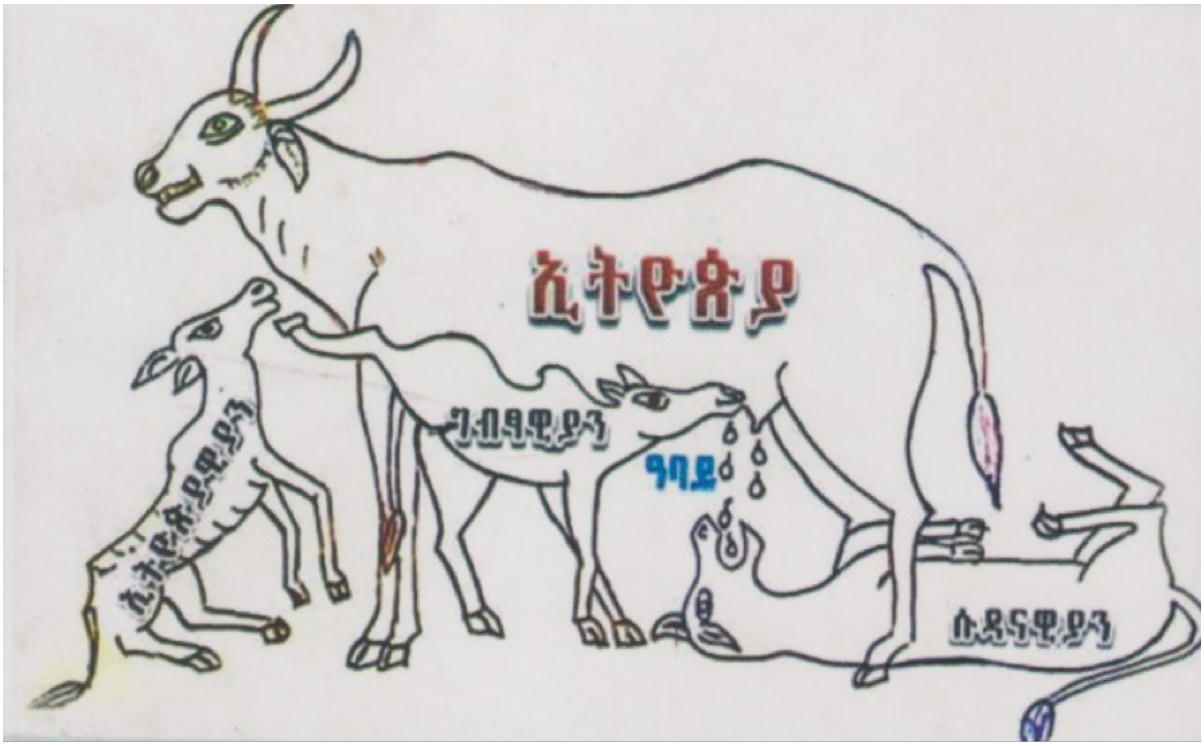

Figure 5: Ethiopian representation of the Nile waters

5.3. Ethiopian media responsibilities

All media outlets have responsibilities to promote the hydro-diplomacy of the Nile water negotiations since media have immense power to influence the negotiating parties through persuasive media representation of hydropolitics of the basin.

Media are instrumental in contributing for peace and security in river basins. For domestic audience communicating in Amharic and other languages may suffice but it is important to work with different languages to gain international support also. Issue oriented media news is not much beneficial. Hence, the journalists have dual responsibilities to work strongly by setting agenda, conducting research, giving prior attention to major issues, consistently hammering and challenging with substantial facts the hyperbole of the Egyptian media.

Last but not least, the Ethiopian journalists have to adhere to the basic tenets of professionalism and maintain the lofty ideals of journalism. High standards of ethicality, free from emotionalism and sensationalism shall be a few but essential qualities journalists when communicating the hydropolitics and hydrodiplomacy of the Nile water.

6. Conclusion

The Nile River basin is hydropolitically contentious because of conflicting water interests of the upstream-downstream riparians. Egypt, which is the furthest downstream riparian, plays role of stumbling block, which is the major predicament for development of cooperative hydropolitics in the basin. Several efforts have been made to establish all-inclusive institution of water regime but the desired goal was not achieved of the wrong position of Egypt and Sudan. Sudan is a weaker game player in the Nile hydropolitics, however rigidly knitted with Egypt, an immediate neighbor and colonial master.

Egypt purposefully becomes hurdle in the Nile hydro-diplomacy with overt or covert objective of sustaining her obsolete status quo. No upstream riparian accepts the old colonial period treaties, unless a mad. If

Egypt continuous with similar behavior all upstream riparians would continue with their individual plans to develop their respective water resources, which is their sovereign rights that no force on earth can stop. This would lead to more crisisful situation in the basin.

The Egyptian media outlets disseminating fake news that mislead and misinform the international public would further complicate the hydropolitics of the basin. National water interests all riparians can be harvested not for conflict shade but from cooperative shade.

The Ethiopian media outlets in countering the hyperbole of the Egyptian media struggle to bring the truth of the hydropolitics of the basin to the light of the sun. When doing this they have to be free from any kind of sentimentalism and subjectivism as the profession demands. It is high time for Egypt to change the old software of hegemonism with the new software of cooperation. Ethiopia as a major contributor of water to the Nile she has to continue playing as a vanguard force of hydro-diplomatic negotiation in the Nile basin until the CFA would be signed and ratified by signatories to become a legal instrument and the establishment of a basin commission.

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HYDRO DIPLOMACY ON THE NILE: CHALLENGES AND PROSPECTS FOR COOPERATION

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Abstract

Hydro-diplomacy has become an important concept in scholarly as well as policy circles considering the urge to prevent violent conflicts over the use of freshwater sources. It is in this light this paper discusses the challenges and prospects for hydro diplomacy in the Nile Basin. The paper outlines a conceptual discussion on hydro diplomacy followed by the challenges and prospects of cooperation on the Nile. The challenges for cooperation on the Nile are clashing doctrines between upstream and downstream countries which is particularly worsened by the excessive claim of Egypt on maintaining its 'historical right' which it argues to be given through agreements that are either colonial or excluding upstream countries including Ethiopia. This has in-turn resulted in unilateral projects on the side of Ethiopia. On the positive side, there still remains hope for legal frameworks to manage the waters of the Nile harmoniously. Such an argument is supported by the economic justification for water which can materialize through a benefit sharing arrangement as well as virtual water. Moreover, initiatives such as the CFA, DoP and beyond are reflections of continuing efforts for cooperation which needs to be genuinely invested on by both upstream and downstream countries as cooperation is the most viable route to manage river basins considering the environmental, economic and strategic interests of basin countries.

Key terms: Hydro-diplomacy, cooperation, conflict, benefit sharing

1. Introduction

The Nile is the longest river in the world. It is shared by eleven riparian countries namely Ethiopia, Eritrea, Egypt, Sudan, South Sudan, Kenya, Uganda, Tanzania, Burundi, Rwanda and the Democratic Republic of Congo. Tvedt (2004) refers to the Nile as the most famous river that has been the subject of hundreds of poems and thousands of books, from Herodotus and Virgil and the travel notes of Islamic scholars and European novelists to the modern books about Nile geology, hydrology, dams and politics.

The Nile is an important source of livelihood in the riparian countries through which it flows. The river is also the subject of heated political debate between the upstream and downstream basin countries. Governments prepare plans for water development projects while they, along with regional and international bodies, continue to look for diplomatic and institutional mechanisms of soliciting cooperation and avoiding violent conflicts over the sharing of water from the Nile (Tvedt, 2004).

The fear of water war on the Nile is mainly based on statements of Egyptian leaders made at different instances. In June, 2013 the ex-president of Egypt- Mr. Mohammed Morsi- stated on national television that "If Egypt is the Nile's gift, then the Nile is a gift to Egypt…." He also said "The lives of the Egyptians are connected around it... as one great people. If it diminishes by one drop then our blood is the alternative." This speech was in response to Ethiopia's announcement of the construction of the Grand Ethiopian Renaissance Dam (GERD) which has renewed the discussion over sharing the Nile waters so far dominated by the Egyptian use. In 1988, the then Egyptian foreign Minister Boutros Boutros-Ghali predicted that the next war in the Middle East will be fought over the Nile waters. Moreover, Egypt has put the doctrine of "historical right" to its new constitution adopted in 2014 which was found to be offensive to upstream countries.

Despite such provoking acts by Egypt, upstream countries have been willing to take part in various diplomatic initiatives aiming at cooperatively managing the waters of the Nile. The establishment of the Nile Basin Initiative (NBI) and the ten years long negotiations which resulted in the Cooperative Framework Agreement (CFA) are some instances that can be raised. This paper deliberates upon the challenges and prospects for hydro-diplomacy in the Nile and responds to the following three questions.

What are the developments regarding hydro-diplomacy on the Nile?

What challenges remain to be resolved if upstream and downstream countries are to cooperate?

What are the prospects for cooperation on the Nile?

2. Conceptual Discussion

There are about three hundred surface water basins and there exist numerous diverging interests over their utilization. Freshwater sources such as river basins connect states and people. Such connections that are accompanied by multiple and at times conflicting interests require to be managed in order to avoid violent conflicts. Scholars such as Starr (1991) talked about the possibility for water war in the Middle East amidst scarcity of freshwater supply in the region. The likes of Tiwary (2006), Gleick (1993) and Dixon (1999) emphasize the eruption of violent conflicts over freshwater utilization in certain specified contexts.

On the other side of the argument, many spell out that states cannot afford to go to war or have any sort of violent conflicts over freshwater resources for various economic as well as political reasons. Wolf (1998) specifically provides five major justifications: (1) Historic (2) Strategic (3) Shared interest (4) Institutional resilience and (5) Economic argument. For him, there is no historical evidence to justify the existence of water wars. Moreover, states that are entangled within one basin share numerous interests that can be shred in technical sense which makes water wars too costly. Wolf argues that institutions that are established for river basin management are resilient, he gives the example of the Mekong committee which existed since 1957. Water wars are also ruled out by Wolf by the economic argument that water is cheaper than war and hence it is easier to buy water from elsewhere rather than wedge war.

The need to avoid violent conflicts over freshwater sources brought hydro-diplomacy to discussion in both the policy and scholarly circle. Hydro-diplomacy is defined differently by various works. Geneva Water Hub (2017) defines hydro-diplomacy as "[…] the use of water as a means for the primary objective of preventing or peacefully resolving (emerging) conflicts and facilitating cooperation and enhanced mutual benefits between different political entities". For the Hague Institute for Global Justice (2016) "water diplomacy includes all measures taken by state and non-state actors that can be undertaken to prevent or peacefully resolve (emerging) conflicts and facilitate cooperation related to water availability, allocation or use between and within states and public and private stakeholders" (The Hague Institute for Global Justice, 2016: 3). Keskinen et al (2021) understood that "water diplomacy is an emerging concept to address the political nature of trans-boundary cooperation and to link water with broader regional cooperation, geopolitics, and foreign policy concerns" (Keskinen et al, 2021:2).

Hydro-diplomacy is a concept based on the understanding that cooperation regarding the manner in which political actors make use of freshwater sources needs to be peaceful. Hence, the approach calls for analyzing specific cases with the objective of avoiding violent conflicts and promoting peaceful exchanges. Keskinen et al. (2021) identified five main aspects of hydro-diplomacy which should be studied. These are Political; Preventive; Integrative; Cooperative; and Technical. The political aspect views hydro-diplomacy as an inherently political interaction which takes place between actors with conflicting interests while the preventive aspect puts hydro-diplomacy as a mechanism aiming to prevent conflicts through mediation. The integrative aspect of hydro diplomacy emphasizes the multiple aspects of it cutting across science, policy, and practice. The cooperative aspect calls for the need to promote mutual cooperation and the idea of shared benefits in hydro diplomacy. Putting issues such as water availability, allocation and use, and the related monitoring, management, and knowledge production processes are therefore in the core of hydro diplomacy is also important.

This paper intends to utilize the five aspects of hydro diplomacy while analyzing the challenges for hydro diplomacy on the Nile along with the prospects for peace. The paper emphasizes more on the political aspects since it is viewed more from the aspect of hydro politics while the technical aspect serves as a background in some parts of the paper.

3. Challenges for hydro diplomacy on the Nile

There are a number of challenges to practice hydro diplomacy on the Nile. Many of the challenges revolve around the hydro-politics arena and have to do with the claims and counter-claims between upstream and downstream countries. Two clashing doctrines of absolute territorial sovereignty[1] and absolute territorial integrity[2] are a challenge to practice hydro diplomacy on the Nile. The doctrine of absolute territorial integrity is particularly supported by the Sudan and Egypt on the Nile with the aim of utilizing the water resources for their own needs only. Such a claim has served as a challenge to achieve cooperation on the waters of the Nile as it is a zero-sum game from the perspective of upstream countries such as Ethiopia.

Egypt, in its aim to control the upper hand in the utilization of Nile waters, started construction of hydraulic structures since the 19th century which were further expanded in the 20th century (Collins, 2002). The Aswan High Dam was constructed in the 1960s with a capacity of storing 169 BCM per year (Tvedt, 2006). Moreover, Egypt is also diverting the Nile water off its basin with the aim of creating a second Nile Valley. The Toshka project is expected to house more than three million inhabitants while increasing the county's arable land by 10% (Azhar, 2012).

1 Absolute territorial sovereignty holds that a state has a right to use the River water that flows within its borders without consideration of whether this use affects other states or not.

2 The doctrine of absolute territorial integrity also known as the theory of a natural flow of the river or a riparian rights of a river confirms that downstream states have the right to demand the entire flow of natural-quality waters from an upper co-basin state, but not the right to restrict or impede the natural flow of waters from its territory into that of a lower co-basin state.

In the aim to maintain the status quo whereby Egypt remains to utilize the lion's share of the Nile waters, the country quotes various colonial agreements as well as those upstream countries are not party to. One of such agreements is the 1929 Nile Waters Agreement which gave the veto power to Egypt over the construction of projects on the Nile. The other agreement which Egypt cites as the source of its historical right on the Nile is the popular 1959 agreement for the full utilization of the Nile waters that was concluded between Egypt and Sudan. As per the provisions of this agreement, Egypt obtained the right to utilize 55.5 BCM water from the Nile while the Sudan 18.5 BCM reserving 10 BCM for evaporation.

On the other hand, Ethiopia as an upstream country of the Nile and contributing to the 86% of the Nile waters stored at the Aswan High Dam, continues to resist such agreements that aim at snatching its right and ability to make use of the waters of the Nile. Towards that end, Ethiopia embarked on various master plan as well as feasibility studies of various water development projects while being able to implement some of these projects unilaterally as downstream countries, spearheaded by Egypt, refused to invest of joint projects. The government of Ethiopia came up with a Lake Tana project intending to construct an outlet to the main Abbay river and sell water to the British colonial power for its cotton plantation in Sudan or elsewhere in the basin as early as the 1930s (Waterbury, 2002). The country also conducted the Blue Nile master plan study for the first time in 1958. Moreover, Ethiopia constructed Fincha, Tana Beles and Alwero dams on the Nile Basin in the past. Ethiopia commenced the construction of the Grand Ethiopian Renaissance Dam (GERD), which is expected to be the largest dam at completion, in 2011.

The basin countries of the Nile lost a number of opportunities to achieve sustainable peace in their utilization of the water sources. These lost opportunities are cited as one of the drivers for Ethiopia to embark on unilateral projects. The Joint Multipurpose Project (JMP) which was designed by the Eastern Nile Technical Regional Office (ENTRO) is an example of lost opportunities for joint projects on the Nile. The JMP was a large-scale, long-term and multipurpose investment project. Its objective was to identify ideal outcomes of water resource management for all the three Eastern Nile sub-basins of Blue Nile, Atbara/Tekezze and Baro-Akobo/Sobat. The Eastern Nile Council of Ministers commissioned an independent study on 'Opportunities for cooperative water resources development on the Eastern Nile: Risks and rewards' by independent consultants Blackmore and Whittington in 2008. The JMP scoping study concluded that the Blue Nile provides the best opportunity for investment. These investments included water storage facilities with the capacity to produce large amount of hydropower, flood control structures, sediment management works, irrigation, and navigation. Following the study, no further action was taken because Egyptian authorities contested the study findings. Despite the efforts of Ethiopia and Sudan to bring Egypt on board, it failed in 2012 (Cascao and Nicol, 2016). In addition, the freezing of Egypt and Sudan's membership from the NBI was a major setback to succeed in having a cooperative framework to manage the waters of the Nile.

4. Prospects for Peace on the Nile

Though upstream and downstream countries of the Nile have not managed to have legal frameworks to manage the waters of the Nile harmoniously, the most feasible route for the future is cooperation. This is mainly taking into consideration economic, political and strategic issues into consideration. Yacob (2007) argues that Egypt is entirely focusing on accessing water from the Nile in the Aswan High Dam while overlooking environment in the basin. Environmental degradation in upstream countries poses threat on the quality and quantity of water reaching downstream countries. Hence, in the future upstream and downstream countries ought to work together in the effort towards a safe environment.

The economic justification for cooperation in the Nile lies in the possibility of benefit sharing rather than thinking of water sharing. The idea here is focusing on sharing of benefits from the river rather than the water itself. In this regard, it would benefit more to construct dams in Ethiopia because of lower evaporation rate. Moreover, Ethiopia holds huge potential for hydroelectric power production because of its topography. On

other hand, the Sudan is best suited for irrigation. It is said that thinking of such a benefit sharing approach may help to depoliticize the Nile waters. Another economic argument is the virtual water which calls for de-securitization of freshwater sources and dealing with scarcity by treating freshwater as a commodity that can be exchanged. It takes about 1000 L of water to produce 1 kg of bread and 15,000 L to produce 1 kg of beef (Allan, 1997; Yang & Zehnder, 2002). Wolf (1998) argues that the virtual is more efficient and politically strategic as war costs more than freshwater which is available in its virtual form as well.

The other hope for peace on the Nile is the continuing diplomatic discussions that are happening in the past as well as in the present. The basin countries of the Nile are relentlessly engaging in various initiatives aiming at achieving peace and cooperation in the basin including the CFA and DoP while acknowledging the fact that none of these have led to a comprehensive water management framework.

5. Conclusion

The argument made by Egypt in different instances emphasizing the Nile is its lifeline is outdated as the other basin countries would also benefit much from the river basin considering their need for food as well as energy which can be better addressed if they are able to utilize the water sources. Ethiopia, in specific, is pushing towards the utilization by embarking on dam projects- the prominent one being the Grand Ethiopian Renaissance Dam (GERD).

If potential open conflicts on the Nile are to be prevented, the basin countries should exert increased effort into the diplomatic efforts that are already happening. This is particularly important for downstream countries of Egypt and Sudan that have the repetition for freezing their membership to basin organizations and abandoning agreements which have been worked on for long years. The downstream countries insist on maintaining their historical rights which snatches the rights of upstream countries to utilize the Nile water. This has been and continue to be the bottleneck for the realization of any win-win hydro diplomatic solutions in the Nile Basin.

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THE FOUNDATIONS OF EGYPT'S NILE POLICY AND ETHIOPIAN 3-D COUNTER STRATEGY

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ABSTRACT

This study examines the ways through which ideology and hegemonic compliance producing mechanisms such as knowledge construction, sanctioned discourse and securitization were used in shaping the dominant beliefs in the Nile basin with the intent of maintaining the hegemonic status quo. In this context, it also investigates how thought control has shaped the cultural foundations and popular imagination of the Eastern Nile Basin as part of Egypt's Nile policy. Hence, the study adopts Gramscian approach as method to analyze the primary data collected through in-depth interview and archival materials from MoFA. Accordingly, the come up with the conviction that water-related mythologies, perceptions, imaginations of the respective societies have influenced contemporary riparian interactions. In addition, it outlines the 3-D counter strategy that Ethiopia needs to follow to change the structures of the Nile hegemony along with construction of the GERD project.

Keywords: Conceptual hegemony; Gramsci; GERD; Nile; Securitization

1. Introduction

Critical scholars such as Gramsci urged us to revisit the hegemonic past using counter-hegemonic perspective for the ability to define truth and meaning has been a product of power. The power elites impose its vision upon any target group through compliance producing processes. However, perceptions and position are everything in understanding hegemony. The importance of perception can be corroborated with the lamentation of Allison (1971:87 cited in Zeitoun and Warner, 2006:438) who stated that 'where you stand is where you sit.' Accordingly, those who are dissatisfied with the status quo complain whereas leading elements brand it as the justest order. Therefore, as Cox (1992: 438) stated, hegemony is supported by opinion-forming activities design for the interpretations of events consistent with the ruling power interest and eliminating the interpretations that are inconsistent with the Orthodoxy.

Likewise, Boggs (1984:160–164), purports that the Gramscian notion of hegemony encompasses a "whole range of values, attitudes, beliefs, cultural norms, and legal precepts" which needs to be deeply embedded in the fabric of social relations. These attitudes and beliefs are propagated and protected by parents, preachers, teachers, journalists, as well as popular musicians. Thus, these sections set the standard for common sense reality (Leas, 1985:572). In short, they engage in "manufacturing consent and legitimacy" in which ideas and beliefs are shaped, and hegemonic ideologies reproduced in the cultural life of the society using media, universities and religious institutions (Heywood 1994: 100-101).

The precepts of the hegemon induced to commons through mystifying the unequal power relation, justifying the legitimacy of numerous forms of sacrifices and deprivations, inducing fatalism and constricting mental horizons so that the intended ideology could shape the desire, the value, the expectation and the actions of the subordinates. Based on this justification, Gramsci unraveled the erroneousness of the ideology adhered by the mass at the general level. He argued that such a doctrine is historically proved to be regressive (Daniel, 2006). Thus, this perspective shade light for the emancipatory project by altering hydro mental status quo.

2. Conceptualization

According to the recent e-mail communication with Rebeca (2020)[3] , the brainchild of the notion of conceptual hegemony, Lukes's theory (2005; 1975) of the three dimensions or "faces" of power namely hard, bargaining, and ideational power is adopted in the analysis of the concept. There is hardly any agreed conceptualization or universally qualified theory on the understanding of power rather the concept is "elusive and essentially contested" (Evans and Newnham, 1998: 446).

In this case, power itself is conceptualized as the ability or capacity of an actor to influence the intended outcomes (Lukes 2007:59). While the first form of power goes to military and economic capability, the rest conform to Nye's notion of soft power (Nye, 2004: 1). Hard power is achieved through force/payment, where as soft power is an immaterial form of power that is based on persuasion or attraction (Zeitoun, et al. 2011: 161).

Accordingly, the first dimension, material power includes the physical tools that enable an actor to influence the surroundings, brute physical force for an individual or military capacity for a group, money, and technology. Wielding material power generally involves the threat or use of force as its frequently espoused from the Egyptian side in the Nile row. In international relations terms, this might also involve economic sanctions (Rebeca 2020).

On the other hand, the second dimension, bargaining power, revolves around the ability to control the "rules of the game" (Zeitoun and Warner 2006: 442). Through bargaining power, an actor "influences

3 Informant:N.1

the agenda" and what is considered in a relationship usually in negotiations. The president of a water user association, for instance, has a power over what the association does and does not consider at their meeting and the same act was manifested during the US brokered GERD deal. In bargaining power, the opponent's alternatives and position are crucial for it is used in occasions whereby the contender in a negotiation strip other options or prevent certain issues from the negotiation agenda.[4]

The third dimension of power, ideational power, exists in the realm of ideas and perceptions. It is believed to be the most difficult to concretely grasp, and counteract. It cuts through actions and agenda to consider basic ideas and assumptions about the world. This third dimension is the "capacity to create, uphold, and destroy narratives, perceptions, and knowledge." The ability to influence narratives is a strong position because narratives play a role in co-determining policy responses. It is thought to be the most effective form of power since its impact is often subtle, with those under its influence not necessarily aware of its presence. The work of Strange (1983:176) describes that "the strong implant their ideas, even their self-serving ideology, in the minds of the weak, so that the weak come to sincerely believe that the value judgements of the strong really are the universally right and true ones." This argument is further corroborated in his recent study (Strange,1994) whereby he developed the concept of "knowledge structure."

These three dimensions of power impact and are impacted by each other. Actors may hold equal levels of all three, two simultaneously, or only one at a time. Different forms of power are useful at different times and in different situations. It is the third that influences conceptual hydro hegemony. It is about "who gets to control what we think and know about water." The idea of the classic hydro cycle or virtual water are strong stories in the modern world. There are other ways of thinking about water, but these two concepts have hegemony over other narratives. It is this 'winning of the battle of stories' which is termed as conceptual hegemony. The following Figure summarizes the various conceptualization and the dynamics in the theorization of power and conceptual hegemony.

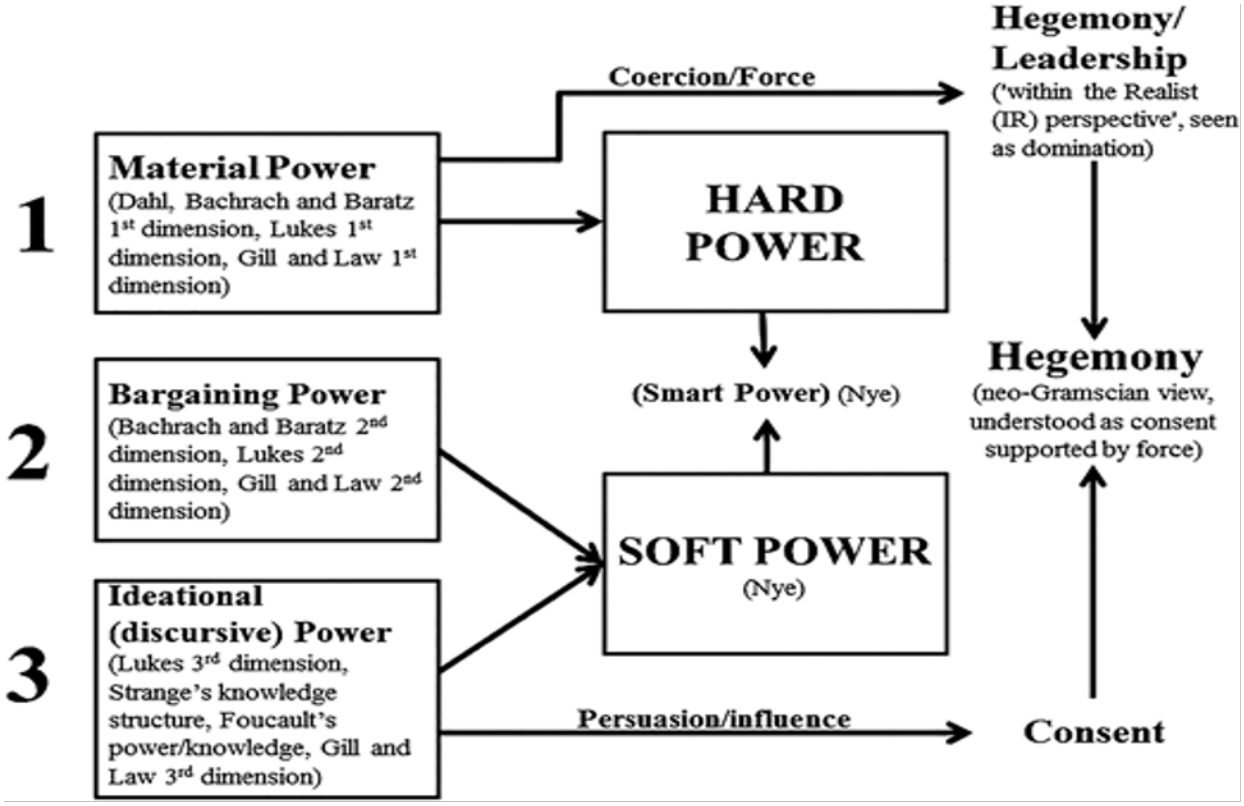

Figure 1: The three Forms of Power and Hegemony

Source: Menga, 2016:405

4 Informant:N2

Thus, knowledge construction is one of the hegemonic compliances producing mechanisms linked with the notion of conceptual hydro hegemony. In this regard, critical theorists argue that knowledge is always ideological (Steans et al. 2010:105-6) and emphasize how culture and ideology shape social order (Ibid., 2010: 107).

Accordingly, Cox (1981) knowledge or development of theory is always being for someone and some purpose denying the possibility of producing objective knowledge. Instead, he emphasizes reflexivity and emancipation as essential elements of critical engagement. Reflexivity implies that the concern of critical theory is to provide alternatives and solutions for human emancipation from oppressive forms of relationships (Ibid.,1981: 106) and advocates how the forces of the social and political system or the structure changes over time. Thus, here below follows how the knowledge about the Nile water itself and the debate in the policy circle was influenced with myths, popular imaginations and deliberate sanctions, distortions or securitizations.

3. Demythologizing Water Myths in the Eastern Nile Basin

Historical records showed that ancient Egyptians were worshipping the Nile as a god called Hapi (Beshir, 1984: 2 and 55). As part of the ritualization ceremony to the Nile, they composed rites. The hymn, which is believed to had been composed around 2100 B.C dedicated to the Nile shows the most profound religious feeling it evoked among the people of ancient Egypt

The hymn evokes self-pride mostly expressed in association with mightiest energy, creator of all gods. In this case extracting the indictors of the hydro hegemonic water society relation is important. As noted in the hymn, the adoration for the Nile is extraordinary homage that turns the river into a visible sacred being caring only for Egypt. Due to this hegemonic mythology embedded in the core culture, the Egyptians began to misconceive the Nile as the sole gift and sacred husband of Egypt alone while its intrinsically polygamous husband that had concluded legal marriage with eleven riparian states since time immemorial. The fervent of nationalism that gave Egypt the sense of invincibility in Nile row with the upper riparian states has its prints from the uncritical endorsement of such legends which is ingrained the social fabric for ages by political elites.

In accordance to the interpolation made by the author from the adoration of the Nile and the multitude of hymns, the most important fact which is conveyed in them is symbolic and ideational mighty of Egypt associated with the River. The adoration symbolizes the Nile as an inexhaustible creator of all good things, master of energy and life but docile to Egypt. Hence, Egyptians whose life is a gift of this symbolic hegemony cultivated the sense of superiority through self-association. However, the production, reproduction and continuity of this position were demanding self-empowerment. But it's important to understand that myth driven hegemony and the asymmetric production-consumption relation has played a significant role in figuring out the contemporary popular perception towards the Nile water-sharing arrangements and the process of establishing an inclusive and efficient water governance regime.

Furthermore, the celebration of the arrival of the Nile floods, which was the sign of their hope, through burning of frankincense, human and animal sacrifice is indicated in the hymn (Ibid.1984). The critical analysis of the hymn highlights how moral standards were set, inequalities addressed, and justice was administered beyond inducing ultra-nationalism in the Egyptian psyche. Nile has the natural power of shaping the personality of individuals as its interwoven to the livelihood of a significant number of the population living on Valley. Lodwig's (1937), memories and encounters associated with the Nile River are powerful. He reported that ; "every time I have written the life of a man, there has hovered before my mind's eye the image, physical and spiritual, of a river, but only once have I been held in the river the image of man (sic) and his fate"(Lodwig, 1937:3). Similarly, Beshir (1984:2) from Sudan wrote the following; "I was born and brought up a few yards far from its banks. My early childhood was interwoven with the Nile. Whenever I go back to my birthplace, the fascination reasserts itself … indeed, many who have not had the same background felt the same when they encountered the Nile."

Not only in the distance past, but also in the 21st century, the might Nile still has the potential of evoking such feelings. During the fieldwork in Cairo (in November 2019), which was the climax for GERD diplomacy, the researcher had identified similar emotional overtures about the Nile. One of the informants stated in shores of the Nile that; "you see, we are the mightiest people in Africa for we drink fresh water from the mighty river."[5] Such convictions are imprinted in the World views of the majority of Egyptians, I came in touch with. It is also reflected in the literary works and fine arts. It is this historical precedent that produced unfounded claims in the contemporary Nile row.

Recently, Egyptian journalist working in Aljazeera commented as follows; "we Egyptians adore our river and Herodotus's words Egypt is the gift of the Nile[which is] found carved inside the heart and soul of each of us when we speak or think of the Nile, it's our river as an Egyptian river, we forget whether consciously or unconsciously that it reaches us only after passing through many other countries." This remark rightly explained the ingrained mindset and the commonsense in Egypt shaped by internally invented and externally imposed myths.

As it is indicated in the last five lines of the hymn, presented earlier for illustration, so is the practice of the human sacrificing of a 'virgin girl dressed in bridal garments which is similar to the biblical narrative' (Bashir 1984:2). Besides, the names of sacrificial animals and burning of frankincense were vividly documented in the adoration dedicated to the Nile, such as:

> Offerings are made up to thee,
> Oxen are immolated to thee,
> Great festivals are instituted thee,
> Birds are sacrificed to thee,
> Gazelles are taken for thee in the mountain,
> Pure flames are prepared for thee,
> Sacrifice is made to every god as is made for the Nile (Hanscom et al. 1967:28-29).

Similar practices are found in the countries of the Eastern Nile Basin (Beshire, 1984:3). Thus, Ra was a personified deity of the Nile. In Sudan and Ethiopia, this stream was revered as a god. Till today, some sections of the society living in the basin provide sacrifices and prayers to the Nile. For instance, in Ethiopia, Abay inspires the comingling of reverence and fear. Many people held pilgrims to the mountain spring at the source of Blue Nile for healing. In Sudan, it was connected with beautiful huri and ginn devils (Beshire, 1984:3). In short, the Nile is "not only a reality of geography and water but an arena of multiple human concepts, myths and discourses; space of intercultural dialogue of the interaction of mutual recognition and denial, assimilation and rejection" (Erlich and Gershoni, 2000). Thus, here below is a depiction of the common myths present in Egyptian writings and oral traditions on the Nile.

3.1. The Triune Myth

The relics of ancient Egyptians indicate that they had creation myth (Browder,1998:189) and literal explanations that attribute the origin of the world to watery chaos. According to this myth, the sun is described as a god having risen from this chaos. They saw their sun-god rising and disappearing under the world each day which they perceived the process as its daily birth and death respectively (Shavit, 2000:80). The most celebrated myth pertaining to the Egyptian cosmogony is related to the resurrection of the man-god Osiris (Shavit, 2000:80). Hence, the myth of Ausar or Osiris is the earliest recorded story of God-man who was symbolically crucified and resurrected from death (Browder,1998:74)
Osiris developed into one of Egypt's most important god following the death of a pharaoh named after him by 2400 BC. The legend attributes Osiris to the spirit of the deceased pharaoh who had been murdered by

5 Informant: N.2

a jealous brother called Seth. The myth narrates that Seth has sliced Osiris' body into parts and Osiris' wife, Isis, collected the pieces of her husband's body for a proper burial. This myth attributes the origin of the Nile from the tears of Isis, the goddess of the earth when she mourned the death of her husband murdered by his brother (Beshire, 1984:2). They also believed that Osiris made the annual flooding of the Nile (Ibid. 1984). His evil brother Seth became a god of sterility whom the Egyptians associated with the sandy, barren desert East and West of the Nile (Ibid.1984). The sound and light engrave at the temple of Philae which is a revered cornerstone of the Ptolemaic dynasty is revealing testimony of such a myth. (Raouf, 2000:1).

3.2. Geographic Myth

There is a myth that took the South to North flow of the Nile as a natural watercourse of all rivers (Shavit, 2000:80). The flow of the Nile from the Ethiopian high mountains to the South, across the desert, to the Mediterranean, has resulted in this geographic myth. The annual flooding of the Nile occasionally was said to be the arrival of Hapi thought to live at the supposed source of the Nile near Aswan. Therefore, for the Egyptian mind versed with these myths, water equity or benefit-sharing were nullified (Tesfaye, 2001:83).

3.3. The Nile's Flow Myth

The flow statistics for the Nile was imprecise due to technical and mathematical manipulations. The average annual flow for about a century is taken to be 84BM (Wassara 2006:55. Such manipulation of the quantity of the Nile's flow explains the ideational power of Egypt in gauging the Nile flow.

Table 3:1: Comparison of the annual flow of the Nile with other African Rivers

Name	Length	Drainage km2	Annual Drainage BM2
Congo	4700	4,104000	1400
Nile	6825	3,100,000	84
Niger	4100	1890,000	180

Source: Wassara, 2006:130

According to table 3.1, the discharge of the river system is not proportional to the length, or the catchment area of the drainage basin. Thus, the Nile, despite its length and drainage area, its yield is assumed to be abysmal, which is usually attributed to the progressive precipitation decrement as it crosses different climatic regions without basing on scientific measurements on its flow.

Due to the manipulation of its discharge, as it could be learnt from deceptive treaty regimes, scholars begin to assume that the quantity of freshwater carried by the Nile as insignificant compared to other Africa rivers (Wassara, 2006). Recently, scholars such as Cascao (2008), disputed 84 BMC figure of the Nile total discharge but failed to produce a reliable figure.

3.4. The Diversion Narratives

Egyptians were anxious about the blockade of the river by Ethiopian leaders as indicated in the exchanges of the long, multifaceted relationship. This fear emanates from Ethiopian emperors' claim as defenders of Christian minorities in Egypt and their usual reliance on the river as a source of bargaining gizmo. Thus, Egypt was suspicious of progressive leaders such as Atse Lalibela (Bairu, 2000:160), and it was against the legitimacy of the Zagwe dynasty since its inception. Their fear about diverting the river rooted in this antipathy and the eventual increment of his glory. However, the Blue Nile was out of the reaches of the Zagwe Kingdom. It was initially incorporated and Christianized during the reign of Atse Amdetsion (Paul, 2000: 41, Bairu, 2000:160).

The emperors of the Solomonic dynasty, especially Dawit II, Yéshaq and Zeryacob went on asserting Ethiopia's control of the river as a tool in their intercontinental relations (Pankhurst, 2000:25-29). They also worked to cement this concept of mastering the Nile in religious terms, identifying the Abay with the Biblical Gion. Following the end of the Zagwe rule and the accession of Yukuno Amlak to power in 1270, Egypt has refused to send Bishop backing Sultanate of Yifat (Paul, 2000).

Generally, this section on the mythologies surrounding the Blue Nile explains why and how Egyptian hydro hegemony is crafted and exercised using ancient and present-day mythologies which became popular commonsense. This myth construction feeds into the foundations of hydro hegemony. Therefore, the relationship between power and knowledge presents itself in the academic elites' discourses which reproduced ingrained thought patterns encoded in the popular imagination. Since the dawn of history myths have played a powerful role in the formation of norms, institutions and shapes perceptions (Browder,1998:21). Thus, challenging the ingrained belief embedded in one's own personality meant "incarceration, resurrection from mental death."

3.5. De-Africanization of the Exploration of the Nile

This section explains how the exploration of the sources of the Nile has become an instrument of Nile hegemony by alienating the people in the basin from the resource, i.e. de-Africanizing the discovery of the sources of the Nile. Although the so-called discoverers were guided to the sources of the Nile by locals, the Africans' contributions to the discovery, first as the original inhabitants and second as having lived on and encountered the Nile, were never recognized. The role of the Africans in the discovery of the source of the Nile is not acknowledged in geographic myths, which consider Egypt as the source of the Nile. The omission of the African contribution to the discovery of the Nile can be considered one of the mechanisms used for ensuring conceptual hydro hegemony.

Before the onset of the great geographical discoveries in the 15th century, Europeans knew little or nothing about Africa. Thus, in the days before satellites were thrown up into the sky loaded with cameras and transmitter, Africa's interior was impenetrable. Thus, mere mentioning of the word Africa has been evoking images of the jungles and half naked cannibals (Browder, 1998:27). Therefore, they coined Africa as 'darker continent' whose peoples are represented with strange creatures and hydra-headed-monsters (Conard, 1996). However, beginning from the 15th century onwards different geographers, adventurers and missionaries begin to penetrate to the heartland of Africa. Still, as mentioned by Tvedt (2000), for many centuries, they were not capable of finding the invincible mysteries of the Nile.

> [t]he Nile has intrigued people, historians and poets since the days of Cheops up to the present day and will continue to be at the heart of the regional economy, politics and culture in the decades and centuries ahead. This most famous of all famous rivers has been described in the ancient stories of Herodotus and the travel notes of Arab scholars and European explorers, and in the many modern books about (its) geology .... hydrology, dams and politics (Tvedt, 2000: viii)

The River Nile has eluded humankind for centuries and inspired philosophers, geographers, historians and politicians. It defied of unveiling its mysteries for centuries for all explorers and adventurers who set out to discover the secret of its source and course (Bahru 2002:2). It has been "the Mount Everest of Rivers (Blashford et al. 1970; Oestigaard and Firew, 2014). The quest to find its source consumed early explorers from the ancient Egyptians to Napoleon (Riehl 1979) to the legendary Richard Burton (Baker,1944) and Livingstone (Ibid.,1944). Many explorers who had attempted to navigate this mighty river died or simply disappeared (Ibid.,1944: 47).

According to Burstien (1976), many of the Greek great thinkers were also lamented imaginatively about the origin of the Nile. Some attributed its birth or descent to particular divine intervention as part of the

creation of the cosmos (Ibid.). Such a belief is also reflected in the 4th century BC report of Herodotus about Lower Egypt (Daniel, 1999:141) and his 460 B.C hypothesis about the origin of the Nile. As witnessed in his narrative which states; as "the river rises of itself, water the fields, and then sinks back again; thereupon each man sows his field and waits for the harvest", (Daniel, 1999: 143), he failed in the trap of humanizing and divinizing it. He contended that the souls and flesh of the Egyptians are created from the 'water and alluvial' of the Nile. The annual flooding of the Nile, is further, attributed to snow melting (Ibid. 1999).

Eratosthenes described the source of the Nile much more accurately, separating the White and Blue Nile (Levtzion, 2000:69). He described the source of the Blue Nile as a lake fed by summer rains better than the wrong conclusions made by the highly referred Herodotus (Levtzion, 2000:58). Aeschylus also talked about Egypt as a country nurtured by the snows in 500 BC. Other theorists that deal about the source of the Nile suggested its locations in Libya (Ibid., 2000) confusing it with the Niger River in West Africa. Such confusion indicates the flaws of geographic expression and cartographic interpretation and how it has continued to haunt the riparian dialogues. Hence, the multitudes of expeditions from the Greco-Roman ended with classical Hellenistic and Roman representations of the river as a male sun-god, Ra which was a personified deity of the Nile (Yamia, 1994:156, in Bismans 1994).

The temple of Philae is essential testimony for such representation. The sound and light depiction curved on it, symbolizes a dialogue between Isisand the Nile where by Isis provide lamentation to the Nile saying for it as 'Father of life, rendered the earth around its banks his subsiding waters' and promising overflows so that Egypt would prosper (Ebeid, 2010:1). The Nile has made life possible for millions of people and shaped their thinking and cultural land escape by filling all forms of life with symbolism as it is vividly depicted in the hymn, as mentioned earlier.

Ptolemy, the Roman astronomer and geographer who resided in Alexandria in the second century AD (Hamm, 2011; Levtzion,2000:72-73), prepared a remarkable map of the Nile basin showing the three lakes (Tana, Victoria and Albert). He traced the main source of the White Nile to the snowcapped mountains of the Ruwenzori Range, which was then mystified as to the mountain of the Moon (Howell and Allan, 1990:15 cited in, Ashiber,1998: 27). Therefore, a blend of ancient astronomic and geographic knowledge signals the preeminence of the African astronomical knowledge. Accordingly, it designated the "Ruwenzori or Mountain of the Moon" as the source of the White Nile.

After him, ancient Arab Geographers adapted Ptolemy's theory of astronomical geography to find out the source of the Nile. Accordingly, Jabal al Qamar or Mountain of the Moon was postulated as its origin (Levtzion, 2000:71). The application of such astronomic formula was also witnessed in the works of Khuwarizmi, a representative of the revised Arabic geographic knowledge (Levtzion, 2000:71-72).

Therefore, the explorations of the sources of Nile have served as an engine for the development and blending of European, African and Arab's astronomical and geographic knowledge. But the astronomical calculations and the cartographic exercise of both European and Arabs couldn't serve as exact marker of the distinctive sources of the Nile rather remained as mythic.

Generally, though the earliest explorers pave the way for latter developments, their misdirected cartographic interpretation and intuitive reports gave way to the reign of commonsense and mythology. Despite such counterfeits of the early incomplete adventures, the quest for the search of the source of the Nile was not concluded, instead it ever reincarnated with new beginnings and momentum.

3.6. A New Phase of the Exploration of the Nile Basin

Europeans at large were ignorant about the origins, not origin, of the Nile before the 15th century. In this century, the exploration began with fresh energy aided with scientific tools. During the 15th and 16th centuries (following the intensification of travel to Ethiopia and East African lakes), Europeans became familiar with the routs to the Nile.

However, since 1937, thought as year for the first exploration of the source of the While Nile by Burkhart Waldecker and later with the coming of James Bruce to the headwater of Blue Nile. The primacy to the exploration of the source of the Nile shifted from the local people to these adventurers. Since then, these two travelers are usually mentioned as the primary discoverers of the sources of the Nile and the heartland of the dark content in much literature.

Africa was never dark for Africans who had been interacting for ages for good or worse. Its darkness was for the outsiders in lieu of African natives who pioneered in discovering all the hidden treasures of the Nile and their environment many centuries before the arrival of Europeans.

The hitherto conclusions which echoed the supremacy of Europeans in discovering Africa and its environment, especially the sources of the Nile negates even the physical presence of Africans in Africa. This prognosis is partly shaped by the ignorance about the primal discovery and adventure made by Africans in Africa.

Hence, the author contends that the original discoverers of the sources of the Nile were African farmers living in Ethiopian highlands and equatorial lakes region as they set out for the search of water for their livelihood. The former can be ascertained from the validity of the information they provided to Bruce who had simply concluded lake Tana as the source of the Blue Nile neglecting the local peasants' claim. The peasants who didn't have advanced scientific knowledge about hydrolysis defied his conclusion with confidence and argued that the real source of the Abay is Piccolo Abay (Moorhead, 1974:14), meaning little Abay.

Bruce and Waldecker can be regarded as the first non-African discoverers who had broken the established geographers' myths by reframing the popular perception about the sources of Nile. Thus, knowledge about the sources of the Nile was primarily documented, literarily disseminated to different parts of the world through them. Hence, though Africans took the championship of discovering the sources of the Nile, they could not disseminate their discoveries in literary works rather it was confined to a few sections of the society being communicated orally. The neglect of the role of the Africans in the discovery of the Nile, might have helped to raise an Africanist counterargument basing on the assumption of the equal role of African oral tradition as the Europeans literary achievements.

However, this cannot out-weight the supremacy of Europeans in the dissemination of the knowledge about the Nile River because Europeans made actual observations about African geographic reality coming out of their continent and disseminated the knowledge to the broader global audiences. However, this doesn't mean that every aspect of their literary report was immune from biases and exaggerations as it is witnessed in Bruce's travel account (1790). A dearth of swiftness constrained the African knowledge dissemination thought it is also criticized in terms of authenticity.

We can also explore the role of oral tradition in the dialogue between Bruce (1790) and the local peasants. The former was guided and directed towards Lake Tana by the local peasants rejected his designation of Lake Tana as the source of Blue Nile. Here we can establish a triumphant Africanist argument. The oral narratives of the Africans outshined Bruce conclusion (1874) due to the following reasons: Primarily, for the simple reason that there are many small streams which empty into the lake.

Thus, either all of them or one of them, Gilgil Abay, needs to be its source. Secondly, geological studies account the age of Lake Tana beginning from the fluvial period. Therefore, the lake cannot be the epicenter of the hydrolysis process rather itself fetches water from other sources but hydrologists and water engineers often incorrectly cite Lake Tana as the source of Abay (Bruce,1790). From this, we can conclude that the African oral narratives about the source of Blue Nile were much authentic than Bruce's literary report, which was influenced by the African oral sources.

Finally, the general process of the intensification of explorations since 15th century has served as the early globalization of the continent because it was the aspiration to unearth the Nile secrets added with the legend of Priest John that spur the foreign relation of Africa, particularly with Europe. But the movement was one-way because the curiosity of making adventure to be familiarized with far away people was weak from the illiterate African side.

3.7. Intellectuals and Water Discourses in the Nile Basin

This subtopic deals with the essential aspects of conceptual hydro hegemony. According to Gramsci, advancing the society towards a particular cultural and moral level, often fitting to the needs of the productive forces is one of the most critical functions of the state. It is this function which Gramsci called the "educative project" executed through both public and private channels. Hence, in this logic hegemony implies the "use of the educative pressure" for obtaining consent by turning necessity and coercion into freedom (educated freedom). Hence, applying the Gramscian view about intellectuals, this subsection elucidates the role of education and intellectuals in reinforcing and countering the conceptual hydro hegemony in the Eastern Nile Basin. It highlights how knowledge was constructed for advocating some of the principles that served the hegemonic claims.

As it is vividly indicated in the Gramscian notion of hegemony, political regimes do not revert to force if they lack cultural hegemony. In this regard, Gramsci analyzed the way the education system disciplines learners and society by internalizing certain norms. According to Paulos (2005:79), education is a conveyer belt of human values, skills, ideas, and an integral aspect in the reproduction of society. He further elucidates that the conflicts that germinate and the solutions find their way in education. Thus, understanding how Ethiopia's educational system served for the perpetuation of the Nile hegemony both as conniver belt of the normative foundation and in subordinating the bargaining capacity due to critical lack of water expert.

As backdrop, it's essential to highlight the indigenous educational practice before its abrupt discontinuities. In Ethiopia, indigenous education is credited for training state functionaries, minting coins, carving Obelisks, inventing writing systems, food processing, terracing, iron-smelting, tanning, weaving and pottery (Belay, 1992:32). However, due religious affinity, there was earlier infusion from Egyptian ideals import by the Bishops and through the aggressive translation of its Arabic texts.

Thought the system was not bereft of science as in the usual discourse, Ethiopia had imported Western education with total rejection of its past. The historical precedents which lead to towards the complete departure were the influence of mission and foreign schools, king advisors, Italian occupation in the 1930s and drive for modernity (Wuhibegezer, 2013). Missionaries (Bahru, 2002:23) were aware of the role of modern education for proselytization, and hence, they were active in establishing schools and sending youngsters abroad. Furthermore, increased foreign contact since the reign of Tewodros II had also resulted in overseas study of young Ethiopians (Pankhurst, 1968:671). The process of modernization under the auspice of missionaries was demanding dismissal of any traditional commitment and disclaiming the indigenous culture before conversion.

The second has to do with the influence of the kings' advisors. His British Advisor, John Bell influenced emperor Tewodros II, the first king with the concept of modernizing the country. Similarly, Menelik in the post-Adwa period showed significant concern for the expansion of Western education by side-lining traditional schools due to his Catholic advisors and as Ernes pressured Haile Selassie to adopt Western schools (Tekeste, 1990). The third factor goes to Italian occupation (Pankhurst 1972:370; Tekeste 1990) that had disrupted Ethiopia's educational system by exterminating thousands of educated Ethiopians who had been waited for institutional transformation and introducing colonial schooling.

In response to the modernity drive Menelik II introduced Western education, but immediately he faced

the opposition of the Church the nobility. However, he overcame it through a compromise of importing teachers from Egypt. Accordingly, in 1906 ten Copts arrived in Ethiopia and sooner deployed at Addis Ababa, Harar, Ankober and Dessie under the directorship of Hanna Salibey (Pankhurst, 1968:676).

Thought the government had imported staffs from Egypt to help build up formal education, these expatriates did not embody the indigenous Ethiopian cultural contexts, values and aspirations. As a result, the curriculum and policies they implemented were detached from the contextual reality of the majority population of the country. It is this historical encounter which provides the opportunity influencing the educational system of Ethiopia under Egypt. During this time, there was deliberate neglect and discouraging measures against traditional schools. Many of them were closed on the guise of branding them as an enemy of modernity.

Therefore, knowledge production and reproduction have played a significant role in figuring out the contemporary popular perception of the Nile water-sharing arrangements. It is because ideas reflect the context in which they emerge and the interest of their producers. Even in the ancient times cultivating the intellect was acknowledged to pose a threat to the established institutions because education believed to entail distancing from tradition and the possibility of a sustained challenge to the prevailing conventions and norms.

The acquisition of knowledge is considered a threat to the status quo. The recurrent efforts of the Church and state to censor and suppress human knowledge ended with the dynamic of liberation and subversion, which are irrevocably appended to the concept of knowledge. However, this had not happened in the discursive struggle in the Nile as it is discussed here below.

3.7.1. Discursive Intellectuals

Gramsci gave much emphasis to the role of intellectuals in society. He stated that "all men are intellectuals, but not all men have the social function of intellectuals." Gramsci's categorization of "intellectuals" as the "organizers of culture and functionaries with "technical" or "directive" capacities falls into "vertical and horizontal dimensions" (Gramsci 1971; Femia 1987:38-39). In the vertical dimension, we find the organizers of society whereas he classifies the horizontal dimension into traditional intelligentsia and organic intellectuals. Traditional intellectuals are those intellectuals "linked to tradition and the economic structure of their particular society."

They regard themselves as "having no basis in any social class and adhering to no particular class or political discourse." Organic intellectuals, on the other hand, are more directly related to the economic structure of their society as "every social group creates its organic intellectual." In this sense, the intellectual is not only the producer of ideology but active in its proliferation. Thus, Gramsci calls for an objective study of the 'ideological superstructure' similar to the base. For Gramsci (1971), the concept of 'ideology' was distinctive and far more developed than his predecessors and contemporaries, because he was able to overcome both "epiphenomenalism and class reductionism."

'Ideological epiphenomenalism' is the claim that the ideological superstructure is determined mechanically by the economic infrastructure, and played no role in the economic life of society or revolutionary change. The ideological formation is also presumed to be dependent on the base, and social revolution is attributed to economic contradictions grounded in the mode of production precisely contradictions of the relations of production and forces of production.

Gramsci's (1971) conception of ideology overcame epiphenomenalism by describing ideology as 'a terrain of practices, principles, and dogmas having a material and institutional nature constituting individual subjects.' This conception of ideology and revolution was often combined with a class reductionist interpretation which argued that ideologies necessarily had a class character. He addressed class reductionism by asserting that classes in the infrastructure were not duplicated in the superstructure through exclusive ideological lines. Instead, the synthesis of the various ideological elements by the organic intellectuals through an "articulating principle" produces 'organic ideology' (Gramsci 1971).

Therefore, this subsection is dedicated to the discussion about the role of intellectuals in producing and reinforcing hegemonic compliance producing mechanism of knowledge production, securitization and sanctioned discourse. The production, reproduction and legitimization of power rested on discursive perpetuation through sanctioning knowledge production, discourses and strategic securitization (Grandi, 2016:169; Cascao, 2009).

Sanctioned discourse denotes the prevailing dominant opinion and views legitimized by the discursive and political elite. It represents "what may be said, who may say it and how it may be interpreted" leading to the creation of a dominant belief system or paradigm (Turton 2000; Turton and Meissner 2000). Furlong (2006:13) elaborates sanctioned discourse as the creation of common sense. This dominating political and ideological force results from a broader geopolitical order in which the action or interest of a hegemon may not be required at all or where issues have achieved a particular international discursive hegemony.

It also embodies the institutionalization of specific methods and ways of viewing the world. The term was first coined by Tripp (1997) and later advanced in the works of Allan. Turton (2001) described sanctioned discourse as a form of 'hydro political ideology.' Foucault (1996) has distinguished between coercive power which usually rests with the state through the military forces and 'discursive' power similar to the Gramsian (1971:80), notion of force and consent. While the former refers to the use of force, the latter refers to the conflict of interests which intensifies conflicts or produce consensus.

The dominant knowledge or view in society is authoritative not because it represents a 'higher level of knowledge' but because it is formulated from a social position that enjoys a strong economic, social and cultural power position in the social hierarchy. It is somewhat difficult, almost impossible to put forth ideas that run "contrary to the sanctioned discourse" in a given society and it is also similarly hard to try to challenge and change 'the ruling scientific paradigm' (Bourdieu,1986).

Jagerskog (2002) focuses on analyzing how sanctioned national discourses determine water policy and affect foreign policy decision making on water. He identified the, actors and structures comprising local features such as national ideology, socio-economic and security situation, social attributes, strong interests' groups along with the international structural component that including international power relationships, international water law, world opinion, and donors' affect.

Thus, the need for governments to be in line with their respective "domestic discourse" in their pursuit of international policies is critical for understanding foreign policy. In the words of Stein (1988: 230) any analysis that ignores the 'context in which negotiations take place, the impact of cultural, institutional, political and psychological factors or processes of communication and choice are inadequate as explanations of negotiations.'

The analysis of how intellectuals shape water relation in Eastern Nile Basin is an infant. Tawfik (2019) has attempted to explore the perceptions of political elites in Egypt, Ethiopia and Sudan on the benefits and terms of cooperation and their assumptions as to who should set these terms and lead the cooperation process (Ibid.2019). However, the long annals of the hydro political history of the Basin are dominated by the water war discourse, which is now discredited as myth in spite of the frequent mentioning of the issue by Egyptian elites. Even following the inauguration of the GERD project pessimistic warnings about the outbreak of water war was dominating the press in Egypt.

The endangerment of the survival of Egyptians following presumed water stress and the securitization of the Nile issue is another preoccupation of the intellectuals. Securitization is a deliberate creation of speech as by securitizing actor over referent object for certain audience (Buzan et al. 1998). Thus, securitization of water is the process of transforming it into national security concern that legitimizes extraordinary measures. The same tactic was in place in the Nile basin for controlling public, expertise, funding agents and water institutions (Cascao,2009). Hence, the deliberate construction of narratives (sanctioning knowledge), and

aggressive move of silencing alternative views (securitizing) has been the widely used approach for building up hegemonic discursive position (Grandi 2016).

The cause for the securitization of the Nile water is domestic politics not water scarcity per see as in the common parlance. Underestimating the cumuli water potential reserved in its underground banks and which even believed to green the Sahara, critical water shortage is mentioned for mobilizing the mass whenever Ethiopia or upstream riparians questioned the unjust status quo. The most dominant securitizing actors are political elites and security officials who target national and international public as an audience. The securitization process is dominated by the state security apparatus because they are dominating the ownership of water in Egypt in tandem with some companies.

These actors aligning with state functionaries used many securitizing mechanisms such structural securitization (resource capture, dam construction, weaponization), institutional securitization (constitutionalizing, assigning security officials as diplomats, excluding none actors from decision making, and signing skewed treaties) and linguistic securitization (the use of framing and narratives for justifying military means, and portraying the GERD as a national treaty) in the Nile case in the recourse with Ethiopia. As it becomes widespread wisdom after Copenhagen school, treating an issue meant the referent, in this case, Nile water, as a security issue is a matter of political choice and continuous negotiation process between the securitizing actor who puts the issue in the agenda, and the audience, the legitimizing or delegitimizing agent.

Securitization excludes or at least marginalizes alternative approaches (unilateral nature) and legitimizes non-conventional extra ordinary measures (Grandi, 2016:170). Hence, it undermines the growth of sustainable solution and as well as democratic negotiations and dialogue. The sense of urgency and prioritization induces compliance from the public (Ibid. 2016:169). This again makes inter riparian water issue to be dictated by the nature of domestic elites.

It further contributes for the depoliticization of water diplomacy engagements through the closure of the political space or over emphasizing the security concerns (Gransi, 2916:168). The interstate capacity gap serves as an opportunity for sanctioning knowledge and discourse. For instance, Cascao (2009:145) identified that numbers, data, models and information concerning the Nile is sanctioned and alternative figures are sidelined. The acceptance of the yearly annual flow of the Nile to be 84 BM3 in the last half century is case in point that confirms this assertion. In reaction to Egypt's offensive nationalism, strategic securitization, and driven by internal challenges, Ethiopia has also referred the GERD project as national pride, flagship project, marker of the renaissance, life line and the second Adwa.[6]

Zerihun argued the issue of Abay is life line to Ethiopia. He critiqued the anomalous approach that portrayed GERD simply as right of development from Ethiopian side while its strategically securitized in Egypt. Selish has also reinforced his argument indicating the vulnerabilities of Ethiopia in terms of energy, food and water insecurities. This position contradicts with those who are declaring of GERD as way for securing strategic domination through hydro strategic approach in the global power play. This marked that due to exalted use of 'strategic securitization' which viewed Nile water as 'matter of life and death,' Ethiopia started to use 'tactical securitization'[7] contending the Nile as an issue of 'national survival.'[8] This confirms the idea that powerful states have the means for securitizing water discourse using structural, institutional, and linguistic means. Moreover, colonial treaties, hydraulic infrastructures, and institutionalization processes were also meant for the securitization process. As it is indicated here above the apex of the securitization of the Nile water is expressed through constitutionalizing and institutionalizing it. Article 44 of the 2014 Egyptian constitution stipulates as follows;

6 Eng. Semegnew was the first to call GERD project as the second Adwa.

7 See the details about strategic and tactical secutization in Fischhendler 2013.

8 In recent televised interview with FANA (2020), Zerihun stated that GERD goes beyond development as national lifeline

> [The] state shall protect the River Nile, preserve Egypt's historic rights there to rationalize and maximize its use and refrain from wasting or polluting its water. The state shall also protect groundwater, adopt necessary means for ensuring water security, and support scientific research in that regard.[9]

This provision reinforced the historic right claim, and maximalist position. Thus, the constitutionalization of the Nile as a part of the securitization process is one of the basic determinants of the Nile diplomacy and specifically the GERD negotiation. Ones the Nile is constitutionalized and strategically securitized, any negotiation process or compromise is futile.

As rightly explained by Verhoeven (1998:3), the problem in Egypt is not associated with water scarcity per see instead its substantially embedded in water distribution. Thus, rising the political question who owns the water in Egypt is vital than scarcity induced national threat of survival. The inclusion of the Nile water issue in the Constitution is meant to serve the elite's organic interest. However, the counter conceptual hydro hegemonic process for these aggressive moves from Egypt in the upper basin is either weak or non-existing. The counter-hegemonic discourses are rather produced by international counter hegemony scholars such as Cascao (2008).

4. The Ethiopian 3-D Counter Strategy

4.1. Discursive Struggle

In reaction to Egypt's offensive nationalism, strategic securitization as well as the threat coming from US move of making water a national security agenda, Ethiopia needs to refer to the GERD project as a lifeline instead of claiming the right of development as it has been argued by Zerihun. He critiqued the anomalous approach that portrayed GERD simply as a right of development from the Ethiopian side while it's strategically securitized in Egypt. Selish has emphasized the vulnerabilities of Ethiopia in terms of energy, food and water insecurities. This position contradicts those who are declaring GERD as a means for securing strategic domination through a hydro strategic approach in the global power play. Due to exalted use of 'strategic securitization', which views Nile water as a 'matter of life and death,' Ethiopia started to use 'tactical securitization'[10] marking the Nile as an issue of 'national survival.'[11]

There is also need for creating alternative vision or agenda for water security discourse using leveraging (increasing influence and authority), and liberating (undermining the status quo's foundations) mechanisms. For instance, a two-track counter-narratives for changing the misperception about the GERD project, Ethiopia and the Nile where by the first track focusing on the Nile system and Ethiopia and the new discursive struggle sticking on the GERD is imperative.

This two-track discourse measure of correcting the old with the new needs a synergistic approach. In this regard, Ethiopian embassies and elites need to play nationalistic role in promoting and justifying the Nile cause to the global community. However, instead of challenging the unfounded and invented narratives of Egypt, the written, oral or mixed discourse about the Nile from Ethiopia is oftentimes serves as reinforcing. For instance, statesmen and mainstream media mistakenly argued that Ethiopia has started GERD following the onset of the Arab Spring. The other discourse which has preoccupied both academia and the public is the water war thesis. The water war thesis which has been echoed by statesmen, military generals, and UN secretary generals is now relegated to wise men statements with no pragmatic value in explaining water relations.

9 Constitution of Arabic Republic of Egypt (2014), unofficial translation from Arabic

10 See the details about strategic and tactical securitization in Fischhendler 2013.

11 In recent televised interview with FANA (2021), Zerihun stated that GERD goes beyond development as a national lifeline.

4.2. Diplomatic Calculus

According to Wriggens (1992), external intervention could be driven by direct economic or strategic interest; affiliations with one of the regional parties, global geo-political rivalry and competition or in response to a call for support to counter balance a dominating force. Accordingly, the motives of the regional and international actors' engagement in the basin are as diverse as their numbers. Hence, for addressing US led securitization of global water issues, identifying the interest of external actors operating the Nile and establishing pragmatic alliance is imperative.

The interference of external actors had significantly influenced the course of history in the basin. The basin is visible for the involvement of external actors as an extension of global and regional economic and military rivalry. The global powers such as the USA, Canada, Israel, China, Japan, Germany and Norway are active in the region. Thought Egypt continued to serve as basic strategic place for US, the upper Nile system is also becoming an alternative centre to the American strategists for military command and operations along with their interest of checking Chinese and France interests in Africa.

First, the contemporary US engagement in the basin is shaped by water[12] and strategic interest of establishing military base and undertaking joint operation arrangements through AFRI-COM (Tayie, 2017:625-28). As part of the Ethio-US relation, the involvement of the US in the Nile was visible during the Cold War period. At that time the US was seeking a strategic area in Eritrea. Therefore, it sided with Hailessellasie for containing the expansion of communism in the region. It was this engagement which has heralded the onset of the American Era in Ethiopia, which was later replaced with the British Era (Bahru, 2002).

The second most significant actor who has a binary impact in the basin is the China factor. The involvement of China in the basin is manifested in three dimensions. The first category includes official aid, commercial relation and investment. The second approach goes to the cultural means which is intended for creating positive image in the Afro-Chines relation. The third approach goes to personal diplomacy (Tayie, 2017). The involvement of China in the basin in one hand has drawn the intention of other international actors to engage in the continent and thereby produced international completion or what's dubbed as second imperialism.

The natural resource bestows has attracted the Chinese investment in hydro-electric power projects, notably in dam construction. This has also provided financial independence for the basin states from World Bank to build hydro-infrastructure projects regardless of the position of US or Egypt. The lending policy of the World Bank that demands 'no objection stance' by co-basin states for projects submitted by one of the riparian countries which is still intact was a great bottleneck.

The Bank's criteria for financing a hydraulic project that based on riparins' consent and associated preconditions has serve as veto power for downstream countries mainly Egypt over external financial sources for upstream water projects. Beyond financial support, Chinese construction companies such as Sino hydro, the world's leading dam builder and China International Water and Electricity Corporation and engineers are also directly involved in the construction of hydraulic infrastructures in the basin (Casaco, 2009:260). Hence, the rise of China and Southern multilateralism as an alternative infrastructure financer (Butterfield, et.al., 2009) assisted for bypassing the stringent demands from the Britton Woods institutions. As it noted in the works of Verhoeven (2013), beginning from 2002 the basin has experienced an unprecedented new wave of hydraulic infrastructure construction with the financial and technical assistance from China.

This development is dubbed as an essential shift in the hydro politics of Nile in terms of access to external financial sources, technical skills and political backing for water projects (Cascao, 2009: 260). Thus, the

12 It is in 2012 that CIA has identified the Nile as one of the top priority concerns of US national security and external water policy concern.

engagement of China in the dam projects and the lending approach with financial assistance modality has provided Ethiopia the opportunity for escaping Egypt's hegemony over external water project financing because Egypt had haunted Ethiopian vision of becoming Africa's hydro energy hub using its geopolitical significance and diplomatic clout. Though Ethiopia and Sudan are major recipients of Chinese finance in Africa (Butterfield, 2009), the financial dependence on China has also brought about debt burden instead of radically transforming the unjust hydro political configuration in the basin.

Generally, one of the external drivers for securitization of the Nile and its elevation to national security issue by the US seems to be informed by its new containment strategy of Chinese involvement in the Nile water infrastructure development. Thus, Ethiopia needs to undertake a careful calculus in its foreign relations with China. The other most critical global actor which is believed to influence the Nile politics is Israel. Its involvement in the Nile affairs is believed to be informed by its water policy and national security strategy (Tayie, 2017:627). In fact, water was the foundation as well as the border security concern since the establishment of the state of Israel and the prevailing water poverty is considered as determinant of its involvement in the Nile. Accordingly, Israel follows a strategy of obtaining a share from the Nile water and simultaneous a move for containing Egypt and Middle East actors.

The desire for having a share from the Nile was reflected in the water quota strategy, Hertzle project (1903), Elisha Cali Project (1974) (Tayie, 2017: 628) and the Egypt's move to transfer the Nile through the Sinai desert. Here, it is paradoxical to follow containment policy against Egypt's influence while Egypt has shown readiness to transfer the water. Never the less the argument on the containment strategy against Egypt is advocated to justify the reason for Israeli's active engagement in the upper Nile basin as case in point (Ibid. 629).

However, critical examination of Israeli strategy of containing Egypt and the weaponization of water for its national security (water as strategic tool) is unfounded. Ethio-Israel convergence is also merely symbolic due to historical relations than to be shaped by the Nile politics for its easily accessible from Egypt than from Ethiopia mainly through virtual water. Hence, critical calculation and new response to the Middle East politics mainly to the Israel-Palestine issue could help Ethiopia for bridging the securitization of water by the US.

Thirdly, the Gulf States are also actively drawn into Basin and immensely engaged in the agricultural investments in Sudan and Ethiopia which is sometimes dubbed as land grabbing. UAE is supporting infrastructural development in Ethiopia and as well willing to broker a deal between Cairo and Addis in the Nile row. Moreover, Ethiopia has received substantial financial support from Saudi Arabia for stabilizing Ethiopian economy.

Qatar and Turkey have also established connections with Sudan and Ethiopia. The latter is building even naval base at Swakin in the Red Sea. While Qatar provides financial and diplomatic aid, Turkey is also major investor in Ethiopia (ICG, 2009:28). Therefore, these states have economic, strategic and diplomatic interest in the region. The investment from the Gulf States and Turkey has also kindled the hope for Sudan for stimulating its economy (ICG, 2009:19). In this regard, Saudi Arabia viewed Sudan as the backbone for ensuring its food security through agricultural investment. This is further facilitated due to the geographical proximity of Port Sudan to Jeddah for transporting goods and service between the two states (Ibid.2009). Saudi Arabia, Sudan's second largest trade partner next of China, dominates the production of water intensive animal forge from Alfalfa. This nutritious animal fodder has also a high demand in the Gulf region.

Furthermore, along with the large farms in Omdurman, tycoon al Rajihi, the Saudi company invested heavily on Alfalfa production. Amtar from UAE has also big farm in Northern Kordofan targeting the fattening of Calves. The Jordanian Bashayir farm is also producing thousands of tons of Alfalfa. Thus, the states from Middle East with an acute water scarcity are deliberately involving in water consuming forge

production that could give them the opportunity to exploit and export the Nile in the form of virtual water. Hence, their involvement in the production of 'Bersiem', the Sudanese equivalent to forage, consumes large swath of land and water contributing marginally to the local economy.

Likewise, Qatar and Turkey have started expanding their agricultural investment in Sudan (Ibid.2009:19). However, the involvement of the Gulf States is not purely motivated by food security concern or agricultural investment but also by security and political reasons (Ibid.2009). Thus, Sudan which has collaborated in the containment of Iran's expansion in the region and as well in backing the Saudi led coalition in Yemen by sending contingents has received substantial aid from Saudi Arabia (ICG, 2009:28). Therefore, the security motive and geopolitical rivalry is also the basic driver for the active engagement of these actors other than the food security concern. Therefore, Ethiopian diplomatic cards in countering US led securitization of water and thereof the Nile needs to take into account such configuration.

Italy, the Netherlands, Canada, Germany, Norway, Japan are also play major role in financing water projects, providing technological support, enhancing the institutional and professional capacity in the Basin. For instance, Italy before it falls on the trap of financial crisis and COVID 19 induced disaster, it was assisting the basin states in building water projects mainly through Water program for Africa (WPA) and promoting equitable and sustainable use of the Nile water resources (PENWR) together with FOA(Tayie, 2017:165 and 166). Canada also provides technological and financial aid to shared vision of NBI through CIDA and as well-established International consortium for Cooperation on the Nile (ICCON). Germany and European Union are the remaining principal external funders of NBI. The WB has reduced its direct participation but engages through Cooperation on International waters in Africa program (IGC, 2009:12).

Thus, the engagement of these actors could serve for importing external challenge in to the Nile case or it might export out the Nile issue for addressing complex external agenda. For example, importing the gulf crisis into the orbit of the Nile water politics would attract the crisis deep in to the continent. However, the external actors can also play constructive role by supporting the confidence building measures and necessary reforms or adjustments in reference to the improvement of inefficient water use and management systems (Egyptian water reform).

They can also encourage Ethiopia, Egypt and Sudan to approach the Nile dispute not as existential matter rather as an opportunity for establishing a resource sharing partnership. Furthermore, non-governmental international actors such as WB, European investment bank, EU, CIDA, etc. can smoothen the water relations by guaranteeing loans or financial aid for handling food security shocks.

The bilateral or trilateral connections with Gulf states mainly Saudi Arabia, UAE, Qatar and Turkey can be geared towards assisting to augment the agricultural productivity in the region and there by facilitating food security concerns. China, Japan, Germany, Italy, and Canada can use their diplomatic clout for positively influencing the Nile negotiation.

4.3. De- Securitization

The approach in the study of transboundary water has evolved from the classical water war approach to a more critical water interaction process. This implies that securitization of water which is rested on the notion of water scarcity is bereft of academic rigor and hence, good standing point for de-securitizing the securitization initiative. The Malthusian theory is espoused for justifying an existential threat which is in the making that emanates from a critical shortage of water. However, the water problem in Egypt is distributional than an absolute scarcity for it enjoys maximal abundance, and the securitization initiative is unfounded.

The neo-Malthusian position which argued on the direct link of population growth and natural resource scarcity that would lead towards violent environmental conflicts or water wars (Starr and Stoll 1988; Ohlsson1995) is now contested. Hence, how the dramatic increase in the use of water and the growing pressure by ever expanding population and climatic change and the predications about the outbreak of water war requires revisiting the academic nitty- gritty of the past. The debate about whether the increasing scarcity of shared water resources would generate violent conflict or cooperation was first dominated by 'water war' discourse. The assumption behind this viewpoint is that trans-boundary rivers are inherently conflict-inducing as they transcend state sovereignty perpetrated by increasing resource scarcity (Homer Dixon, 1999).

The idea of water war was frequently invoked by Egyptian statesmen and politicians (Shiva, 2002: 1). With this discourse in mind, some have concluded that 'the wars of the twenty-first century will be about water' (Shiva, 2002:1). This claim has been used frequently in explaining the Nile geopolitics. Informed by the water 'war thesis,' Gleick (2001) analyzed the role of water in conflicts by regarding it as a cause, weapon and target. Gleick (2009: 1) indicated that water conflict can be induced by complex non-water factors such as ideological, strategic and religious concerns. However, Gleick's view remains fundamentally shaped by water war theory, believing that water has been a trigger, weapon and target of conflict in the Middle East. The Peace Research Institute of Oslo (PRIO) multivariate qualitative analysis approach confines the discussion on different cooperation modalities. However, in all these examples the continuum approach, which places water conflict and water peace at the opposing poles of a linear line, serves as both a methodology and an analytical tool (Phillips, 2008) bifurcating water conflict and cooperation and elaborating them separately. On the other hand, Allouche (2005) explained the phenomena in terms of water nationalism and the lack of cooperation. His inquiry was based primarily on theories of nationalism and territory in political geography. He repudiated the notion that regarded water scarcity as the sacrosanct explanation of water conflicts by asserting the emergence of the modern nation as a fundamental factor (Gleick, 1993: 30).

However, Wolf (1998) has dismissed the neo-Malthusian notion of a water war. Guided by Oregon University's transboundary freshwater dispute database, Wolf (1998, 1999, 2001 a, b) has empirically analyzed the relationship between freshwater resources and conflict. The transboundary Fresh Water Dispute Database (TFDD) study was a historical survey of wars covering nearly 4500 years, and the findings indicated that, apart from one case, there has never been a war fought over water (Wolf, 1998: 5). This finding has heralded a 'paradigm shift' in water conflict studies (Phillips et al. 2006:25) and encouraged the conclusion that shared water resources are more likely to promote peace and cooperation (Wolf et al. 2003a).

Wolf's study was not only based on historical proofs, but it also suggested other factors, such as the notion of interdependence, availability of efficient institutions and consideration of strategic issues (Wolf 1999: 261). He concluded that states tend towards making mutual gains through cooperative management of shared interests over trans- boundary water resources instead of conflict (Wolf, 1999; Wolf, 2001a). This cooperation can be executed through joint funding of water infrastructures such as hydro dams in exchange for cheap energy or in joint pollution management projects to ensure the health of a river system (Wolf, 1999).

Furthermore, Wolf (1999) argued that the availability of water management institutions and agreements could also serve as deterrents. Wolf (1999) added a strategic point of view, the calculation of costs arising from the geographical positions, military capability, and environmental hazards that hostile engagement could cause on the health of the river system as additional constrain on the move towards water war. He also accounted for the nature of the regimes in the basin as the other determinate, grounded on liberal peace theory that asserts democracies will never fight each other (Salih, 1999). Ultimately, Wolf (1999: 262) concluded the impossibility of war due to water.

The optimism of the water peace argument and the proclamation that 'nations do not, and probably will not go to war over water' (Wolf's 1998: 9) underestimates the 'latent conflicts' (Wolf et.al. 2003). Nevertheless

(Wolf et al., 2003a) identified the determinative role of the institutional capacity and the rate of change in the Basin. He stated that 'conflict would rise as the rate of change within a basin exceeds the institutional capacity to absorb that change' (Wolf, 2001a: 10).

The most important matter that transcends the 'water war or the water peace' argument is the analysis of the role of power asymmetry in creating and sustaining 'latent water conflicts.' This view is echoed by Mirumachi and Allan (2007), Zeitoun, and Warner (2006) who warn against the optimism produced by Wolf (1998) by identifying many destructive but mostly silent water conflicts that lie between the much-feared water war and often-lauded water cooperation. Hence, the rigorous study of Wolf (1998) has dismissed the neo Malthusian notion of water war and his study has served as watershed for charting out optimistic history which took cooperation as an inevitable phenomenon in water relations (Ohlsson and Turton1999). Never the less the optimism is clouded by the identification of many destructive but largely silent water conflicts that lie between the much-feared water war and lauded water cooperation (Mirumachi and Allan, 2007; Zeitoun and Warner,2006).

Thus, a new approach named as framework of hydro hegemony was designed to investigate the silent conflicts by London water study group. This approach goes beyond the conflict- cooperation dichotomy pointing at the need for power analysis to understand asymmetric trans- boundary interactions between riparian countries whereby some of it used to understand the case in the Nile basin(Zeitoun and Warner, 2006; Zeitoun and Mirumachi, 2008; Cascão 2008; Cascão and Zeitoun, 2010a, 2010b; Zeitoun, Mirumachi and Warner, 2011; Zeitoun et al., 2014, 2016). However, these studies are again based on the traditional theories of international relations and the need for applying critical approach.

Transboundary water opportunity analysis is another framework which identifies development opportunities through attaining social and political agreement amongst the concerned riparians (Ibid, 2008). It outlines potential benefits and approaches for optimizing economic process, political stability and regional integration. It consists of a 'matrix with four key development opportunities including hydropower production and power trade, primary production using Green and Blue water resources, environmental and ecosystem services' (Phillips, 2008). However, this approach rested on the notion of development corridors for sharing benefits, yet it failed to show 'how riparian interests could converge' and specializes into areas of comparative efficiency.

Moreover, in the middle grounded critical hydro politics approaches such as the FHH and 'circle of hydro hegemony' place power and hegemony at the center of analysis. In more recent approaches these are replaced by the notion of water interactions. In this latter approach both conflict and cooperation coexist, evincing a web of interaction in varying intensities and scale. This historical development in the understanding of water interactions shows that securitizing of water is obsolete policy response. Hence, Ethiopia needs to mobilize upstream positioned global water powers whose national interest could face direct challenge following the universalization of the US initiative of counting water security as national security.

5. Conclusion

Generally, the examination of the foundation of the established water use arrangements indicated that a multitude of myth driven hegemony consolidated the asymmetric. The myths and conceptual hegemony associated with the nature of the river as inverted one or sacred, manipulation of the discharge level, perplexing the source/s heaven, Aswan, Tana, Gish, Ethiopian highlands or Equatorial lakes ended by creating a confusion in terms of ownership.

In the empiricist dichotomous world is divided into the realms of the empirical and non-empirical categories. The later comprising all that can be corroborated by the senses circumscribed as the 'legitimate sphere

of scientific investigation. The non-empirical category, generally, includes, for example, religion, myth, philosophy, and discourse. The primary category is believed to be tool for demystifying water myths which are rampant in the Basin as its discussed in the preceding sections. In this context, "demystification" is the falsification of erroneous views with the neutrality on the part of individual scientists whereby all prejudice, bias, prejudgment, expectation or value being purged out from the process, or implausible assumptions. It liberates from myths and provides the means for acquiring objective knowledge (Diderot et al. 1751:65).

What is central to the demystification process is the reinvestigation of the normative explanations. Demystification is important not only to shatter a weaken predispositions and water dogmatism but also in identifying the unifying principles that could lay the foundation for cooperative engagement in the water interaction. The other most important point indicated in this chapter is the notion of cultural hegemony or conceptual hegemony using the combination of ideas, and discursive practices to build and maintain power relations. The key intent and manifestation of 'cultural hegemony' in the basin is to reproduce the dominant position as the common-sense in water relations, which erodes the legitimacy of radical alternatives.

Generally, Ethiopian counter strategic needs to take into account the national, regional and international dimensions and implications of securing water and elevating it into national security concern.

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DROUGHT TRAJECTORIES IN THE BLUE NILE BASIN: A REVIEW AND META DATA ANALYSIS

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Abstract

Almost 95% of the agricultural area in the Upper Blue Nile Basin in Ethiopia depended exclusively on precipitation and about 85% Nile basin water originates from 6% of the basin area. Drought is one of the major weather related disasters which is persisting over months or years in the basin. Several studies indicated that Meteorological drought is the earliest event in the process of occurrence which is caused by a decline in precipitation leading to hydrological droughts in the Nile River. However, studies in the basin so much variable and in some cases contradictory in both spatial and temporal scales. This review paper presents the current understanding of meteorological droughts in the Blue Nile River basin under historic conditions, largely drawing on recent research outputs. The review illustrates some discrepancy among research outputs and tries to correlate the analysis results of various studies with historical drought occurrence in Ethiopia. The discrepancy is partially attributable to the various and differing climate and hydrological models included and the downscaling techniques applied. We pooled various meteorological drought studies in the Nile and upper blue Nile basin using standardized precipitation indices (SPI) at 1, 3, 12 months' time scale. We found that overall average meteorological drought percent years for average years of 42 years are about 40%. More exactly normal, medium, Sever and Extreme meteorological drought in the Nile basin recurs, respectively, once in 5, 13, 23 and 33 years. Historical drought and flood records in Ethiopia from 1920 to 2016 showed that about 77%, 26% and 3% of hazed was caused respectively by drought, flood and both. Generally, about 25% to 80% severe/extreme droughts found in the Blue Nile basins were also seen in drought records of Ethiopia in the past 50 years. Moreover, the drought occurred in the years 1978,1982, 1984, 1985, 1987, 2002, 2009 and 2015 were respectively captured by about 29%, 57%, 14%, 14%, 29%, 14% and 14% in the Blue Nile basin.

1. INTRODUCTION

Many researchers believe that drought is considered to be the most complex phenomenon but least understood of all natural hazards, affecting more people than any other hazard (Kebede et al., 2020, Elkollaly et al., 2018, Bayissa et al., 2015). Drought is one of the major weather-related disasters which has persisted over several years in Ethiopia. Drought has serious, environmental, social, and economic impacts, and accounts for about 33% of the global natural human damage (Wilhite, 2000). Unlike the effects of a flood which can be immediately seen and felt, drought builds up rather slowly, creeping and steadily growing (Lehner et al., 2001). The overall drought impacts depend on the severity, duration, and spatial extent of the precipitation deficit, as well as the socioeconomic and environmental vulnerability of affected regions.

Until recently, more than 95% of the agricultural area in the headwaters of Ethiopia depended almost exclusively on green water from precipitation (Hagos et al., 2009). Droughts typically include meteorological, hydrological, agricultural or socioeconomic that may be classified based on many drought indicators associated with each drought type (Valipour and Research, 2013). Precipitation over the Upper Blue Nile Basin in Ethiopia contributes to 85% of the Nile River, and a decline in precipitation causes meteorological droughts, which subsequently cause hydrological droughts (Alrajoula et al., 2016). Meteorological drought may also be followed by agricultural or socioeconomic droughts, particularly in the Ethiopian highlands where most of the Upper Blue Nile flow originated (Wilhite, 2000).

Drought indices are the most common methods to evaluate the severity of drought and several indices can be used to assess, for example, meteorological droughts. The most commonly used drought indices include the Palmer drought severity index (PDSI) (Palmer, 1965), crop moisture index (CMI) (Palmer et al., 1968), standardized precipitation index (SPI) (McKee et al., 1993), Reconnaissance Drought Index (RDI) (Jamshidi et al., 2011), Precipitation Declines Index (PDI) (Mabrouk et al.), Rainfall Anomaly Index (RAI) (Van Rooy, 1965), Standardized Runoff Index (SRI) (Pathak and Dodamani, 2016), Standardized Precipitation Evapotranspiration Index (SPEI) (Beguería et al., 2014), Standardized Discharge Index (SDI) or standardized streamflow index (SSI), and surface water supply index (Shafer and Dezman, 1982), drought area index (DAI) (Bhalme and Mooley 1980), the soil moisture drought index (SMDI) (Hollinger et al. 1993), and crop-specific drought index (CSDI) (Meyer 1990).

Meteorological drought is the earliest and the most obvious event in the process of drought occurrence (Naresh Kumar et al. 2009) which shows a precipitation shortage over a specific region during that period. Precipitation is considered the direct cause that affects the occurrence of meteorological drought where SPI is one of the most well-known indices used in the monitoring of meteorological drought (Mishra and Singh 2010). Several studies have used SPI to assess drought characteristics, including frequency, duration, magnitude, and severity, in different parts of the world. These drought indices have been used throughout the globe to facilitate better water resources planning and management. However, indices developed in one location cannot (Bayissa et al., 2015) be extrapolated to others. Consequently, it is important to investigate the degree to which drought indices can accurately explain drought characteristics at different spatiotemporal scales across a basin.

According to Ntale and Gan (2003), SPI is widely used for monitoring Eastern African droughts because it is more easily adapted to the local climate, has modest data requirements, can be computed at almost any time scale, has no theoretical upper or lower bounds, and is easy to interpret. The SPI index is a probability index that provides a representation of abnormal wetness and dryness on a given timescale from the long-term average precipitation. This index can be calculated on as little as 20 years of data, but ideally, the time series should have a minimum of 30 years of data, even when missing data are considered. The index can track drought on multiple timescales, including 1, 3, 6, 9, and 12 months. The SPI methodology does not change whether using daily, weekly, or monthly data (McKee et al., 1993).

The assessment of drought over a large basin such as the Blue Nile is a challenging objective and has not been deeply tackled before, except for small portions of the basin. In this study, a review of research articles with historical drought events has been well assessed over the whole basin or part of it in particular. Therefore, the current review study proposes to investigate meteorological droughts and their characteristics in the Nile or Upper Blue Nile basin using SPI computed by various researchers at monthly, three months, and twelve months (annual) time scales. We compared SPI-3 and SPI-12 values computed by different scholars. Besides, this study contributes uniquely by connecting the knowledge gaps that exist between drought and non-drought historical periods in the Nile basin. The specific objectives of this study are to (i) to review and characterize meteorological droughts in the basin using SPI, at different accumulation periods, including 1 month, 3 months, and 12 months; (ii) to determine the meteorological drought trend, recurrence periods, and levels of drought for selected time scales in the basin. This review paper would be very useful to show gaps on the hydrological and agriculture drought studies in the basin so that researchers would focus on that.

2. MATERIALS AND METHODS

2.1. Description of the study area

The Nile River is located in the northeastern part of Africa and is recognized as the world's longest river with a length of about 6,825 km [9]. Its drainage area extends from 5o South to 31o North with a covering area of 3.4 million Km2 across 11 countries and serve as a home for about 370 million inhabitants (Elkollaly et al., 2018). The Nile water contributes mainly to the social and economic development of the Nile Basin countries. The eastern part of the Nile Basin extends from the rugged highlands of Ethiopia in the east; to the wetland areas of Sudan and Ethiopia in the South; and to the deserts of Sudan and Egypt in the north.

The Blue Nile river, which originates from the highlands of Lake Tana basin is the largest tributary of the Nile river in terms of annual discharge and even the longest with approximately 5000kms (Figure 1c) and contributes more than 85% of runoff to the Nile river at Aswan (Amer et al. 2005). About 199,000 km2 of catchment areas (i.e., 6% of the Nile Basin) lie in the Ethiopian territory (Figue 1). The altitude of the Upper Blue Nile Basin ranges from 511 m to 4,052 m (Figure 1 a & c). The highlands of Ethiopia and the Equatorial Lakes' plateaus are characterized by high precipitation ranging from 1200 to 1600 mm per years. In general, rainfall is irregular and highly variable both temporally and spatially in Ethiopia and Sudan and consequently, the region is subjected to frequent droughts and floods due to this high climatic variability (Hamouda et al. 2009).

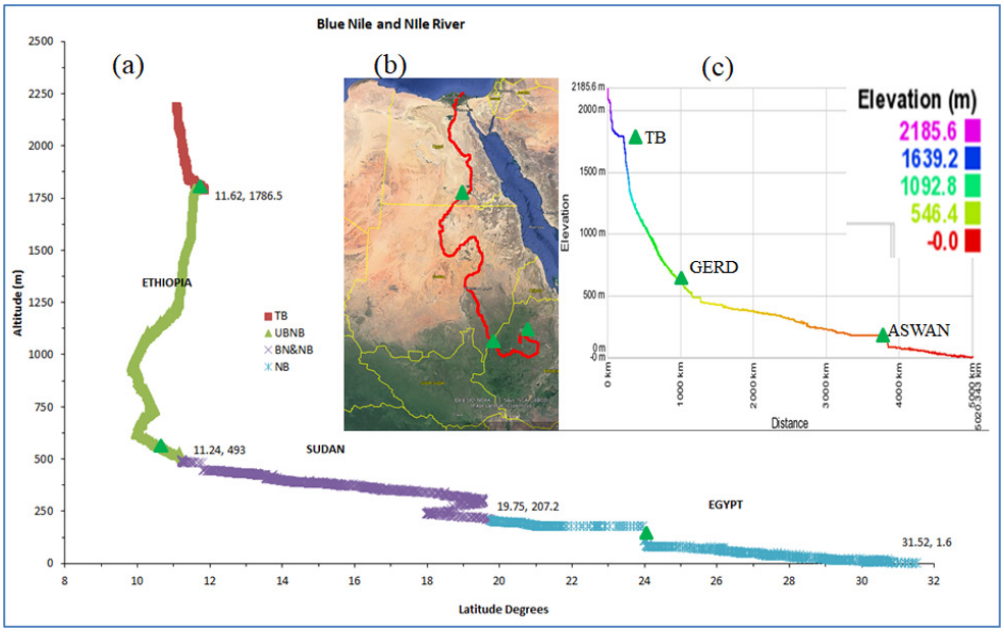


Figure 1: The Blue Nile River (a), the latitude altitude relation along the river (b) and the distance elevation profile along the river (c).

The climate in the basin varies considerably between the highlands of Ethiopia and its confluence with the White Nile in Khartoum (Awulachew et al. 2009). The spatial and temporal variation is affected by the movement of air masses and during the winter dry season, which is called "Bega" locally in Ethiopia. As a result, rainfall distribution is highly variable both in space and time, decreasing from the southwest to the east and northeast. In the Nile basin particularly in the Blue Nile basin, altitude and latitude have intrinsically explained the rainfall of the basin. Rainfall exponentially increases with altitude or elevation towards Lake Tana basin (Figure 2a) while it also logarithmically decreases with latitude towards its source (Lake Tana) Figure 2b).

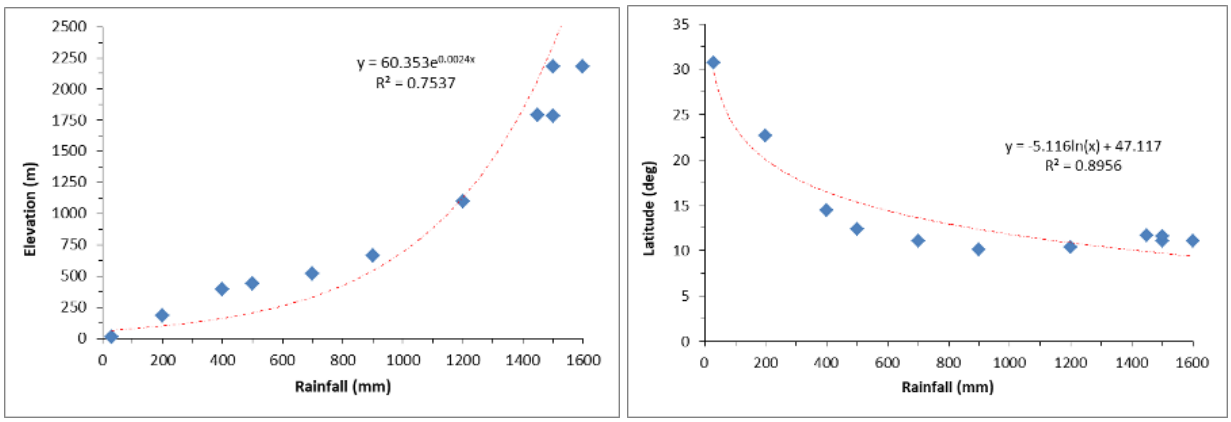


Figure 2: Rainfall exponentially increases with altitude towards Lake Tana basin (a), rainfall logarithmically decreases with latitude towards Lake Tana (b).

The Blue Nile Basin possesses a strongly-varying seasonal drought and flood regime, whereby over 80% of the annual discharge occurs during the three months from June to August (Awulachew et al. 2009). The average annual historical flow of the Blue Nile at the Ethio-Sudan border constitutes more than 40% of Ethiopia's total surface water resources or about 48.7 billion m3(BCM) while the average annual flow (1900 to 1959) of the Nile River at Aswan is about 84 BCM (Nour-El-Din 2013). The extreme range of flow values for the years 1916 (120 BCM) and 1984 (42 BCM) at Aswan dam showed enormous fluctuations in the natural Nile river flow (Amer et al. 2005).

2.2. Databases and Search Criteria

The Web of Science and Scopus were the two databases selected to the search for relevant articles in this review study. Based on previous studies, keywords such as drought, meteorological drought, hydrological drought, economic drought, agricultural drought, Nile Basin, Blue Nile Basin, and Upper Blue Nile basin have been used during the search process. Inclusion and exclusion criteria were used for systematic review as explained in Table 1. Accordingly, only articles that focused on Nile Basin or Blue Nile basin, or the Upper Blue Nile basin were selected. In the searching process, the database search resulted in 80 articles from Web of Science and 20 articles from Scopus, and then about 40 duplicate articles were removed from the entire pool. After inclusion and exclusion criteria in Table 1, a total of 20 articles were used for the body of this review article.

Table 1 Inclusion and exclusion criteria for review

SN	Criteria	Eligibility	Exclusion
1	Literature type	Research articles	Review papers, conference preceding, book chapters
2	Language	English	Non-English
4	Basin	Nile Basin, Upper Blue Nile Basin, or Abay Basin	Other Basins
5	Country	Nile Basin countries	Other countries

** The maximum number of years, however, varies according to each study*

The contribution of recent articles for the development of this review paper included about 5%, 9%, 24%, 19%, 14%, and 9% respectively for the years from 2022 to 2017 (Figure 3). This implies that the findings from recent articles would be helpful for policymakers and the scientific community with updated and refined drought information in the Nile basin in general and in the Upper Blue Nile basin in particular.

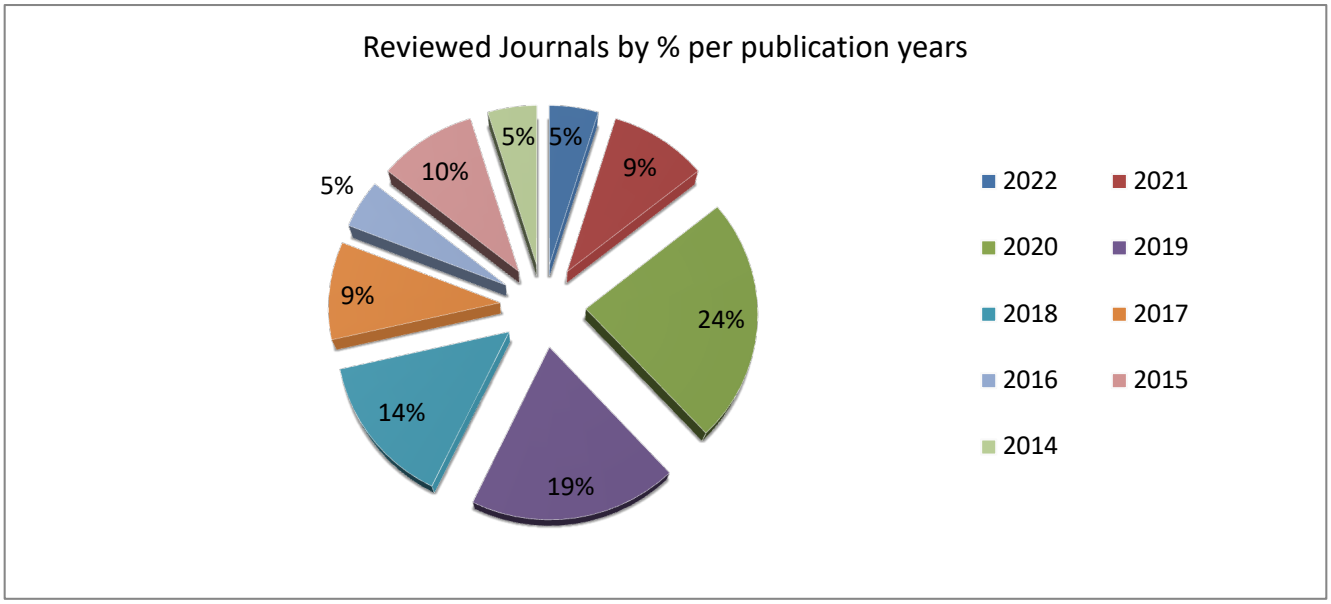


Figure 3: Reviewed Journals by % per publication years

3. RESULTS AND DISCUSSIONS

3.1. SPI-1 Analysis of drought

According to Taye et al. (2020), the study timescale for the single-season cereal crop production area of the Upper Blue Nile Basin was limited to one month, whereas during Kiremt period, drought on the order of 4 weeks duration, at any stage of the crop growth, can have an adverse effect on crop yield. The range of extreme drought frequencies seen for different months and different sites shows the highly temporally variable and spatially localized nature of climate variability in the basin (Table 2). Findings of Taye et al. (2020) indicated that extreme/severe drought years in percent for June, July and August fall in the range of 5%-8%, 8%-10% and 8%, respectively and drought in the month of June was highly variable (Table 2). In similar study average recurrence periods of such drought in June, July and August were found to be approximately in the range of 10-13 years (Table 2).

Consistent with this study, Khadr (2016) found percent severe/extreme drought magnitude for SPI-3 for June, July and August of 7,8 and 7 respectively for Bahir Dar. This shows that the Blue Nile basin could be characterized as a drought-prone basin even during rainy periods. Over the 38-year period, severe/extreme drought occurred at the onset and/or offset time of rainy season over the basin which implies the presence of varied levels of exposure to meteorological drought (Taye et al., 2020). The prevalence of moderate, severe, and extreme magnitudes of meteorological drought in the basin was also reported by authors (Bayissa et al., 2018). The highest frequency of severe/extreme meteorological drought months was observed in the northeast and southwest lowland parts of the basin, whereas the lowest frequency was found in the southeastern part of the upper Blue Nile. Similarly, as reported by the authors of (Conway, 2000), annual rainfall over the basin decreased from the southwest to the northeast. This can indicate that the farming practices in the basin need to be enhanced with an improved early warning system, surface and ground water use, and drought-resistant seed technologies.

Table 2: Grid system Monthly Analysis of SPI from CHIRPS data source for Kiremt (June-August) by Taye et al., (2020) from 1981 to 2018 years.

Reference	Basin part	Number of years	Number of Observed Data set/stations	Percent (%) Severe/ Extreme drought in 38 years			Recurrence period (Years)		
				June	July	August	June	July	August
Taye et al., (2020)	Highland	38	18	7.9	10.5	7.9	13	10	13
	Midland	38	18	5.3	10.5	7.9	19	10	13
	Lowland	38	18	7.9	7.9	7.9	13	13	13

3.2. SPI -3 Analysis of drought

Recent meteorological studies using SPI revealed that the most severe and extreme droughts have occurred in the upper Blue Nile basin (UBNB). Khadr (2016) used monthly precipitation of 49 years (1960–2008) and computed 22 series of SPI for the UBNB using the monthly precipitation and a 3-months SPI shows that Bahir Dar station experienced frequent moderate, severe and extreme droughts and May is the month during which the 3-months SPI most frequently takes the annual minimum value (13.7%) and it is followed by July (8.22%). Consequently, SPI-3 (three-month SPI) at Bahir Dar shows severe droughts in 1961, 1965, 1980, 1982, 1984, 1990, 1996, 1999, and 2002. The 1982, 1990 and 1999 droughts were extreme and had a substantial impact, especially on downstream countries (Khadr, 2016). Results show that for Bahir Dar station, the maximum negative SPI values for 3-months timescale was −2.69 and these values were found in the years 1990 (Khadr, 2016). Meteorological drought severity based on SPI-3 for recent studies in the upper Blue Nile basin (Figure 4 a to g) are presented in Table 3.

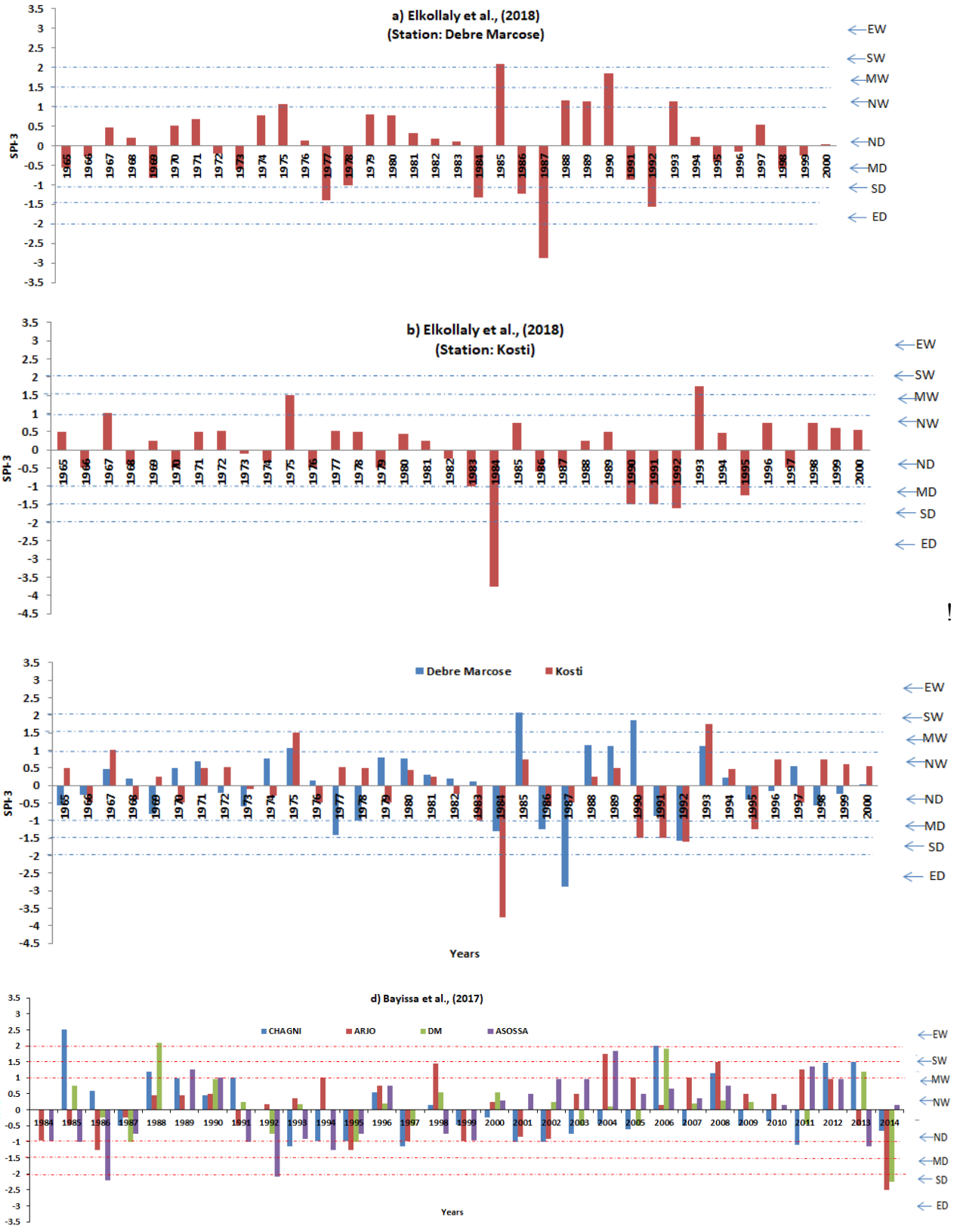
Table: 3 SPI-3 Studies and statistics of drought severity in the Nile basin

Reference	Study period (years)	Number of years	Number of stations used	Station Name	Number of years falling SPI drought Severity levels				Occurrence in years	
					ND	MD	SD	ED	Severe drought yrs.	Extreme drought yrs.
Elkollaly et al., 2018	1965-2000	36	1	DM*	10	3	1	1	1992	1987
	1965-2000	36	1	Kosti	10	1	3	1	1990, 1991,1992	1984
Bayissa et al., 2017	1984-2014	31	1	Chagni	9	7	-	-	-	-
	1984-2014	32	1	Arjo	6	4	-	1	-	2014
	1984-2014	33	1	DM	6	2	-	1	-	2014
	1984-2014	34	1	Assosa	3	5	-	2	-	1978, 1986
Bayissa et al., 2015	1955-2006	52	1	DM	9	5	2	2	1963,1992	1987, 2005
	1953-2009	57	1	Gondar	18	4	3	1	1981, 1982, 1997	2009
Khadir et al., 2016	1960-2008	49	1	Bahir Dar	20	7	9	3		

** DM = Debre Markose*

Recent studies using various remote sensing data acquisition techniques have tried to show the temporal and spatial variability of SPI-3 in the upper Blue Nile basin. We expect the probable reason of result variation among the studies would be the accuracy or resolution level of such techniques. However, all the scholars used the ground station data for their validation and all the plotted information in this study (Figure 4 a – g) were using ground data sources. And variations were still significant as we can see from the plots. For example, the extreme levels of severe drought for Debre Markose for various researchers include 1992

(Elkollaly et al., 2018), none (Bayissa et al., 2017), and 1963, 19921981, 1982 and 1997 (Bayissa et al., 2015). Similarly extreme drought for Debre Markos was 1987 (Elkollaly et al., 2018), 2014 (Bayissa et al., 2017) and 1987, 2005 and 2009 (Bayissa et al., 2015). Moreover, some studies depicted Bahir Dar station has less drought severity compared to Debre Markose and other northern stations; contrary to this, Khadr et al., (2016) have reported about 9 severe droughts (1961,1965,1980, 1982,1984,1990, 1996,1999, 2002) and three extreme droughts (1982,1990, 1999).



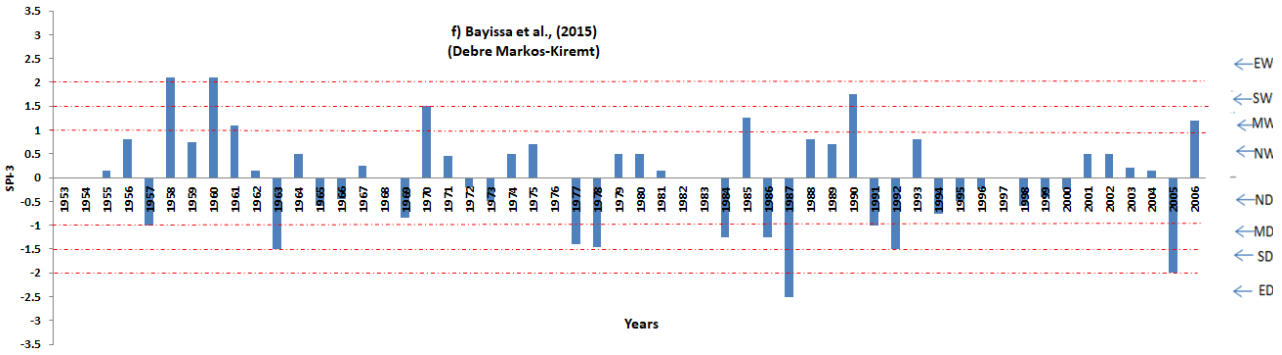


Figure 4: Time serious plost of SPI-3 at selected stations in the Blue nile basin according to the findings of scholars (mainly of Ethiopians and Egyptians) as cited in the title of each plots).

3.3. SPI -12 (annual) Analysis of drought

In this section we reviewed and analyzed characterization of annual drought severity using SPI drought indices over the Upper Blue Nile in particular and the Nile basin in general. The SPI value according to Mabrouk et al., (2020) for Debre Markose and Gore seems extremely impractical since it describes sudden shift from wet period to a continuous drought conditions over the periods 2006 to 2016 for Debre Markose and over 1999 to 2016 for Gore (Figure 5 a & b). Contrary to this, Marwa et al., (2022) in their study over the Nile basin (1980 to 2019) showed kiremit was the dominant season and an indicator for the occurrence of drought on annual scales, and severe drought (SD) was observed in the years 1982,1984, 1987,and 2002 while extreme drought was obtained in 1986 (Figure 5 a and c).

On another study, severe drought was indicated in 1978 and 1986 (Elkollaly et al., 2018) while no extreme drought was found from the years 1965 to 2000. On the other hand, using the average of 28 stations in the basin from 1980 to 2016), Extreme severe drought was observed in the years 1984 and 2001 while severe drought was obtained in the years 1981, 1985, 2002, 2014 and 2015 in the southern part of Upper Blue Nile basin; similarly extreme drought was observed in the year 1991 while sever drought was found in the years 1982, 1987, 2008 and 2009 over the northern part of UBNB (Kebede et al., (2019) (Figure 5e). This shows that drought frequently occurred over Northern regions of Upper Blue Nile compared to the southern regions across annual time scale. On the other hand, Bayissa et al., (2015) found extreme drought year in 1991 for Debre Markose (1953 to 2006) and 3 drought years (1970, 1982 and 1991) for Gondar station (1954 to 2009) while severe drought were occurring in 1954, 1965, 1978 and 2008 for Debre Markose and no severe drought for Gondar (Figure 5 f, g).

Table 4: SPI-12 Studies and statistics of drought severity in the Nile basin

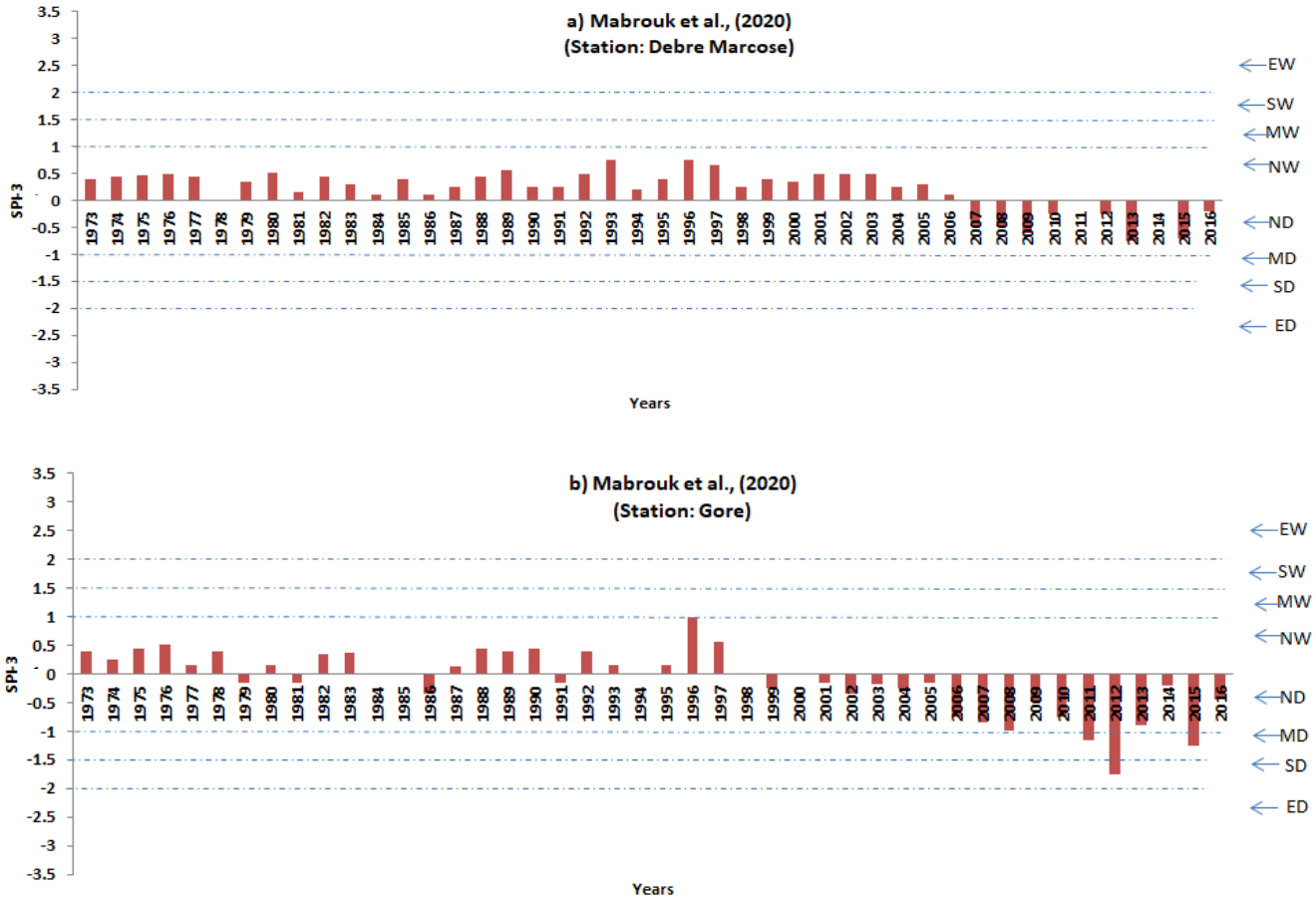
Reference	Study period (years)	Number of years	Number of Stations	Station Name	Number of years falling in SPI drought Severity levels*			
					ND	MD	SD	ED
Mabrouk et al., (2020)	1973-2016	43	1	Debre Markose	8	-	-	-
	1973-2016	43	1	Gore	17	2	1	-
Marwa et al., (2022)	1980-2019	39	1	All*	12	2	4	1
Elkollaly et al., (2018)	1965-200	35	1	All	12	2	2	-
Kebede et al., (2019)	1980-2016	36	1	All south	7	1	5	1
	1980-2016	36	1	All North	3	2	5	2
Bayissa et al., (2015)	1954-2006	52	1	Debre Markose	14	4	5	1
	1954-2006	52	1	Gondar	11	8	-	3

** D= Drought, N=Normal, M=Moderate, S=Sever and E=Extreme; * All indicates the average of used stations by the author.*

3.4. SPI -12 Based Consecutive Drought Periods

The most impactful drought would be when two or more drought years consecutively occurred in the basin. We reviewed and found that consecutive drought occurred from 1982 to 1987 (Marwa et al., 2022), 1983 to 1985, 1993 to 1994, 2001 to 2002, 2014 to 2015 in the south UBNB and from 2001 to 2002 and 2008 to 2009 in the north UBNB (Kebede et al., 2019). Besides, a study by Bayissa et al., (2015) showed drought was occurred for consecutive years from 1966 to 1970, 1981 to 1983 and 1990 to 1992 for Gondar, and from 1986 to 1987 for Debre Markose (Figure 5 f & g).

Similar results from Khadr (2016) studies in UBNB indicated that several annual significant droughts were identified within the study period such as years 1965, 1982,1983, 1984, 1990 and 1992, however the longest droughts occurred during the 1980s. The annual minimum SPI values for 12 for the period of analysis of various studies were mainly observed from May to September. Drought indices from one scholars probably Egyptians were reported low or none SPI values for Ethiopian stations in the upper Blue Nile basin particularly from 2007 to 2016 for Debre Markose and Gore (Figure 5a) which may probably be due the use of less data quality (Mabrouk et al.,2020).



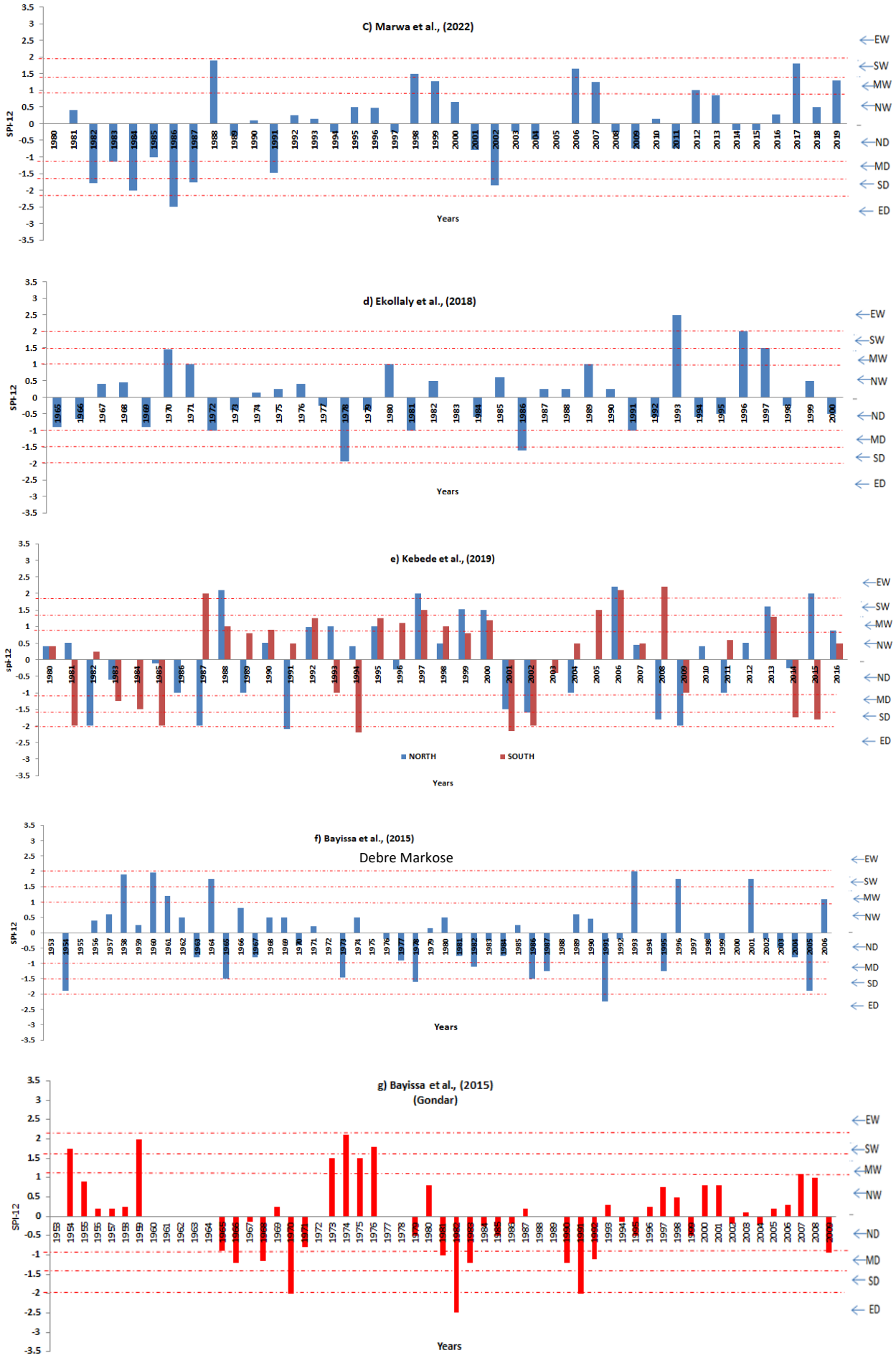


Figure 5: Time serious plots of SPI-12 (annual) at selected stations in the Blue Nile basin according to the findings of scholars (mainly of Ethiopians and Egyptians) as cited in the title of each plots)

3.5. Drought Frequency and Recurrence Period

In general the lowest drought percent years were found in Debre Markose (18.6%) according to Mabrouk et al., (2020) but another study reported as 46.2% (Bayissa et. (2015), however, based on various literatures, the later value is accepted and the lowest drought percent years was found 33.3% for north UBNB reported by Kebede et. (2019) while the highest drought percent years (48.7%) was found by Marwa et al., (2022) which includes the whole Nile basin for the study. Generally, average meteorological drought percent years for average years of 42 years was about 40%, approximately one drought every three years (where wet coverage becomes 60%) (Table 5).

Besides, Normal (ND), Medium (MD), Sever (SD) and Extreme (ED) meteorological drought in the Nile basin recurs, respectively, once in 5, 13, 23 and 33 years according to various studies conducted in the basin (Figure 6a). Variations of drought severity recurrence period (Figure 6a) and drought frequency (Figure 6b) for different studies increased as the drought level goes from normal (ND) to extreme (ED). For normal drought, approximate horizontal line of a plot of recurrence period against various studies (Figure 6a) showed findings on recurrence period of such drought match compared with extreme drought which shows a trendless line of plot. Conversely, a plot of the number of years against various stations or studies gives a horizontal line for Extreme drought followed by sever and moderate drought while it extremely various for normal drought (Figure 6 b).

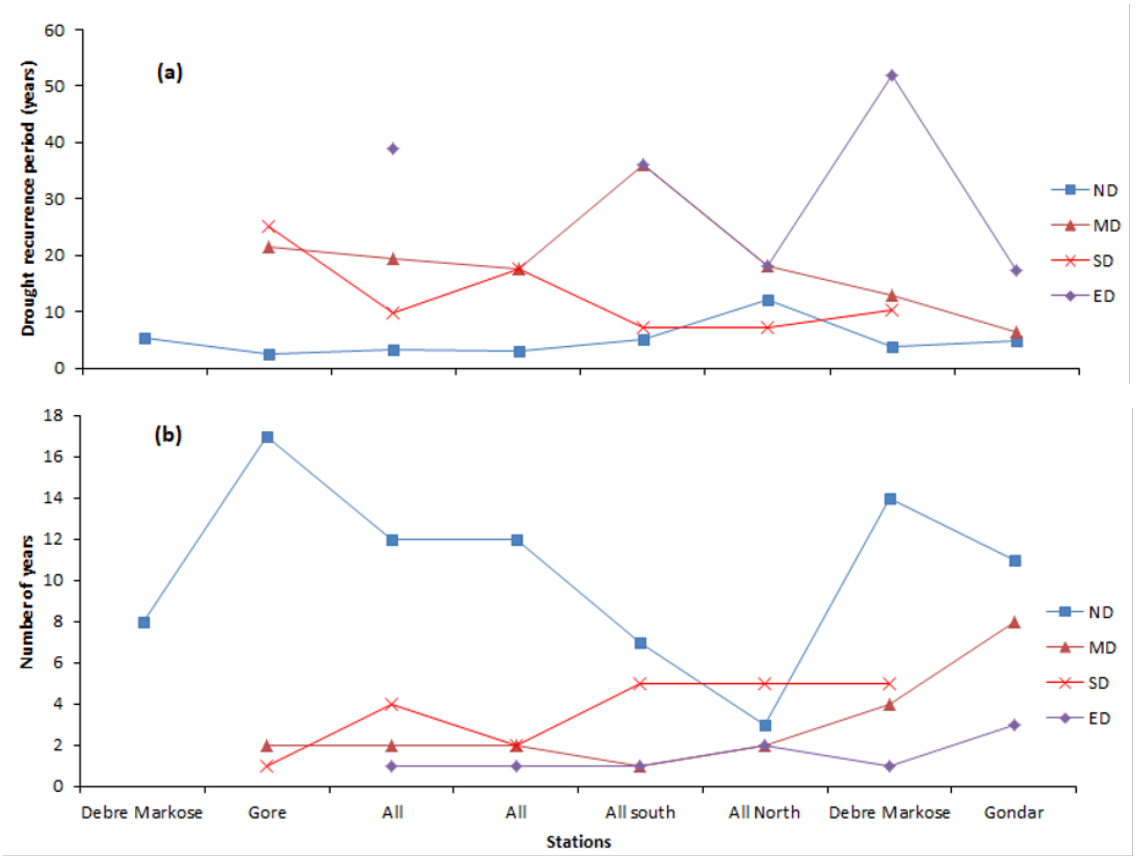


Figure 6: Meteorological drought recurrence period in the upper Blue Nile Basin

3.6. Historical drought Records in Ethiopia compared with drought occurrence in the UBNB

Because of the variability, intensity, and frequency of precipitation extremes during the main rainy season, frequent drought and flood occurred and affected various socioeconomic activities, predominantly in agricultural and water resource sectors. It is increasingly clear that many east African countries are already experiencing erratic impacts of climate change particularly Ethiopia (Anyah and Qiu, 2012) where drought

(70%) and flood (26%) hazards are the main causes of mortality and economic losses in sub-Saharan Africa (Wolde-Georgis et al., 2000). Additionally, the variability of rainfall performance over Ethiopia shows droughts and floods since ancient times however drought and flood records from 1920 to 2016 (Figure 7) showed that drought hazed consisted of about 77% while 26% hazards and 3% of both (Teshome and Zhang, 2019).

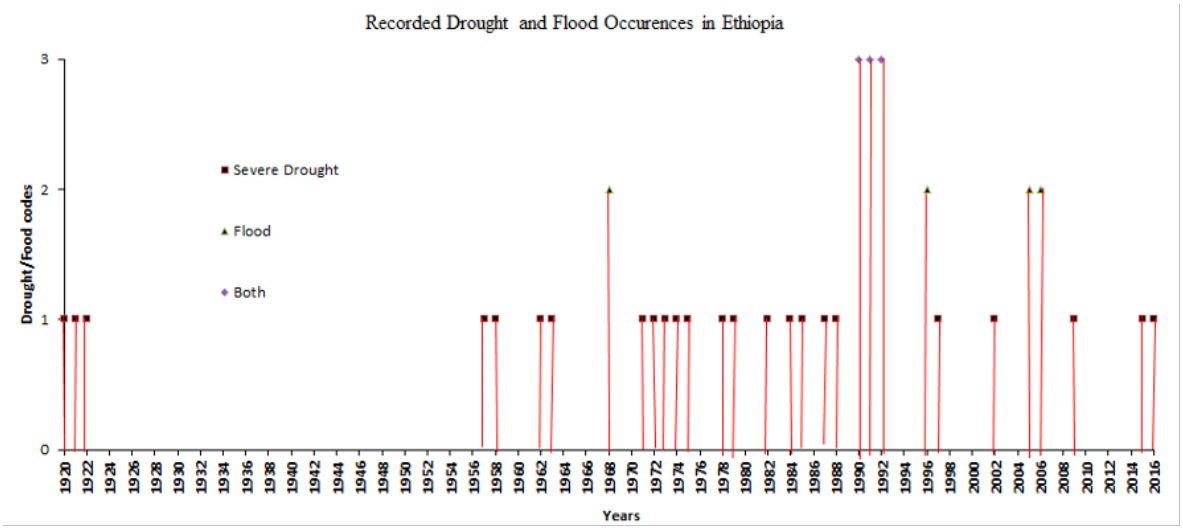


Figure 6: Chronology of Ethiopian drought and flood extreme events at different time periods (sources: http:/www.emdat.be).

Generally, several meteorological drought study findings in the Blue Nile basin have been compared with historical severe/extreme drought records in Ethiopia (Table 5). It's shown with this studies that approximately about 25% to 80% severe/extreme droughts found in the Blue Nile basins were also seen in drought records of Ethiopia in the past 50 years (Table 5). As shown in Table 5, the droughts occurred in the years 1978,1982, 1984, 1985, 1987, 2002, 2009 and 2015 were respectively captured by about 29%, 57%, 14%, 14%, 29%, 14% and 14% by various study findings in the Blue Nile basin.

Ethiopian Drought Yrs	*Matching Blue Nile Drought Years							
	Ref.1	Ref.1	Ref.3	Ref.4	Ref.5	Ref.6	Ref.7	% Matching Yrs
1920-1975	-	-	-	-	-	-	-	-
1921	-	-	-	-	-	-	-	-
1978	-	-	1978	-	-	1978	-	29%
1979	-	-	-	-	-	-	-	-
1982	1982	1982	-	1982	-	-	1982	57%
1984	1984	1984	-	-	-	-	-	14%
1985	-	-	-	-	1985	-	-	14%
1987	-	1987	-	1987	-	-	-	-
1988	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-
2002	-	2002	-	-	2002	-	-	29%
2009	-	-	-	2009	-	-	-	14%
2015	-	-	-	-	2015	-	-	14%
2016	-	-	-	-	-	-	-	-
% years	33%	80%	50%	60%	43%	25%	33%	-

** Ref.1=Khadr et al., (2016); Ref. 2=Marwa et al., (2022); Ref.3=Elkollaly et al., (2018); Ref.4 & Ref.5= Kebede et al.,(2019); Ref.6 & Ref.7 =Bayissa et al., (2015)*

4. Future potentials to absorb drought in the basin

It is known that Abbay River Basin experienced high rainfall variability, as indicated by drought SPI analysis. Approximately 85% of the precipitation occurs in summers, between July and October, whereas the highest IWR demand occurs in dry seasons. This situation requires water storage reservoirs in the wet for dry seasons, to achieve a sustainable irrigation system in the basin. With the existing cropping pattern and estimated irrigation areas assuming full irrigation development, Ethiopia could irrigate approximately 2.5million ha with less than 50% of the annual flow of the Abbay River (Yimere et al., 2022). These data imply that the nation might foster a climate-resilient agricultural system while reducing deforestation and land degradation. For example, from 2003 to 2015, Ethiopia expanded its cropland by 5 million ha through deforestation and land degradation (awulachew et al., (2010). This is a high-risk situation in which forests and grasslands are turned into croplands.

Suitable investment and infrastructure is required for the expansion of irrigation. Irrigation plays a vital part in Ethiopia's food supply and offers room for improvement, since only small amount of the country's irrigation capacity is presently used. More studies should provide a potential baseline for determining the IWR, future irrigation area, cropping patterns, and irrigation efficiency, considering the expansion of irrigation with population growth and the reduction of rain-fed agriculture. It is critical to develop crop cultivation systems that require less water and are water efficient, especially given the longer time scale of adaptation to climate change when agricultural productivity must increase with restricted water supply. Therefore, given the uncertainty of future climate change, the irrigation water requirement can vary depending on the average dry or wet conditions of the basin within a given period. It is important to consider both the gross water withdrawal and net water consumption under different climatic conditions, along with an expanded irrigation area in future studies.

The interaction between climate and irrigation is an important factor in estimating the irrigation water demand and requirement. Globally, studies have shown that irrigation lowers the temperature in the given area and increases the occurrence of precipitation and hence precipitation decreases with decrease in availability of water. This warrants a reduction in streamflow requiring harmonization of the development of water resources between government agencies and riparian states. However, even if rainfall does not decrease, the general sustainability of irrigation is uncertain; as the demand for irrigation is rapidly increasing, investigating the potential for the use of groundwater in irrigation is imperative. Finally, irrigation efficiency and the level of water withdrawal are constantly changing, and they differ by the types of crops grown, climatic conditions, and seasons. Therefore, to incentivize irrigators to conserve water, it is critical to study the basin's water valuation and pricing methods. Additionally, for a resilient irrigation development plan, water resource planners.

5. Conclusions

Ethiopia is highly dependent on rain-fed agriculture, so meteorological and agricultural drought analysis, monitoring, and early warning system development are crucial. But still, there is no well-adopted drought analysis technique for a nationwide or a regional level. As a result, the development of drought early warning system has lacked. At the same time, hydrological drought analysis and monitoring is also key point for river basin development and water resource management. But due to its large input data requirement, hydrological drought study is not further investigated. Particular attention is to be given to drought-affected areas and conjunctive use of ground and surface water has to be encouraged. Aridity is the general characteristic of an arid climate and represents a permanent condition, while drought is temporary. In an arid climate, drought can still occur when local conditions are even drier than normal. Almost 90% of the studies in Ethiopia were conducted on arid and semiarid areas of the region and generally hydrological drought study lacked in the country. Meteorological drought is highly varying within the short-period scale in a month depending on the precipitation variability and analysis may lead to an erroneous conclusion and hydrological drought study requires a long-term time scale and should be conducted annually to give some concrete information about the drought situation of a particular study area.

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BLUE WATER SAVING STRATEGIES THROUGH WATER FOOTPRINT REDUCTION IN NILE BASIN COUNTRIES: POLICY IMPLICATIONS

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Abstract

Water scarcity is one of the critical challenges of the 21st century, mainly in arid and semi-arid regions, due to the consequences of the growing population and climate change. The present study evaluates the blue water-saving strategies through deficit irrigation (DI) and organic mulching (OM) over the Riparian Nile Basin countries. It focuses on blue water savings in irrigated agriculture showing the effects of DI & OM on blue water footprint (WF). The AquaCrop model and the global WF accounting standard were used. The model was performed at a spatial resolution of 5x5 arc-minute grid cells in eleven Nile Basin countries for five selected crops from 2011-2015. The blue WF of the selected crops was the largest in Egypt, Sudan, South Sudan, and Tanzania. For the current condition, the total blue water footprint was 48.5 k m3/y, largely located in Sudan (55%) and Egypt (34%). Production of sorghum accounts for the largest share of the blue WF (50%) followed by maize (21%), rice (16%), groundnut (9%), and millet (4%). The largest blue water footprint in Sudan is due to the large harvested area in the region. Deficit irrigation combined with mulching could reduce the current blue WF by 42%. Close to three-quarters of the reduction in blue WF was in Sudan and more than two-third was related to sorghum. The findings underline that DI combined with OM could reduce blue WF and help in sustainable water use in the region. Hence, the study suggested that downstream countries shall implement water saving strategies like deficit irrigation & mulching to alleviate water scarcity.

Keywords: Blue water-saving; deficit irrigation; mulching; Nile Basin countries

1. Introduction

Globally, about 4 billion people live in severe water scarcity at least one month a year (Mekonnen & Hoekstra, 2016). As population increases, then the development calls for increased allocations of water resources for agriculture, domestic, and industrial sectors, the pressure on the water would intensify, leading to tensions, conflicts among users, and excessive pressure on the environment (Adeba et al., 2016). The agriculture sector is the major water consumer globally (Hoekstra & Mekonnen, 2012). It accounts for 92% of the global blue water footprint (Hoekstra et al., 2012), thus with a significant contribution to the global blue water scarcity. Blue water scarcity generally results in reduced river flows and diminishing groundwater, streams, and lakes levels that affect ecosystems and people (Schyns et al., 2019). To reduce the blue water scarcity problem, there is a need to explore techniques that reduce the water footprint of crops (Mekonnen & Hoekstra, 2014).

There are various soil, water, and crop management practices that would help to improve crop water intake and improve water productivity (Perea et al., 2018). Soil mulching could lower unproductive soil evaporation (Chukalla et al., 2015). Deficit irrigation strategy decreases consumptive water use and improves water productivity (Molden et al., 2010). According to Chukalla et al., (2015) an average reduction in the consumptive water footprint (WF) of 8–10 percent is achieved when it changes from the reference case (furrow full irrigation with no mulching) to drip irrigation system. 28 percent reduction in the consumptive WF is achieved while it shifts from reference to drip or subsurface drip irrigation with synthetic mulching. When the available water is not enough to meet the full crop water requirement, deficit irrigation practices could be a viable option to optimize irrigation water application and crop yield (Du et al., 2015). DI & OM could be used as a mechanism for reducing water footprint and achieving water security (Fereres & Rabanales, 2007).

Many empirical studies examined the field level reduction of the water footprint in crops. Field level studies were carried out in different regions focusing on the effects of irrigation techniques, irrigation strategies, and mulching on the water footprint reduction of different crops (Chukalla et al., 2015). All of the above-mentioned studies dealt at the field level. Regional/Basin studies were undertaken on the water footprint of crops in different parts of the world (Nouri et al., 2019). Santos et al., (2002) studied irrigation management under water scarcity by implementing improved farm irrigation systems and DI to reduced water demand. Deficit irrigation as a strategy has emerged as strategies ways to increase water savings (Costa et al., 2007). All the studies have used either mulching, drip irrigation, or both to the WF of crops. Therefore, none of the studies have quantified the blue WF reduction for DI & OM at the national level.

Yield in rain-fed countries is low because it is difficult to meet the crop water requirement. The low yield in better-rainfall countries is due to high variability in rainfall and its unpredictable nature. Rain-fed agriculture is subject to the occurrence of longer dry spells and droughts that highly affect crop productivity. Therefore, there is a need for supplementary irrigation during low rainfall. In rain-fed crop production, adding a limited amount of irrigation water (supplementary irrigation) when rainfall fails to meet the crop water requirement would help to alleviate the negative effects of soil moisture stress on the crop yield. On the other hand, in irrigated crop production, different irrigation techniques and irrigation strategies would help to reduce the overall water demand (Chukalla et al., 2015). This study has evaluated the blue WF for the main irrigated crops namely: rice, maize, sorghum, millet, and groundnuts in the Nile Basin countries in both the current condition and a water-saving scenario. These five crops were selected based on the largest irrigated area harvested and produced in the Nile Basin, so the largest strategies water savings through deficit irrigation and mulching can be achieved.

1.1. Objective of the study

The objective of this study is, to evaluate the strategies for blue water savings through deficit irrigation combined with mulching in irrigated agriculture in the Nile Basin countries.

2. Methods and Materials

2.1. Description of the study area

This study was conducted in Nile Basin countries, which are located in North-East Africa and is shared by eleven countries, namely: Burundi, Congo, Egypt, Eritrea, Ethiopia, Kenya, Sudan, South Sudan, Tanzania, Uganda, and Rwanda (Figure 1).

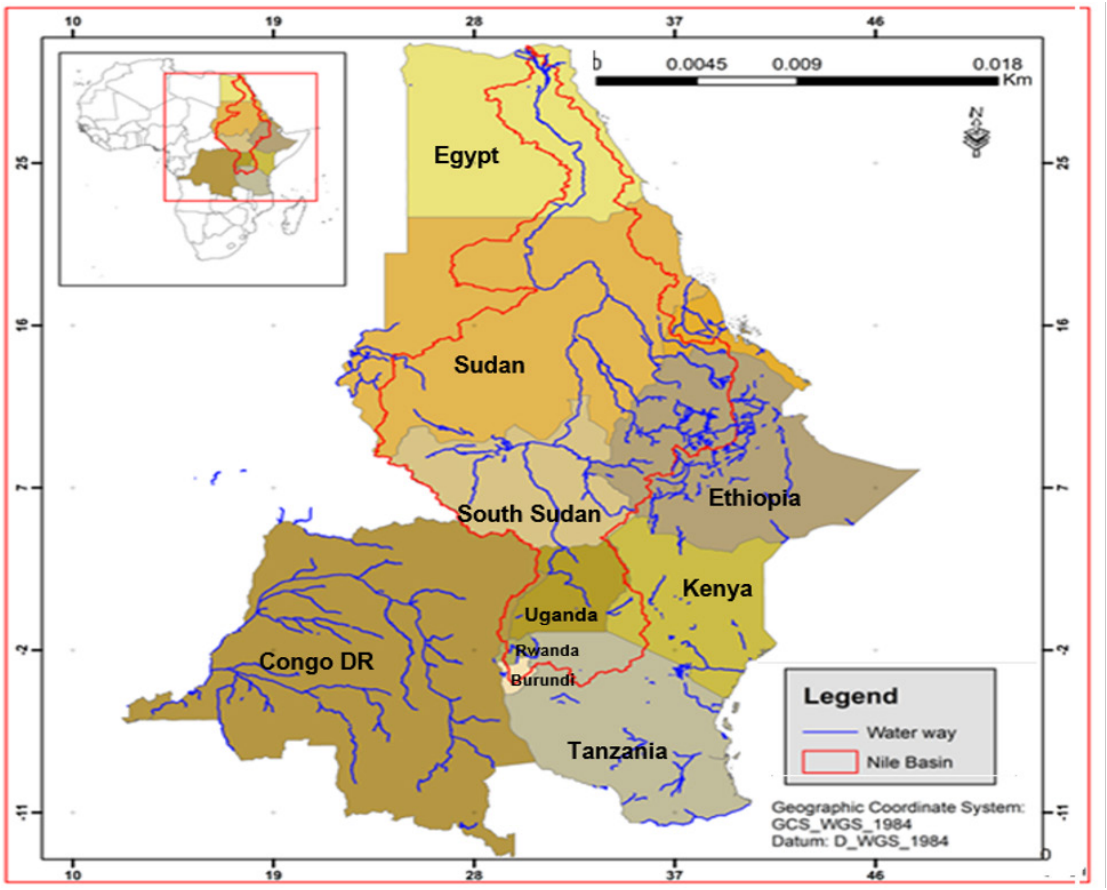

Figure 1. The study area of the Nile River Basin countries

The study area focuses on the Nile basin, which is the longest north-flowing river in the world, and located in North-Eastern Africa and shared by eleven countries (Melesse et al., 2014). Though the Nile basin water is scarce, it is one of the transboundary basins in which millions of people rely on its water resources (Melesse et al., 2014). The high rate of population growth in the basin rests pressure on its natural resources, including water. The population in the Nile basin is estimated at around 202 million in 2005 and is expected to reach 336 million by 2030, suggesting that water scarcity could reach a crisis point if water needs cannot be met timely (Kloos & Legesse, 2010). As the demand for water increases, the link between the river and the watershed becomes a cause of conflict (Melesse et al., 2014).

The basin's area extends across the different geographical, climatological, and topographical regions with a different environment, social and economic aspects of the basin. The vegetation cover in the basin is strongly associated with the amount of precipitation. The precipitation amount is more than 1,000 mm/yr in the southern part and is almost zero in the northern part of the Sahara Desert (Mohamed & Loulseged, 2008). The region is considered one of the poorest regions of the world. More than 70% of the Nile population depends directly or indirectly on farming for their incomes and livelihoods (Mohamed & Loulseged, 2008). Agriculture is the economic base of all the Nile basin countries and the major consumers of water except in Uganda (Kloos & Legesse, 2010). The actual consumption (blue water footprint) is 5% of the water withdrawn for industrial purposes and the remaining fraction is the return flow (Mekonnen & Hoekstra, 2011).

2.2. Technique

The annual WF for the selected five dominant crops was estimated in all the eleven Nile Basin countries for the years 2011 - 2015 following the global water footprint assessment standard (Hoekstra et al., 2011). To evaluate strategies blue water savings the AquaCrop-OS plugin model, which is the open-source of FAO's AquaCrop model was applied in the Nile Basin countries. The model was implemented at 5x5 arc minute grids spatial resolution for all grid cells for all selected dominant crops. First, the simulation was done on the current agricultural practices (the reference case), that is without mulching and with standard full irrigation practice; second, simulate a scenario within irrigated areas deficit irrigation and mulching in irrigated areas. The water-saving was then computed as the difference between the blue water footprint in the reference and scenario. The type of mulching is 100% organic mulching which is natural origin materials that can decompose naturally (compost).

The AquaCrop earth alternatives model built around on the plug-in version of AquaCrop 4.0 has been used which is set up by Hogeboom et al., (2019). To simulate model, it has been used as the main AquaCrop papers of FAO crop model to simulate yield response (Hsiao et al., 2009; Raes et al., 2009 & Steduto et al., 2009). ET and crop yield were simulating the dynamic soil water balance during the study period based on the global water footprint assessment standard (Hoekstra et al., 2011). Daily soil moisture was partitioned into a green and blue part. Blue water accounting in a soil water balance was calculated following Hoekstra, (2019):

$$Sgt=Sgt\text{-}1+Pt-ROt(Pt/(Pt+It))-(Dt+ET)((Sgt\text{-}1)/(St\text{-}1)) \quad (1)$$

$$Sbt=Sbt\text{-}1+It-ROt(It/(Pt+It))-(Dt+ET)((Sbt\text{-}1)/(St\text{-}1)) \quad (2)$$

Where Sg is the content of green soil water (mm) and Sb is the content of blue soil water (mm). During the growing period, the green and blue parts of crop water use (CWU, m3/ha) were calculated by aggregating the green and blue evapotranspiration (ET, mm/day).

2.3. Data

Different global data sources were used to estimate crop WF. These five crops (rice paddy, maize, millet, sorghum, and groundnuts) were selected based on the FAO (2019) database on both the largest in production and area harvested. Monthly precipitation, daily reference evapotranspiration (ET0), and daily maximum and minimum temperature were obtained from CRU TS-3.20 with a 30 x 30 arc-minute grid spatial resolution (Harris et al., 2014). Soil data with 5x5 arc minute resolution were obtained from the ISRIC-WISE dataset. The MIRCA 2000 dataset was used for the irrigated and rain-fed harvested area for each crop at 5x5 arc minutes resolution (Portmann et al., 2010) which made to fit FAO's national level total harvested area. The 'scaling coefficients' were adjusted to the MIRCA2000 reference map to meet the annual harvested area values. The yearly harvested area at 5×5 arc minute was derived by multiplying the reference MIRCA2000 map by the scaling coefficients. To get the initial soil moisture in the first year, the model was run with initial soil moisture at field capacity for the entire period and then we used the average values.

3. Results and Discussion

3.1. The water footprint of selected crops in the reference period

The total blue WF in the Nile Basin countries in the reference period 2011-2015 for producing the five selected crops was 48.5 km3/y (Figure 2). Sudan accounts for the largest share of the blue WF (55%) mainly related to the production of sorghum, which accounts for 79% of the blue WF in the country. The other major country with a large blue WF is Egypt, which accounts for 34% of the blue WF of the Nile Basin. The major crops in Egypt with a large contribution toward its blue WF are maize (53%) and rice (36%).

Among the crops, the production of sorghum takes for half of the blue WF in the Basin, followed by maize (21%), rice (16%), groundnut (9%), and millet (4%). The current blue WF for five crops per country and crop has shown in Figure 2.

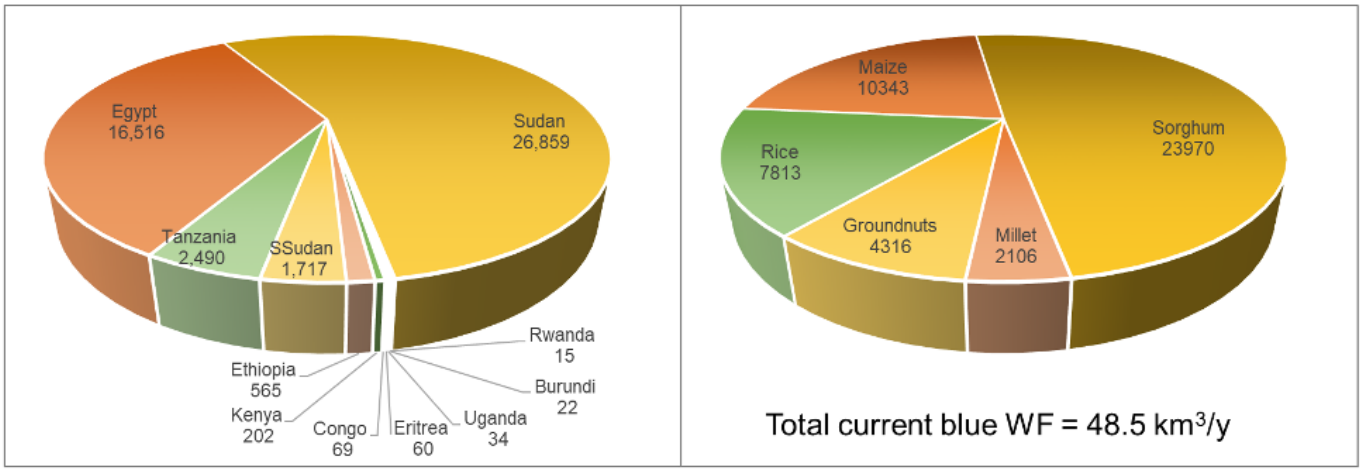

Figure 2 Average blue WF of crops (M m3/y per country) and crop in the ref period 2011-2015

3.2. Effects of deficit irrigation and mulching in reducing WF per tonne of crops

The blue WF reduction for five dominant crops in the entire Nile Basin countries was estimated by comparing the current agricultural practice and practice aimed at water footprint reduction (i.e., deficit irrigation and organic mulching). Because of the difference in climatic regions and soils, the result exhibited a significant difference in WF reduction across the Basin countries. These scaling factors vary per country per year, so the soil also contributes to observing changes across countries. The results show for the total blue water saving (m3/y) and the savings per ha (m3/ha) per country, per crop.

Based on the results in countries such as Egypt, Sudan, and Tanzania where rainfall is minimal and irrigation is extensive, the reduction in blue WF is large. However, in some countries, there is a smaller blue WFs reduction such as in Burundi and Congo. The reason for this could be crop production in these countries is mainly rainfed based on little irrigation according to the MIRCA2000 database (Portmann et al., 2010). Figure 3- Figure 7 shows, the blue WF for five selected crops in Nile Basin countries under the reference case and water-saving scenario in the period 2011–2015.

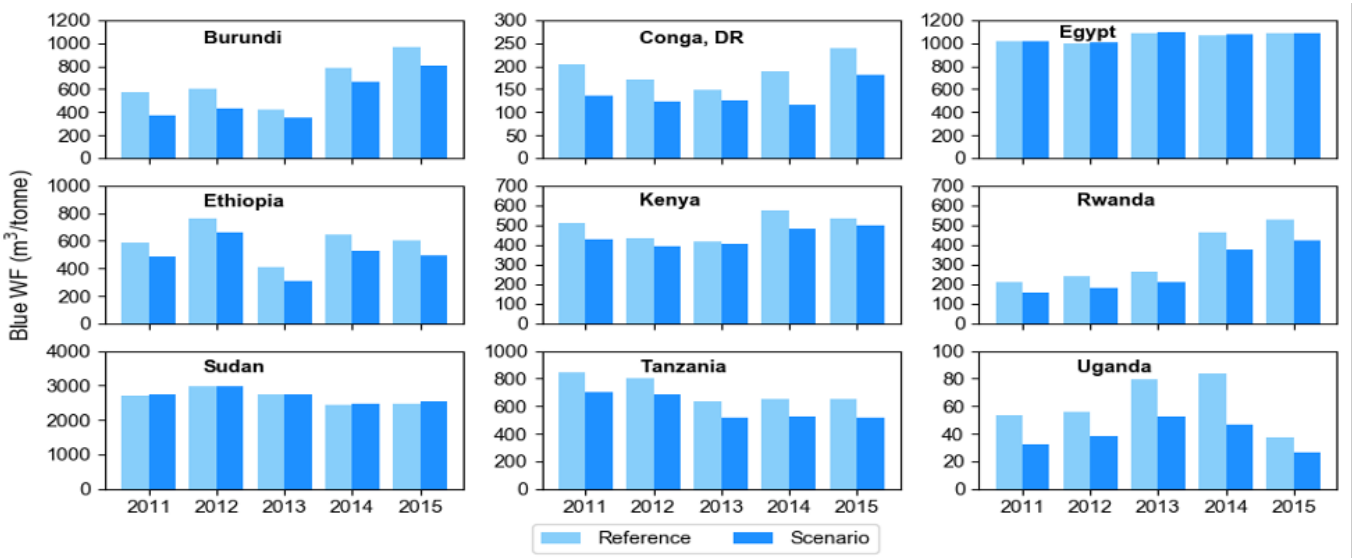

Figure 3 Blue WF of rice in Nile Basin countries under reference & water-saving scenario

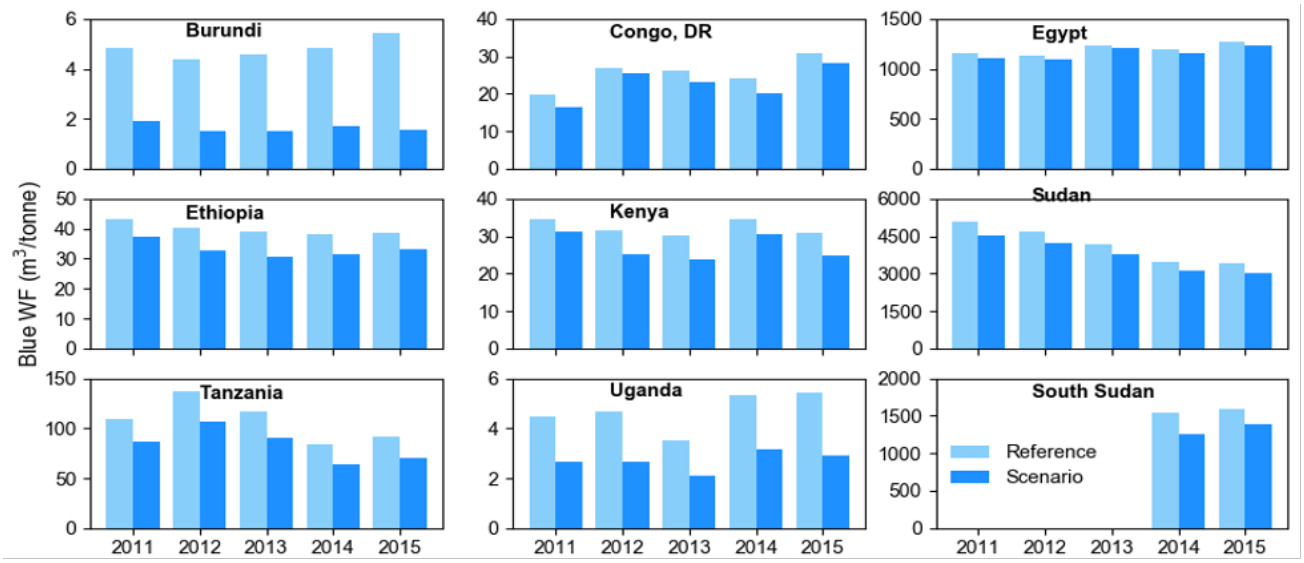

Figure 4 Blue WF of Maize in Nile Basin countries under reference & water-saving scenario

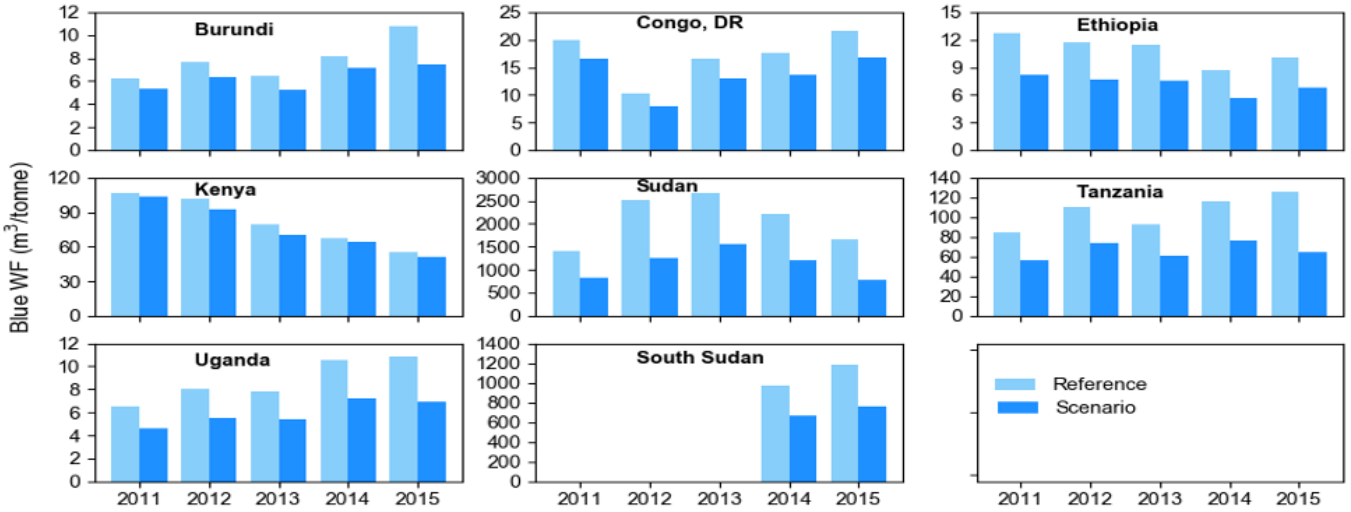

Figure 5 Blue WF of Millet in Nile Basin countries under reference & water-saving scenario

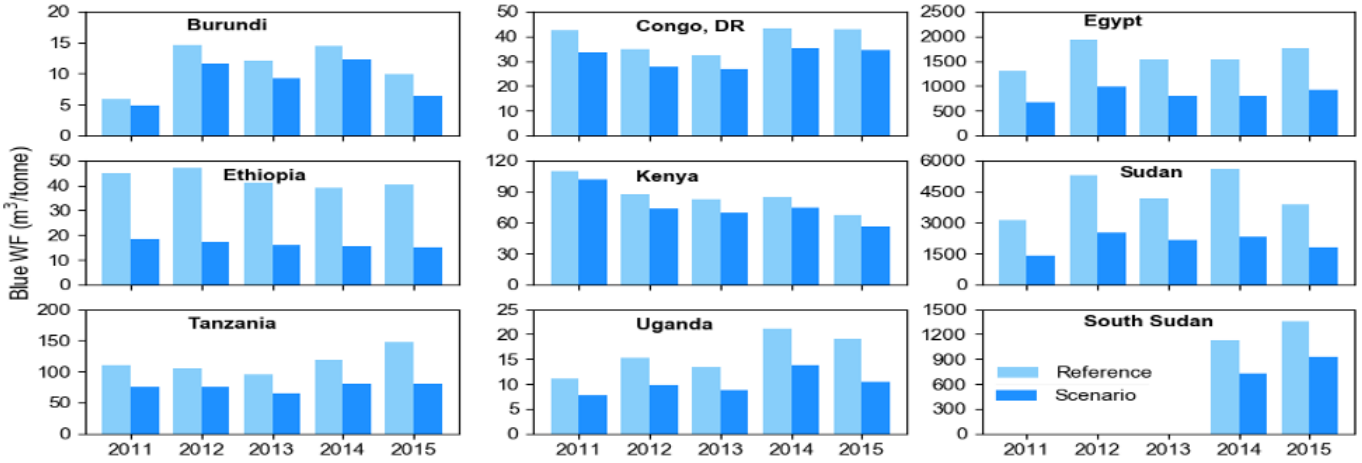

Figure 6 Blue WF of sorghum in Nile Basin countries under reference & water-saving scenario

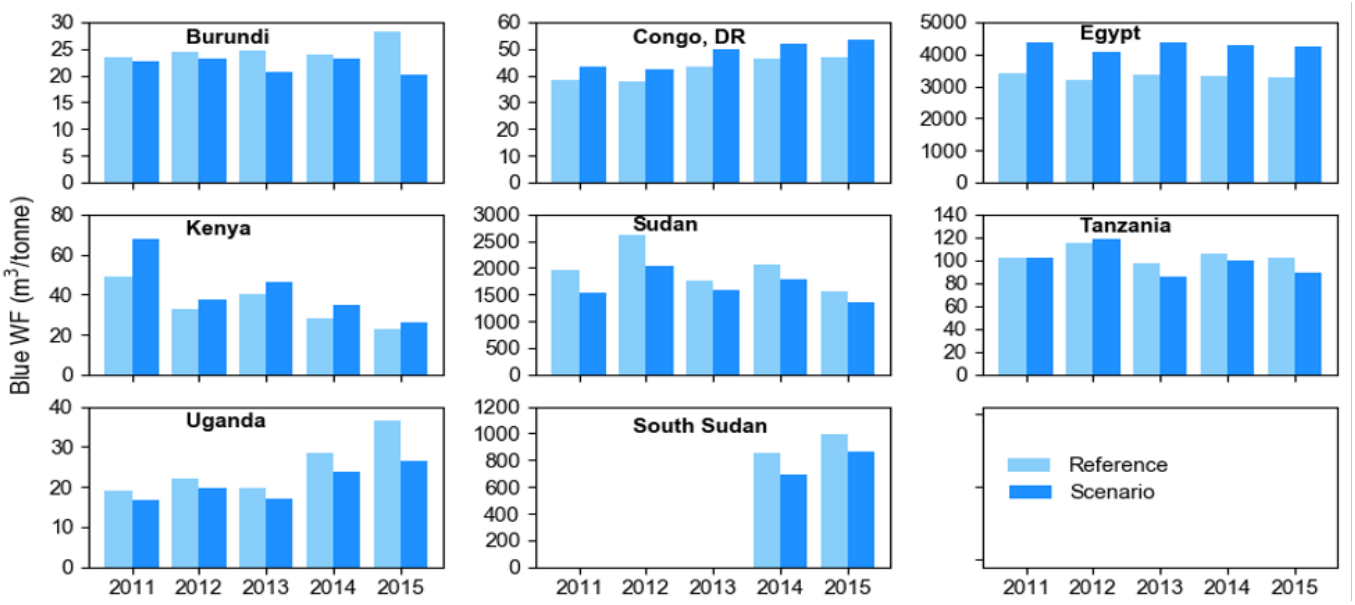

Figure 7 Blue WF of groundnuts in Nile Basin countries under reference & water-saving scenario

3.3. The total blue water saving

The blue WF reductions through deficit irrigation combined with mulching were estimated. The total blue water saving in the Basin under the water conservation scenario was 20.4 km3/y or 42% of the current blue WF related to the production of the five selected crops. The largest water-saving was achieved in Sudan (74%), Egypt (18%), South Sudan (4%), and Tanzania (2.4%). The blue water saving for the other crops ranges between 5% for millet to 9% for maize and rice. Table 1. Shows blue water savings of crop production in irrigated agriculture showing the effects of DI & OM on blue WF (M m³/y) for five crops per country: Average for 2011-2015.

Table 1 The total blue water savings of crop per country in M m³/year: Average for 2011-2015

Country	Rice			Maize			Sorghum			Millet			Groundnuts		
	Ref	Sce	Save	Ref	Sce	Save	Ref	Sce	Save	Ref	Sce	Save	Ref	Sce	Save
Burundi	20.1	13.6	6.5	0.71	0.23	0.48	0.4	0.29	0.11	0.09	0.06	0.03	0.27	0.17	0.1
Congo	13.6	10.5	3.1	37.6	30.7	6.9	0.21	0.16	0.05	0.76	0.6	0.16	16.6	13.3	3.3
Egypt	5882	4303	1579	8761	7341	1420	1212	554	658			0	661	577	84
Ethiopia	77.9	55.3	22.6	276	249	26.8	202	63	139	9.16	5.3	3.86			0
Kenya	59.5	46.6	12.9	117	92.9	24.6	16.5	12.5	4	7.65	6.41	1.24	0.96	0.81	0.15
Rwanda	14.5	10.2	4.3												
Sudan	65.8	57.9	7.9	194	151	43	21156	8511	12645	2041	1121	920	3402	1940	1462
South Sudan			0	317	182	135	1282	652	630	11.4	6.96	4.44	106	58.8	47.2
Tanzania	1613	1366	247	626	461	165	95	61.7	33.3	34.1	20.8	13.3	121	82.7	38.8
Uganda	6.38	5.34	1.04	13	7.13	5.87	5.34	3.23	2.11	2.16	1.38	0.78	7.16	4.26	2.9
Total	7813	5915	1897	10343	8515	1828	23970	9858	14112	2106	1163	944	4316	2678	1638

In arid and semiarid regions of agricultural land which have the characteristics of low and variable rainfall and climate, implementing water-saving strategies is required to reduce the water footprint of crops. To alleviate water scarcity problems in the region, implementing deficit irrigation and mulching is vital, although the impacts might vary in different years from a country to country and from a crop to a crop. Therefore, it requires a regional and seasonal investigation.

In the current study, five crops (rice, maize, millet, sorghum, and groundnuts) were observed to have a consistent WF reduction from DI & OM. For the current condition, the total blue WF was 48.5 km3/y, 55% of which falls in Sudan, and 34% in Egypt. Similar studies were carried out to reduce the water footprint of crops. The finding is in line with earlier studies. Nouri et al., (2019) found blue water saving of 5% from the combination of drip irrigation and mulching. Chukalla et al., (2015) explored the strategies of reducing WF of crops by using different management practices in different environments.

4. Conclusion

To reduce the pressure on freshwater and enhance the sustainable use of blue water and ensure crop production, different solutions are required. Reducing the blue water footprint of crop production is a strategy to alleviate the problem of water scarcity and unsustainable use of water. This paper estimated the strategies of saving blue water in Nile Basin countries through deficit irrigation and mulching for five dominant crops. Under current conditions, the largest crop water footprints were found in Egypt, Sudan, South Sudan, and Tanzania. Upstream counties have a smaller water footprint. Deficit irrigation together with mulching can have a significant impact on blue water saving. Hence, it is imperative to promote water-saving scenarios. Further research is required to study the cost-benefit in implementing deficit irrigation and mulching at the national level. The study suggested that countries with a large proportion of blue water can save more water as deficit irrigation and mulching have significant impacts on total blue water footprint reduction in water-scarce regions for sustainable water use. Hence, the downstream countries shall implement those water saving strategies for the water scarcity alleviation.

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EGYPT'S SECURITIZATION DISCOURSE ON GERD: DRIVERS, ACTORS AND SECURITIZATION MECHANISMS

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Abstract

This study examined the drivers, actors and securitizations tools used by Egypt over the Grand Ethiopian Renaissance Dam Project (GERD). The study employed a qualitative research approach in which data were gathered from secondary sources, public documents, and archival sources. The central argument is that Egypt's securitization of GERD as an existential water security threat is neither an actual nor perceived threat. Current water scarcity in Egypt is not due to the hydropower projects of Ethiopia like Tana Beles and Tekezze hydroelectric power projects. Rather water scarcity is largely attributed to Egypt's poor water management, high evaporation at High Aswan Dam, and primitive irrigation system and water-intensive agriculture. Thus, Egypt contestation of GERD is not due to the negative impact posed by the project but to counter the broader geopolitical implication of GERD for Ethiopia and the region at large. The study also identified that the presidents, member of the parliaments, intellectuals, media, ministries of foreign affairs, and water and irrigation, opposition political parties are the main securitizing actors. Furthermore, the discourse of absolute water dependency of Egypt on River Nile as well as Egypt's notion of 'water security' are the major securitization mechanisms used by Egypt against the GERD. However, the study shows that Egypt's absolute Nile water dependency discourses is a myth. Rather Egypt is a groundwater endowed country with infinite access to sea water so that its historicism of the Nile as matter of life and death is a fabricated myth. Based on this, the author argues that GERD is an invented fictitious threat neither has a legal ground nor supported by scientific research. Thus, two kinds of transformation are needed. On the part of Egypt, the securitizing actors should bring the securitized GERD into the realm of normal politics. On the part of Ethiopia, it should deconstruct the unwarranted myth of Egypt on GERD in particular and Nile in general through proactive discourse targeting international community, regional organizations, Nile River Basin countries, media, and the wider Egyptian public.

Keywords: Securitization, De-securitization, GERD, Nile, Ethiopia, Egypt

1. Introduction

Since the second half of the 20th century, Ethiopia has been engaged in building small hydroelectric power development. With the coming to power of Ethiopian People's Revolutionary Democratic Front (EPRDF), however, there are large-scale water resources development projects. The GERD project, which is under construction on the Abbay River, is one of the mega hydroelectric power project. The project has been viewed in the existing literature as game changer,[13] new legal order[14] and fair system.[15] Despite scientifically verified broader positive regional implication of GERD, Egypt regards GERD as an existential security threat.[16] Egypt securitization approach over GERD is not based on recognition of Nile as a single hydrological unit and shared resource but as a national security and geopolitical issue,[17] deep sense of entitlement and monopolism, doctrine of prior use, discourse of absolute water dependency,[18] absence of alternative water resources other than Nile River in Egypt, and overriding importance to the principle of not to cause significant harm.

In its face value, the major controversies raised by Egypt were the potential downstream consequence of GERD, reservoir filling strategy and time, and overall technical aspects of dam design, and its impact on Egypt's water security.[19] However, in practice what Egypt insists is not the above-mentioned issues but securitization of GERD as a threat of Egypt's notion of water security[20] which is grounded on the logic of not to give a drop of water for Ethiopia whose water is feeding Egypt.

In contrast to the zero-sum game politics of Egypt securitization, Ethiopia has used tactical securitization-cum-desecuritization approach.[21] In Ethiopia, the GERD project has been viewed as an existential issue

13 Rawia Tewfik, The Grand Ethiopian Renaissance Dam: Benefit-sharing Project in the Eastern Nile? 41 Water International, 1, 4 (2016). See also Ana Elisa Cascão and Alan Nicol, GERD: New Norms of Cooperation in The Nile Basin?, 41 Water International, 550, 565-569 (2016).

14 Salman M. A. Salman, The Grand Ethiopian Renaissance Dam: The Road to the Declaration of Principles and the Khartoum Document, Water International, 1, 1 (2016)

15 Zeray Yihdego & Alistair Rieu-Clarke, An exploration of fairness in international law through the Blue Nile and GERD, 41Water International, 528,544-545 (2016).

16 Letter From Sameh Shoukry, Minister of Foreign Affairs of the Arab Republic of Egypt, to the United Nations Security Council (June 11, 2021), Security Council Report (19 Jun 2020), https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3 CF6E4FF96FF9%7D/S_2020_566%20Egypt%20letter%20of%2019%20June.pdf ; Hamdy A. Hassan, Contending hegemony and the new security systems in Africa, 9 Afr. J. Pol. Sci., 159, 164(2015); Omar Nasef, National Security as Told by the Nile, Century International (Aug. 4, 2016), https://tcf.org/content/report/egyptian-national-security-told-nile/?session=1

17 Stefan Deconinck, Security as a threat to development: the geopolitics of water scarcity in the Nile River basin, Royal High Institute for Defence Focus Paper (10, 2017), https://www.waternet.be/documents/Security_as_a_threat_to_development_Deconinck.pdf

18 Letter of the Ministry of Foreign Affairs of The Arab Republic of Egypt to UNSC, Annex-1, The Grad Ethiopia Renaissance Dam, Setting the Record Straight, Security Council Report (19 Jun 2020), https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3 CF6E4FF96FF9%7D/S_2020_566%20Egypt%20letter%20of%2019%20June.pdf

19 Ahmed H. Elyamany and Walaa Y. El-Nashar, Managing risks of the Grand Ethiopian Renaissance Dam on Egypt, 9 Ain Shams Engineering Journal, 2383, 2383–2388(2018)

20 Letter From Sameh Shoukry, Minister of Foreign Affairs of the Arab Republic of Egypt, to the United Nations Security Council (June 11, 2021); Samuel Berhanu and Yohannes Eneyew, Betwixt Development and Securitisation of the Nile: Competing Narratives, Australian Outlook (Aug. 27, 2020), https://www.internationalaffairs.org.au/australianoutlook/betwixt-development-securitisation-of-nile-competing-narratives/; Antoaneta Roussi, Row Over Giant Nile Dam Could Escalate, Experts Warn, 583, Nature, 501(2020); Egypt Today, We want to help Ethiopians in their development, but Egypt's water share is a 'red line': Sisi, Egypt Today (Jul. 15, 2021), https://www.egypttoday.com/Article/1/106101/We-want-to-help-Ethiopians-in-their-development-but-Egypt

21 Eloise von Gienant, "#Itsmydam": An analysis of Ethiopian and Egyptian discourses surrounding the Grand Ethiopian Renaissance Dam, Ch 6 (Master Thesis, University of Amsterdam, 2020)

which can be considered as tactical securitization. However, Ethiopia's approach is largely desecuritization. Because, tactical securitization emanates from the development narrative as GERD is regarded as a development project than an issue of security. Accordingly, GERD is presented by Ethiopia as a benefit sharing project having not only national but also wider regional and global significance. In this regard, the bedrock of Ethiopia desecuritization approach rests upon the recognition of Nile as a transboundary resource and its utilization based on principle of equitable and reasonable use, hydro cooperation and solidarity, and the right to development.

Against this backdrop, GERD is framed and marketed by Egypt as a threat not only to its water share (55.5 billion cubic meters of water) as per the 1959 bilateral agreement but also to the fabricated identity of inseparability between Nile and Egypt. The very intention of this study is, therefore, to examine the drivers of securitization and de-securitization discourse over GERD.

2. Core Argument

Accordingly, the writer of this paper argue that Egyptian view of GERD as a water security threat of Egypt is a hyperbolically constructed myth that is neither actual nor perceived threat. The rationale behind Egypt securitization of GERD as an existential threat is to counter the broader geopolitical implication of the construction of GERD for Ethiopia and the region at large. Because, the GERD project has a potential in increasing Ethiopia's hard and soft power.

3. Methodological and Theoretical Approach

Methodologically, the study employed a qualitative research approach due to the need to address who securitizes (securitizing actor) what (issues considered as threat), how (tools employed), why and with what intended goals. Moreover, qualitative research method is found viable approach for water securitization studies because securitization study requires a deep looking at and analyzing how the securitizing actor uses metaphors, policies, analogies, emotions, propaganda and fabricated knowledge in establishing rhetoric of existential threat.

Accordingly, the study principally employed secondary sources of data (documentary analysis and literature reviews) such as journal articles, conference papers, books, riparian countries reports, report of International Panel of Expert (IPoE) on GERD, government official speeches, and governmental and intergovernmental organization briefings and statements. Finally, the data is analyzed using critical discourse which is important in understanding how discourse of national security is constructed and maintained.

Theoretically, the study is grounded on the constructivist approach of securitization and desecuritization theories which are an appropriate theoretical approach to study issues of water securitization like the GERD issue and the Nile water. The former is used in analyzing why Egypt securitizes GERD, for what and its implication; while the latter is employed to examine Ethiopia's attempt in bringing the securitized water back to mainstream politics and negotiation based on win-win scenario with due consideration of principle of international water law such as equitable and reasonable use.

4. Egypt Securitization Approach over GERD/Nile

4.1. Drivers for Securitization and the Securitizing Actors

Egypt's Nile policy is solely guided by securitization of Nile water. From Gamal Abdel Nasser to the incumbent president Abdel Fattah el-Sisi, all regimes in Cairo have used water war rhetoric as an instrument of securitization to maintain the inequitable status quo established by the 1929 and 1959 bilateral

agreements. Water security for Egypt is non-alteration of its current use and claimed historic rights.[22] Thus, the consideration of GERD as a national security threat to Egypt is not a new policy approach. It is part of Egypt's Nile securitization policy.

The main factors which drive Egypt to securitize the Nile water/the GERD are twofold: seeking for ontological security and geopolitical factors. For long, the Nile water is treated as a living-being and inseparable from Egypt's history, civilization, culture, identity and supernatural world. Such worldviews have steadily become a dominant and hegemonic worldview that guides modern Egypt and its relation with other co-riparian. In this thinking, the ruling elite consider upstream water resources development as a threat to their ontological security which is a sense of stability that emerges in response to "the need to experience oneself as a whole, continuous person in time-as being rather than constantly changing-in order to realize a sense of agency".

However, in the process of sustaining such Egypt's enacted world and its reality, Egypt and its ruling elites have faced an ontological security problem. Egypt's ontological security problem, as noted by Fana and Dawit (2021:10), is about the struggle to "ensuring the biographical continuity of an Egyptian state identity" that was formed around Nile. It's ontological insecurity arises when development projects like hydraulic infrastructure disrupts the continuity of established self-identitiess, social relations, worldviews, traditional way of life, values, and in general, the meta-physical/spiritual aspect of a given State or society.

Since the 1990's Egypt's enacted world and reality have faced a growing contestation from other co-riparian worldview. However, it is the GERD project that forces them to redefine their self-identity that was constructed at the center of Nile River. Hence, in order to preserve their Nile identity they securitized the GERD project and the Nile water at large. Thus, Egypt securitization emanates from the need to secure Egypt's ontological security. Here my argument is that GERD has not threatened the physical security of Egypt but its ontological security which is defined as 'security as being'. On the other hand, by securitizing the GERD the ruling elite of Egypt intends not only to preserve the constructed identity of inseparability between Egypt and Nile but also to unite the divided Egypt by instigating conflict with Ethiopia.

The consideration of the GERD and the Nile water as matter of geopolitics is also another driver of Egypt securitization policy over the GERD project. Historically, the Nile water was the source of geopolitical rivalry between Egypt and Ethiopia. With regard to the GERD, the concern raised from Egypt is not entirely on the potential impact of the dam on downstream countries but the geopolitical implication of the project to the northeast Africa. Its intention is thus to counter the broader geopolitical implication of GERD for Ethiopia and the region at large.

Having such drivers, the securitizing actors ranges from State to non-state actors. The major securitizing actors are, however, successive presidents of the Arab republic of Egypt, military leaders, radical Islamist party, media, radical environmentalists, and parliament members. They maintain a securitization policy that any actual or perceived threat to the existing water use of Egypt constitutes a red line for legitimate use of force. The first securitizing actor was President Muhammad Mursi who marketed his policy of "a drop of Nile water with their blood."[23] The securitization of GERD as an existential threat had reached its climax level when the government of Ethiopia announced to divert Abbay River. While the spokesperson of the president and Egypt Ambassador to Addis Ababa regarded the diversion as a realm of normal politics, opposition political parties particularly the radical Islamist Party of Light, radical Islamist Party of Construction and Development, and Parliamentary representatives moved GERD from mainstream

22 Zerihun Abebe Yigzaw, Open Letter to Egypt: A Response to The Spokesman of Egypt`s Ministry of Foreign Affairs Regarding GERDP from An Ethiopian Perspective, Zerihun Abebe Yigzaw's Views on Transboundary Watercourses and Related Issues Blog, https://zenileabbay.wordpress.com/2014/03/28/open-letter-to-egypt-a-response-to-the-spokes-man-of-egypts-ministry-of-foreign-affairs-regarding-gerdp-from-an-ethiopian-perspective/

23 BBC, Egyptian warning over Ethiopia Nile dam, BBC News (10 June 2013), https://www.bbc.com/news/world-africa-22850124 Fred H. Lawson, Supra Note 35, at 4-5

politics to exceptional high politics calling an emergency situation and extraordinary measure.[24] Leaders of opposition political parties make the issue an absolutely urgent by declaring that president Mursi would be responsible for any shortage of water Egypt might face as a result of GERD.

Apart from his political rivals, President Morsi had also made a securitized speech act to legitimize extraordinary measures to be used against GERD including proxy war. Morsi and his foreign minister proclaimed that Egypt will not give a single drop of water; water security would be ensured by any means including use of force.[25] In his June 2013 televised speech, President Morsi had not only reaffirmed the identity of inseparability between Egypt and the Nile saying that "If Egypt is the Nile's gift, then the Nile is a gift to Egypt"[26] but also made a securitized speech:

> *The lives of the Egyptians are connected around it [Nile]... Egypt's water security cannot be violated at all… As president of the state, I confirm to you that all options are open…If it diminishes by one drop then our blood is the alternative.*

The regime also invoked indefensible claimed historic right, associated water with bread rights, identity, national security and geopolitical issue.[27] According to Nasr and Andreas, "the securitisation of water poverty was again asserted through a narrative constructing Ethiopia as having 'evil' motives to endanger and destabilise Egypt, emphasizing particularly the relationship between Ethiopia and Israel".[28] This implies that Nile water is treated in terms of national security, identity and geopolitical consideration.

However, the tone of speech act, if not the securitization of GERD, was changed with the coming to power of Abdel Fatah al Sisi (from 2014 onwards). The inauguration of Abdel Fatah al Sisi as the president of the Arab Republic of Egypt was seen by many as a shift of Egypt policy over GERD: a shift from possible use of force to peaceful resolution of the dispute over GERD [29]. Despite his initially desecuritization move, Egypt's official policy of securitization over GERD remains unchanged. What was changed was the rhetoric he made about the importance of solving the GERD dispute through negotiation and cooperation than use of force.[30] The reason for his deviation from the historic trend and position of his predecessors of modern Egypt is to buy a time. Because since the very day of his election campaign to the recent GERD stalemate, he has made several speech act stressing Nile water as a matter of life and death.[31] For instance, in the 2021 news conference in Ismailia, Abdel Fatah al Sisi had made a securitized speech saying that "…no one can take a drop from Egypt's water, and if it happens there will be inconceivable instability in the region".[32]

In sum, the government of Mursi and al Sisi have used securitization as an instrument of maintaining the inequitable status quo. Conservative religious leaders have also attempted to give a moral legitimacy for any action to be undertaken by the regimes in Cairo in defending the claimed Islamic principle of no harm

24 Fred H. Lawson, Supra Note 35, at 4-5

25 BBC, Egyptian warning over Ethiopia Nile dam, BBC News (10 June 2013), https://www.bbc.com/news/world-africa-22850124

26 Id.

27 Andreas Neef and Hala Nasr, Ethiopia's Challenge to Egyptian Hegemony in the Nile River Basin: The Case of the Grand Ethiopian Renaissance Dam, 21Geopolitics, 1, 8(2016)

28 Id., at 9

29 Endalcachew Bayeh, New Development in the Ethio-Egypt Relations over the Hydro-Politics of Nile: Questioning its True Prospects, 3International Journal of Political Science development,159, 161(2015)

30 Id.,at 161

31 Zerihun Abebe Yigzaw, Al-Sisi`s Nile Policy: What is New and What is Not?, Zerihun Abebe Yigzaw's Views on Transboundary Watercourses and Related Issues Blog, https://zenileabbay.wordpress.com/category/dams/

32 Aljazeera, Egypt's Sisi warns Ethiopia dam risks 'unimaginable instability', Aljazeera News (30 March 2021), https://www.aljazeera.com/news/2021/3/30/egypts-sisi-warns-ethiopia-dam-risks-unimaginable-instability

through water/green jihad.[33] From this it can be argued that, the securitizing actors not only securitized the water of Nile through their speech act but also attempted to change the Nile identity. By invoking history of prior use, they also denied the transboundary nature of Nile River. In the eye of the country's politicians and statesmen, GERD is a threat not only to their self-claimed 55.5 billion cubic meters of water as per the unbinding 1959 bilateral agreement but also to their identity of inseparability between Nile and Egypt. This is the author's point of departure arguing that Egyptian view of GERD as a water security threat of Egypt is a hyperbolically constructed myth that is neither actual nor perceived threat. Rather the securitization of GERD by Egypt is an invented fictitious threat. In the following section, a discussion is also made on the myth and reality of each of the securitization mechanisms used by Egypt.

4.2. Securitization Instruments

4.2.1. The discourse of Egypt's Absolute Water Dependency on Nile

One of the securitization mechanisms of Egypt against GERD is based on an invented discourse of absolute water dependency. Egypt viewed itself as a country whose life is absolutely dependent on the Nile waters and thus water is taken as a national security issue.[34] Al Rasheedy and Hamdy described the dependency discourse as follows:

> *as compared to the other riparian states, Egypt is the only country that is heavily dependent on the Nile River waters, making Cairo vulnerable to any actions that would jeopardize the flow of the Nile. The Nile River will always be the parameter that influences Egyptian foreign policy vis-à-vis the states in the basin region.*[35]

While maintaining absolute dependency discourse and any decrease of Nile water as an existential threat, Egypt maintain that Ethiopia has alternative sources other than the main Nile for whom water is not an existential threat. In this discourse, taking a drop of water from the Nile is taken as a red-line for calling extraordinary measure against the threat. GERD is thus securitized by Egypt based on absolute water dependency discourse. This securitization narrative of Egypt is, however, an artificially manufactured myth on the following grounds.

First, Egypt is a country endowed with groundwater source[36] and infinite sea water while Ethiopia depends on surface water.

If one looks at the hydrologic water budget of the Nile riparian countries, then it will be clear to know more water stressed country. With the exception of Sudan and Egypt, the rest of Nile riparian countries have insignificant groundwater reserves. According to the British Geological Survey, in Africa the largest groundwater reserve is found in five countries of North Africa: Libya, Algeria, Sudan, Egypt and Chad.[37] Of these countries, Egypt is ranked the 4th huge groundwater reserve country in Africa.[38] It has eight

33 Andreas Neef and Hala Nasr, Supra Note 65, at 9; See also Janot Mendler de Suarez, Achieving equitable water use in the Nile Basin: time to refocus the discourse on collective human security?, 38 Review of African Political Economy,455, 462-464 (2011).

34 Arab Republic of Egypt, Ministry of Water Resources and Irrigation Planning Sector, National Water Resources Plan for Egypt-2017, 1 (2015)

35 Ahmad Al Rasheedy and Hamdy A. Hassan, The Nile River and Egyptian Foreign Policy Interests, 11African Sociological Review, 25, 36(2007)

36 Tekleab Shibru, Debunking Ethiopia's Plentiful Water Resources vis-à-vis Egypt: A Closer Look at Basins' Water Budget, 4, https://eastafricanistcom.files.wordpress.com/2020/06/egypt-has-more-water-resources-than-ethiopia-a-closer-look-by-dr.-tekleab-shibiru-gala.pdf

37 H. C. Bonsor, A.M. MacDonald, B´E´O. Dochartaigh and R G Taylor, Quantitative maps of groundwater resources in Africa, 7Environmental Research Letters, 1, 5 (2012).

38 Tekleab Shibru, Supra Note 74, at 7

hydrological units for storing groundwater namely the Nile Valley and Delta aquifers, Coastal aquifers, Nubian Sandstone aquifer, Moghra aquifer, Tertiary aquifer, Carbonate rocks complex aquifers, Fissured basement complex aquifers and Aquiclude rocks.[39] The Nubian Sandstone and Nile aquifer are the two significantly important groundwater aquifers. Some of these systems, for instance, the Nile Valley and Delta, are renewable water resources both extractable and fresh with low pumping cost. Egypt has an estimated total groundwater storage of 55, 200-63,200 BCM.[40]

Table-1: Estimated Groundwater resources of Sudan, Egypt and Ethiopia in Decreasing Order

Country	Groundwater storage (km3)	
	Rang	Best estimate
Sudan*	37,100–151,000	63,200
Egypt	36,000–130,000	55, 200
Ethiopia	4,340–39,300	12,700

Source: Extracted from Bonsor et al.[41]

** The estimation includes the share of South Sudan*

As indicated in the above table, Sudan has high groundwater reserves followed by Egypt while the groundwater reserve of Ethiopia is insignificant as compared with the two downstream countries. When we make a comparison there is a big difference. Ethiopia has approximately 12,700 BCM groundwater storage. Whereas Egypt has close to 55, 200. Other studies, however, estimated Egypt's groundwater reserve as 63,200 BCM.[42] If we take, for instance, the estimation by Tekleab, Egypt's groundwater reserve is "50,500 BCM more and 400% higher than the groundwater reserve of Ethiopia".[43] By comparing available groundwater resources with that of the annual flows of Nile, Habtamu noted that "if one compares it with the 1959 bilateral Nile water quota of Egypt and Sudan, i.e., 55 and 18.5bm3 per annum respectively, their groundwater potentials correspondingly equate to the sum of flow of Nile water share of 1,000 and 3,400 years".[44]

Moreover, Egypt has more surface water reserve than Ethiopia. The study of Tekleab reveals that Ethiopia and Egypt have 30 and 108 BCM surface water reserve in the Nile Basin respectively.[45] Egypt has also unlimited access to sea water whereas Ethiopia has no access to sea water due to its landlocked status. This implies that in terms of the parameters such as groundwater reserve, per capital water availability, storage capacity and spatial variability, Ethiopia is more water stressed than Egypt. Habtamu noted that "…if Nile water flow dries up by some inexplicable natural and/or manmade factors, the two nations [Egypt and Sudan] can lead life for millennia without change to present water usage".[46] In contrast, any absence of surface water in Ethiopia literally means no life.

39 S.S. Ahmed, M. R. El Tahlawi, and A. A. Farrag, Groundwater of Egypt: an environmental overview, Environ Geology, 1, 3, (2007).

40 See. H.C. Bonsor, A.M. MacDonald, B´E´O. Dochartaigh and R G Taylor, Supra note 75, at 5; Tekleab Shibru, Supra Note 74, at 7-8

41 See H.C. Bonsor, A.M. MacDonald, B´E´O. Dochartaigh and R G Taylor, Supra note 75, at 5;

42 Tekleab Shibru, Supra Note 74, at 8

43 Id., at 8

44 Habtamu Abay, Egypt's Groundwater Resources, Aiga Forum (April 10, 2014), http://www.aigaforum.com/articles/Egypt-groundwater.pdf

45 Tekleab Shibru, Exposing an Infinite Water Resources Advantage of Egypt over Ethiopia, 1 (2020), https://www.researchgate.net/publication/342354234_Exposing_an_Infinite_Water_Resource_Advantage_of_Egypt_over_Ethiopia

46 Habtamu Abay, Supra Note 82, at 3

4.2.2. Constitutional securitization

Legally, the 2014 constitution of the Arab Republic of Egypt fallaciously legalized Egypt's monopolistic ownership of the Nile water. The preamble of the constitution denies the transboundary nature of the river as it recognizes an identity of inseparableness between Nile and Egypt: "Egypt is the gift of the Nile for Egyptians and the gift of Egyptians to humanity".[47] The constitution also obliges the government to "… protect the River Nile and preserve Egypt's historical rights".[48] This kind of constitutional securitization as well as legalization of the monopolization claim of Egypt is a major hurdles in the decade of CFA and also the ongoing GERD negotiation. Because, the government in Cairo has been negotiating the Nile water with co-riparian to safeguard not only Egypt's historical right but also to preserve the constitution. It is obvious that negotiations with an external party always requires a simultaneous negotiation with domestic groups such as citizens, parliament, political parties and pressure groups. For instance, Robert Putnam argued that "at the international level, national governments seek to maximize their own ability to satisfy domestic pressures, while minimizing the adverse consequences of foreign developments".[49] From this perspective, it can be argued that if Al Sisi fails to preserve constitutionally enshrined rights of Egypt over the Nile water, the regime may face a legitimacy crisis. GERD is thus a threat to the regime in power. This is one of the driving factor that force the regimes in Cairo to tend to securitize the Nile water.

In this regard, for the regime in Cairo, the regionalization and internationalization of the GERD as a security issue by Egyptian statesmen might be considered as a success.

4.2.3. Institutional Securitization

For Egypt, the Nile is a security and political issue. Because of this, issues related with Nile are dealt with the Supreme Committee for the Nile Water (SCNW) consisting of Ministry of Foreign Affairs, Ministry of Water Resources and Irrigation, Ministry of Defense, General Intelligence Service, and the Prime Minister and the President.[50] Zerihun noted that in all riparian except Egypt the Ministry of Water Resources Affairs has a mandated to deal issues related with Nile while Ministry of foreign affairs has a supportive role; whereas in Egypt, the Ministry of Water and Irrigation has nominal power especially when it comes to issues of negotiation.[51]

5. ETHIOPIA'S TACTICAL SECURITIZATION-CUM-DESECURITIZATION APPROACH

While Egypt securitizes the GERD as a security threat, Ethiopia has been desecuritizing the issue. Ethiopia has also used tactical securitization which is manifested in the GERD narrative which considers it an existential project. However, Ethiopia's approach over GERD is largely desecuritization. The bedrock of Ethiopia desecuritization approach rests upon the recognition of Nile as transboundary resource and its utilization based on principle of equitable and reasonable use, and cooperation. Its desecuritization approach over GERD is manifested through its altruistic invitation of downstream countries to establish a tripartite committee to review the design and study document and to jointly establish IPoE. Ethiopia also manifested it as it accepted the recommendation of the IPoE, hired consultants to implement the

47 Preamble of The Constitution of the Arab Republic of Egypt (2014)

48 Id., article 44

49 Robert D. Putnam, Diplomacy and Domestic Politics: The Logic of Two-Level Games, 45International Organization, 427, 434(1988)

50 Zerihun Abebe, Blue Nile/Abbay and Grand Ethiopian Renaissance Dam, Power Point Presentation Given at 2020 International Conference on the Nile and GERD, https://environment.fiu.edu/events/all/2020-international-conference-on-the-nile-and-grand-ethiopian-renaissance-dam/_assets/zerihun-abebe---zerihun-abebe-21-august-2020-fiu-1.pptx

51 Zerihun Abebe Yigzaw, Supra Note 69

recommendation of IPoE, signed the DoP, established Tripartite National Committee, and set up National Independent Scientific Research Group. The approach of Ethiopia is an exceptional not only in the history of Nile but also in international transboundary watercourses. In an article published on the official website of Ethiopian Ministry foreign Affairs (MoFA), it is stated that:

> *We don't know of any single country in the Nile basin that has ever previously invited other riparian countries to study the impact of a dam on riparian countries. Definitely this has never been the experience of Egypt, at least in regards to Ethiopia. If Ethiopia had chosen to follow historical precedent and indeed the example set by Egypt, there would never have been any consultations on GERD in the first place.52*

Egypt has built macro and micro dams on Nile but neither notified nor consulted Ethiopia. Why Ethiopia did this is just for the sake of hydro-cooperation, confidence building and to forge a benefit sharing regime. In view of that, the following are the desecuritization discourses of Ethiopia.

5.1. GERD as a Benefit Sharing Project

In the Nile basin, both water sharing and benefit sharing approaches has been applied at different degree. The 1929 and 1959 bilateral agreement, and the CFA can be considered as a water sharing frameworks whereas the NBI is a benefit sharing arrangement.[53] However, upstream and downstream countries have contradictory position on water sharing and benefit sharing. For Egypt and Sudan, water sharing means the 1959 agreement that allocates the Nile water only for themselves. Egypt objection of GERD is based on this inefficacious bilateral agreement as it pursued a policy of not to give a drop of water for upstream countries. Against this backdrop, however, GERD is presented by Ethiopia as a benefit sharing project.

While the speech of all Egyptian statesmen is securitization of GERD, in their speech act on GERD, successive Ethiopian leaders have used a consistent desecuritized, transformative and win-win narratives. For example, during the inauguration of the project the late Prime Minister Meles Zenawi announced that GERD is a benefit sharing project having a role of inducing cooperation among countries that share the Nile River[54] . The desecuritizaition policy of Ethiopia is also manifested in its altruistic invitation of downstream countries to establish tripartite committees.

Moreover, the GERD project has also cross-border benefits. In this regard, Sudan is an immediate beneficiary of the project: increases the hydropower generation capacity of its seasonal storage dams, reduces damages as a result of seasonal flooding, increases potential of irrigated agriculture, reduces the cost used to cope with the destruction and for maintenance due to flooding, saves more water and reduces evaporation, helps sediment control, allows sustainable navigation opportunity and power purchasing form the project.[55]

Despite the strong assertion that Egypt will be affected negatively, the benefits accrued from GERD for Egypt includes water saving and enhanced water management, flood control, controlled and uniform flow

52 Ministry of Foreign Affairs, Egyptian "Experts": unjustified statement on GERD, http://www.mfa.gov.et/web/guest/articles/-/asset_publisher/TiDZpSUe5oS6/content/egyptian-experts-unjustified-statement-on gerd?_101_INSTANCE_TiDZpSUe5oS6_redirect=http%3A%2F%2Fwww.mfa.gov.et%2Fweb%2Fguest%2Farticles%2F-%2Fasset_publisher%2FTiDZpSUe5oS6%2Fcontent%2Fegyptian-experts-unjustified-statement-on-gerd&_101_INSTANCE_TiDZpSUe5oS6_cur=0&_101_INSTANCE_TiDZpSUe5oS6_page=1

53 Zerihun Abebe, Eastern Nile Basin: The Nexus Between Water Sharing And Benefit Sharing Arrangements, Chap3 (Master Thesis, Addis Ababa University, Department of Political Science and International relations, 2011)

54 Meles Zenawi Memorial, Ethiopian Pm Meles Zenawi Speech on Launching GERD (Text and Videos), April 02, 2011, Guba, Benishangul Gumuz, http://www.meleszenawi.com/ethiopian-pm-meles-zenawi-speech-on-launching-gerd-text-and-videos/

55 Office of National Council for the Coordination of Public Participation on the Construction of the Grand Ethiopian Renaissance Dam, Grand Renaissance Dam, 4 Special Magazine Publication, 9 (2017).

of water, reduction of evaporation loss to 9.5 BCM/year from 10.8 BCM/year at High Aswan Dam, sediment control and hence GERD will extend High Aswan Dam design life, enhanced navigation as a result of regulated and increased water flows.[56] The report of IPoE also confirmed the above listed benefits GERD for Egypt as it enumerates "an increase in irrigated area, a decrease in sedimentation in Lake Nasser, and a reduction in flooding".[57] Of these benefits, the major one is drought mitigation. As Egypt faces irrigation failure due to drought and high evaporation, this will be decreased as a result of GERD. According to several studies and the report of IPoE, the negative impact of the project on Egypt is the reduction in power generation at High Aswan Dam which is very minimal and largely determined by the type and duration of reservoir filling strategy of GERD.[58]

5.2. Principle of Equitable and Reasonable Utilization

In contrast to the downstream countries claim of acquired and historical rights of the Nile waters, Ethiopia asserts an international water law principle such as equitable and reasonable utilization with a duty of not to cause significant harm. This can be found in the agreements signed by Ethiopia such as CFA[59] and DoP [60]. Both legal instruments codified principles such as equitable and reasonable utilization and not to cause significant harm. These principles have also got wider international acceptance. They have been also codified in the 1977 Convention on the Law of the Non-navigational Uses of International Watercourses.[61] Throughout the GERD negotiation, Ethiopia has adopted and adhered the principle of equitable and reasonable use as enshrined in regional and international water related legal instruments.

5.3. Concluding Remarks

Using securitization theory as an analytical framework, the author argues that Egypt securitization of GERD as an existential water security threat is neither an actual nor perceived threat. Rather Egypt's view of GERD as a water security threat is an invented fictitious threat neither scientifically verified nor legally supported. Thus, Egypt's securitization of GERD is part of the historicism strategy of Egypt as it considers Nile water matter of life and death, a security and geopolitical issue.

In contrast, Ethiopia's desecuritization approach is based on the strategy of 'desecuritization through rearticulation' which is a win-win approach based on principles of collaboration, accommodation and negotiation. It is grounded upon the recognition of Nile as a transboundary resource and its utilization based on principle of equitable and reasonable use, and hydro cooperation and solidarity. Through this Ethiopia presented GERD as a benefit sharing project having scientifically verified domestic, regional and international benefits. Against this backdrop, Egypt's negotiation approach is based on securitization of GERD under the notion of water security, discourse of absolute dependency and claimed historic rights. They come to negotiation table to pressurize Ethiopia to recognize Egypt's claimed historic right under

56 Id., at 9

57 International Panel of Experts, Grand Ethiopian Renaissance Dam Project Final Report, 31st May 2013, at 41

58 See Rawia Tawfik, The Declaration of Principles on Ethiopia's Renaissance Dam: A Breakthrough or another Unfair Deal?, The Current Column, 26 (2015); Esam Helal and Abdelhaleem Fahmy, Impacts of Grand Ethiopian Renaissance Dam on Different Water Usages in Upper Egypt, 8British Journal of Applied Science & Technology, 461, 462 and (2015); Asegdew G.Mulat and Semu A. Moges, Assessment of the Impact of the Grand Ethiopian Renaissance Dam on the Performance of the High Aswan Dam, 6Journal of Water Resource and Protection, 583, 583 (2014).

59 Agreement on the Nile River Basin Cooperative Framework, Article 4 and 5

60 Agreement on the Declaration of Principles between the Arab republic of Egypt, The Federal Democratic Republic of Ethiopia, and The Republic of the Sudan on The Grand Ethiopian Renaissance Dam Project, March 23, 2015, Article 3 and 4

61 Convention on the Law of the Non-navigational Uses of International Watercourses, General Assembly of the United Nations on 21 May 1997; Article 5 and 7

the cover of ill-defined and amorous concept of water security. Its strategy of negotiation is not based on scientific knowledge, data and principled politics of give and take. Rather it is based on distorted image and securitization of GERD. Egypt's approach of negotiation is based on win-lose as the negotiator always comes to negotiation table 'not to give a drop of water based on the notion of water security'.

The study also identified the myths and realities in the securitization discourse of Egypt. The myths of the securitization of GERD by Egypt as a security threat include the following. First, securitizing GERD based on the discourse of Egypt's absolute dependency on the Nile water is scientifically unverified and is an invented myth. Contrary to Ethiopia, Egypt is groundwater endowed State. Estimated groundwater resources of Egypt and Ethiopia is 55, 200 km3 and 12,700km3 respectively. In Ethiopia, if there is no rain then there will be no agriculture, no food and no life at all. However, life in Egypt can sustain in the absence of Nile waters with groundwater. Second, Egypt securitization of GERD based on its policy of politicization and nationalization of Nile waters is a myth. By politicizing the Nile waters, Egypt brings the political GERD rather than the technical GERD in to the negotiation table. Egypt also securitized GERD based on unscientific syllogism of 'Egypt is a gift of Nile then Nile is a gift of Egypt'. Third, the securitization of GERD based on Egypt notion of water security is unscientific, non-accommodative, and destructive. Why Egypt use ill-defined, amorphous and destructive concept of water security is to stop the construction of GERD and thereby canonizing the inequitable status quo. Fourth, GERD is an invented existential threat and foreshadower of Egypt's hysteria and Ethiophobia.

In conclusion, two kind of transformation is needed. On the part of Egypt, it should renounce its unscientifically supported securitization discourses and recognize the Nile as a transboundary shared resource. Instead of maintaining indefensible historical rights, Egypt should accept international water law principles such as the principle of equitable and reasonable use, and not to cause significant harm as codified in CFA and DoP. Moreover, Egypt must revisit its notion of water security which is a win-lose. On the part of Ethiopia, it should deconstruct the unwarranted myth of Egypt on GERD in particular and Nile in general.

DECIPHERING THE NILE IMPASSE: INSTITUTING PAYMENT FOR ECOSYSTEM SERVICES

Mersie Ejigu1

Abstract

Over 86 percent of the Nile waters originate in Ethiopia. But two lower riparian countries: Egypt and Sudan claim 100% of the Nile waters while Ethiopia gets zero. The Nile is the only major transboundary river in the world without a comprehensive treaty. Egypt has frustrated and continues to frustrate any negotiation effort for promoting equitable and sustainable use of waters.

The Nile may dry up; and may not be there by 2080 as some research shows. The upper Nile (Blue Nile) ecosystem is severely degraded. Egypt contributed to the ecosystem degradation massively, by putting pressure on international finance and development organizations to deny funding for upstream projects, including those projects that would have provided alternative livelihood sources and thereby conserved ecosystem integrity.

Yet, the entire cost of maintaining healthy ecosystems that enables sustainable water availability (quantity and quality) is historically borne entirely by Ethiopia. Ethiopia should exercise its inalienable right over the use of its water resource in a manner that does not do significant harm to downstream countries. In 1999, the Nile riparian countries joined by Egypt and Sudan, created the Nile Basin Initiative, or NBI, under the slogan One River, One People and One Vision to develop a comprehensive Nile treaty anchored in the equitable and sustainable use of the Nile waters. Unfortunately, Egypt and Sudan refused to sign the Cooperation Framework Agreement and suspended their NBI membership, and essentially halted the negotiations for a Nile treaty.

International water conventions and practices are today widely promoting Payment for Ecosystem Services (PES), which will lead to the equitable and sustainable use of the Nile waters. Payment for ecosystem services (PES) is a market-based mechanism, widely used now in several regions. This mechanism rewards upstream communities (farmers/landowners) for managing their land or watersheds to provide ecological or ecosystem services (such as cloud formation, hydrological processes, carbon sequestration, and nutrient recycling) which enables and maintains water flows.

Key words: natural capital, water accounts, ecosystems, ecosystem services, payment for ecosystem services

Objectives of the paper:

- Contribute to the development of policies and institutions in Ethiopia for maintaining healthy ecosystems, promoting equitable and sustainable use of the Nile and other transboundary rivers;
- Help Ethiopia set the Nile agenda and galvanize the fight against Egypt's false Nile narrative echoed by the Arab League and the West;
- Encourage research and publications on payment for ecosystem services.

The setting:

- Inequity: over 86 percent of the Nile waters originate in Ethiopia, but Egypt & Sudan claim 100%. The primary beneficiary of the river, Egypt, takes lead in ecosystem destruction through, among other things, lobbying the international financial institutions to deny Ethiopia development financing in the Blue Nile watershed that could have contributing to ecosystem restoration and maintain the quantity and quality of the Nile waters. Paradoxically, the least beneficiary country, Ethiopia, shoulders the cost of maintaining healthy ecosystems that enable water availability (quantity & quality) & river flows
- Disappearance of the Nile is imminent: If current practices continue, the Nile may dry up; and may not be there by 2080 as research shows. The upper Nile (Blue Nile) system severely degraded accelerated by anthropogenic and non-anthropogenic factors

- Absence of a legal framework/ treaty: the only major transboundary river without a comprehensive treaty. Any negotiation effort promoting equitable & sustainable use frustrated by Egypt.
- False Nile narrative spread by Egypt and bought by the West and Arab League: A narrative that is antithesis of science & best practices in river management
- Benefits and costs must be shared- payment for ecosystem services (PES) has the potential to end the Nile quagmire, shift the narrative in favor of Ethiopia and revive talks.

Key paradigm shifts that paved the ground for PES

- Ascendancy of sustainability as a development organizing principle and policy framework. The integrated and balanced pursuit of development: 1980 WCS, 1987 Our Common Future, 1990 Governing the Commons, 1992 Rio Earth Summit (CBD, UNFCCC, etc.), 2000 MEA, 2002 WSSD, 2012 Rio + 20, 2015 UN SDGs 2030. Finally, sustainability has been embraced by Business/ private sector as a business strategy (PPP) and by academic institutions as a mainstream pedagogy
- The new wealth of nations. The redefinition of the wealth of nations (the classical production function: David Ricardo Q = f(C,L, L), Neoclassical /Keynes: Q = f(C, L).
- The New Wealth of Nations 2005 (World Bank Task Force) – produced, human, institutional, and natural capital.
- Changes in the measurement of the wealth of nations. 1947 UN initiated SNA to measure transactions of an economy (GDP) but was based on neoclassical economic thought that assumed natural resources are so abundant in colonies and have no marginal value and are gifts of nature and no investment cost to write off against. In 2008, adopted the System of Environmental-Economic Accounting (SEEA) and in 2021, the System of Ecosystem Accounting (SEA) that is anchored in valuation of ecosystem services and functions and measures changes therein.

Evolution of Natural Capital and its Accounting: Natural capital: the quantity & quality of natural resources (land, water, minerals, flora, fauna, ecosystems functions & services), cultural & spiritual benefits derived from nature. In developing countries, "natural capital" constitutes more than a quarter of total wealth of the country: cropland and pastureland accounting for "nearly 70 percent" (MES, 2000)Thus, natural capital accounting (NCA) is the systematic physical as well as monetary accounting of stocks and flows, stock changes, costs of depletion and degradation.

It is worth noting that in economics, 'capital' is wealth (an 'asset' in the form of stocks and flows) with value derived from its potential use & available to produce further wealth (goods & services). The controversy the world faces arises from two lines of thinking:

a. The benefits of nature is unlimited, intrinsic, and irreplaceable, hence wrong to use the term "capital" or commoditize nature & place it on equal footing with other forms of capital
b. On the contrary, the absence of apparent value combined with deficient property rights paved the ground for over exploitation, abuse and misuse.

Among the benefits of Natural Capital Accounting are:

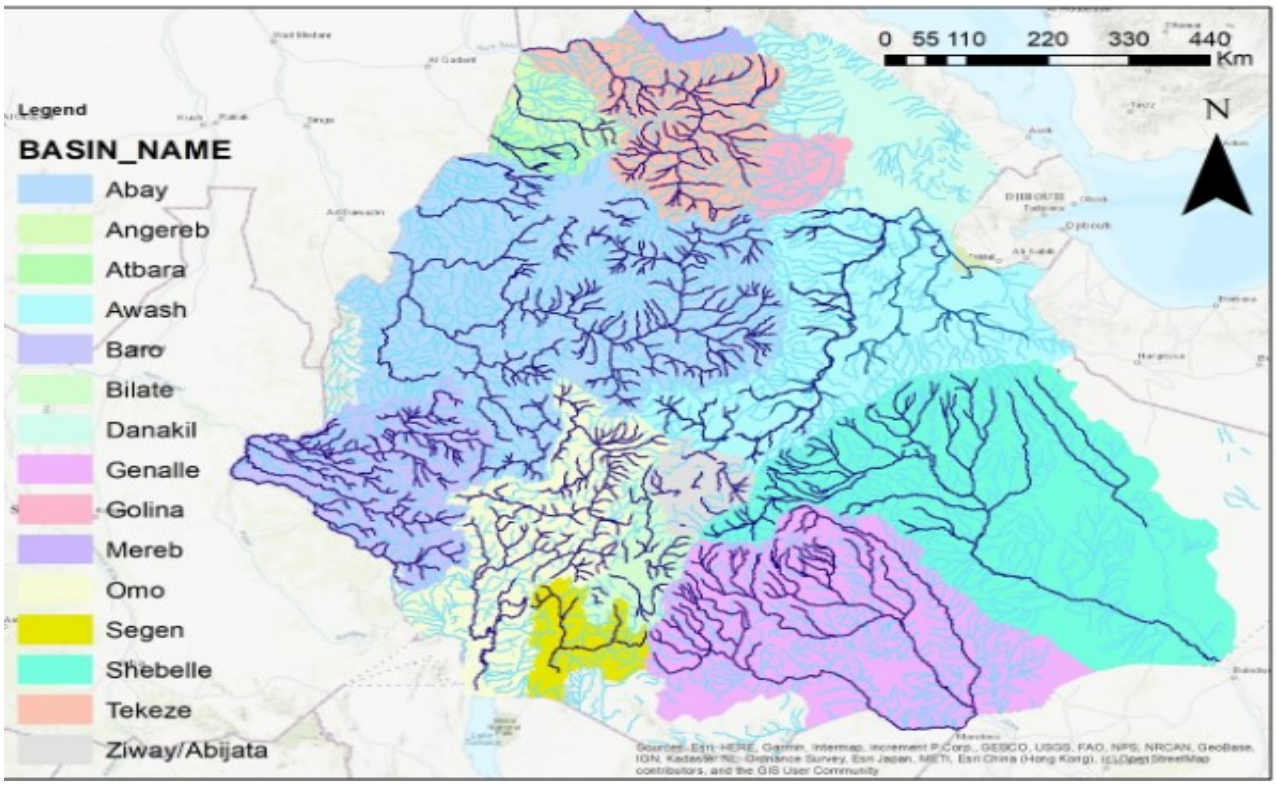
- Expands the asset and wealth boundary of nations / true wealth. Ethiopia's wealth is highly undervalued and unknown
- Helps to monitor changes in national wealth (losses and gains in natural capital) over time and space to plan and make well informed and timely intervention
- Helps to identify priority areas for resource allocation and investment and improve planning & management
- Over 100 countries are developing NCA, but Ethiopia is not one of them

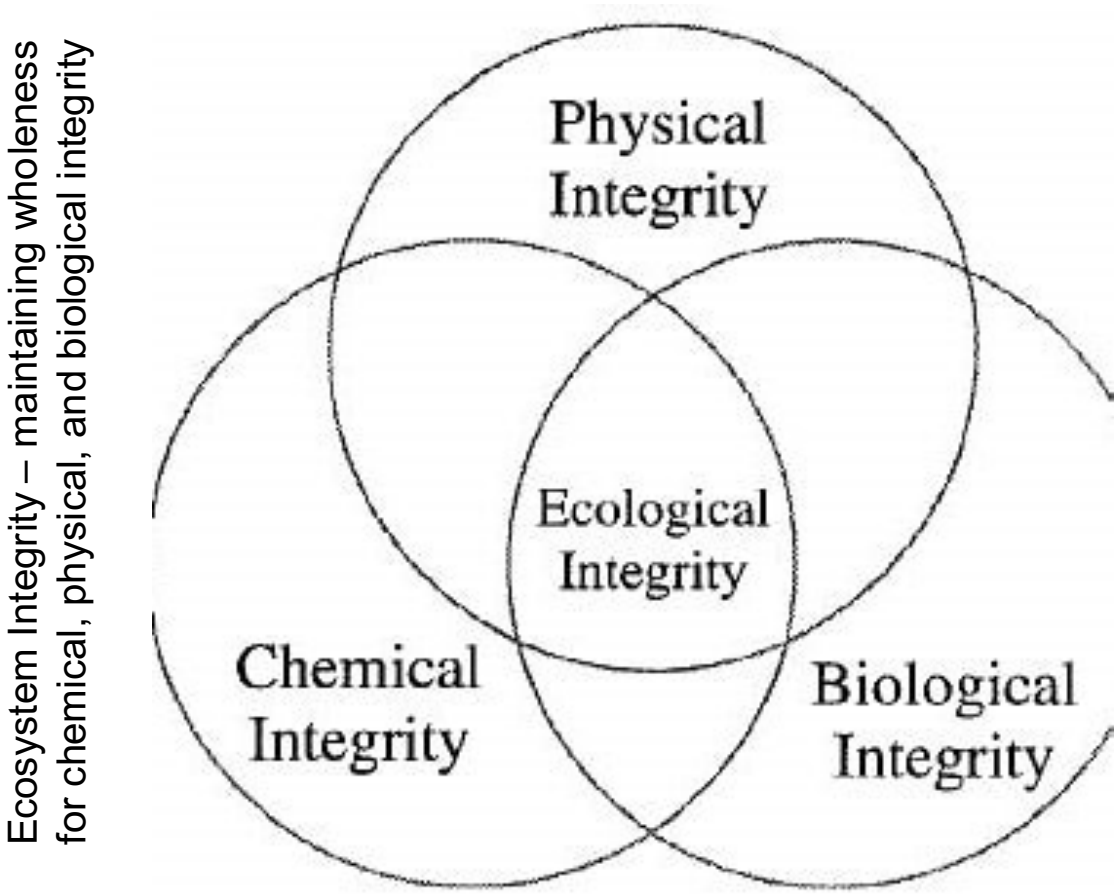
Understanding ecosystem functions and services

- Ecosystem: a structural and functional unit of the biosphere (production unit), in which biotic and abiotic factors interact among themselves and with each other through the food chain, food web or chemical cycles, etc. In a word, it is a production and service rendering entity
- Ecosystem services are services that people enjoy for survival and reproduction (MEA, 2005a) and the direct and indirect contributions of ecosystems to human well-being (TEEB, 2010)
- Provisioning services: primary production (food, fiber, fuel, herbs and medicinal plants, genetic resources), air, water supply and quality, soil formation and soil moisture retention
- Regulating services: the capacity of ecosystems to regulate natural processes: climate stabilization, carbon sequestration, hydrological processes, disease outbreaks and prevalence
- Cultural and educational services: aesthetic and recreational value of forests, streams and landscapes, research and education, preservation of genetic diversity
- Supporting services: creating conditions necessary for the provision of all other ecosystem services: photosynthesis, soil formation and nutrient recycling, pollination, seed dispersal, detoxication

In Ethiopia, ecosystem services and functions are interconnected:

Ecosystem functions are integrated





Valuation of Ecosystem Services

Valuation seeks to capture the complete range of values of services/benefits as an integrated system– resource stocks, flows of services, and the attributes of the ecosystem

- **Types:**
  - Direct values: (marketable) raw materials and physical products that are used directly for production and consumption: energy, shelter, foods, medicines, and recreational facilities.
  - Indirect values: (non-market / passive) ecological functions- maintenance of water quality and flow, flood control, stabilize microclimate & sequestrate carbon
  - Optional values: the premium placed on maintaining a pool of species and genetic resources for future possible uses, some of which may not be known now
  - Existence values: the intrinsic value of ecosystems and their component parts, cultural, aesthetic, and heritage
- **Methods for monetary valuation of ecosystem services:**
  - Market Price Method: e products or services bought and sold in commercial markets.
  - Productivity Method -products /services contributing to the production of commercially marketed goods
  - Hedonic Pricing Method - services directly affecting market prices of some other good, i.e., housing prices
  - Travel Cost Method - for ecosystems or sites that are used for recreation; the value of a site is reflected in how much people are willing to pay to travel to visit the site.

- **Payments for ecosystem services (PES) and the Case for it in Ethiopia.**

PES is based on the recognition of existence of a market for ecosystem products and services that people need and are willing to pay for. It is an approach where downstream water users pay (voluntarily) upstream farming communities for providing ecosystem services, i.e., maintain and conserve nature, water bodies, and ecosystem functions.

The Case for PES in Ethiopia

- Enables sharing the cost burden of maintaining healthy ecosystems & water flows 90% of Ethiopia's rivers are transboundary, riparian countries get them free while the burden of keeping them flowing rests on poor Ethiopians
- Ensuring benefits derived from ecosystems continue well into the future. Acknowledging ecosystem values is establishing their continuity.
- Ecosystem services are recognized and valued globally: PES places buyers and sellers on equal footing as prices are globally known and comparable.
- PES is unifying: The ES market involves multiple actors (government, communities, individuals, etc.), buyers, sellers, brokers or intermediaries, scientists, regulators & planners.
- Helps build policy and institutional capacity that benefit the entire economy

Lessons learned from major international rivers:

- Danube: The most international river basin in the world covering 19 countries and more than 800,000 square kms or 10 percent of Continental Europe using the waters in a manner that is equitable and sustainable while living in harmony, mutual respect, and peace. There are strong institutions for policy making, planning and monitoring implementation policy making- EU Water Framework Directive (WFD), EU Flood Directive (FD), planning Danube River Management Plan (DRBMP) and the International Commission for the Protection of the Danube River (ICPDR)
- Mekong River: 80 percent of the Greater Mekong's 300 million people depend directly on the goods and services its ecosystems provide.
    - Most PES initiatives primarily funded by government, donor and civil society organizations (Cambodia, Laos, Thailand and Vietnam. In the case of Vietnam, the Government requires water supply, hydropower and tourist companies to pay fixed rates and distributes those to the ecosystem services providers, which include state companies and villagers as they conserve forests for watershed protection and landscape aesthetics.

The Way Forward

- Adoption of PES as a national water policy
- Developing clear and pragmatic PES implementation strategy
    - Pursue an ecosystem restoration project cost approach until markets are developed: priority projects: severely degraded ecosystems restoration
    - Area closure for ecosystem repair and rehabilitation of Mount Guna & Choke
    - Lake Tana and GERD buffer zone development
    - Freeing Lake Tana from invasives/water hyacinth
    - Resettlement of people outside severely graded catchment areas
    - Rehabilitate national parks and protected areas, and wetlands

- Starting with the replacement cost method: cost of soil degradation. For example, Getachew and Dinar (2016) estimated Ethiopia, Sudan, and Egypt need to contribute $462 million, $1.04 billion, and $2.13 billion for five years, respectively.
- Removing constraints to ensure continuity and the well-functioning of the PES market, for example, improving tenure rights and institutions.

HYDRO-COMMUNICATION FOR HYDRO-DIPLOMACY: ABBAY RIVER BASIN IN FOCUS

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Abstract

Hydro-communication is communication on (transboundary) water to form national interest and ensure its sustainable governance and management, and it is vital for hydro-diplomacy. Given its transformative potential, Abbay River Basin is a strategic natural resource on which the battle for sustainable development of Ethiopia is going to be hugely won or lost. And being instrument of global geopolitical hegemony, Abbay River Basin has been defining the international relation and the image of Ethiopia in both the regional and international arenas. As a cross-cutting, public and transboundary resource, putting Abbay River Basin into efficient use and securing equitable and reasonable use of it is a moving target, which demands involvement of multiple stakeholders ranging organizationally from individuals to state, individually from farmers to water scientists and political leaders and across all sectors. This involvement is ensured through hydro-communication that forms and crystalizes national interest for that should win space in the regional and international forums. Underpinning the constructivism research paradigm, two-level games theory and employing qualitative content analysis, this paper analyzed the evolvement of conceptualization of hydro-communication along with the underlying reasons and specified the opportunities and challenges of hydro-communication for hydro-diplomacy on Abbay River Basin.

Keywords: strategic resource, national interest, hydro-hegemony, geopolitical hegemony

1. Introduction

Communication on water has existed ever since the existence of mankind. Taking in its face value and broadest sense that hydro-diplomacy refers to all diplomatic relations and efforts relating to water, it is also safe to say that hydro-diplomacy has been practiced throughout history, but it, as a mainstream, has gained growing importance since 2015 (Farnum, 2018). The emphasis given to sustainable development and environmental communication from 1980s onwards, the increasing crucial importance of natural capital including water as the third form of capital next to physical and human capital for development (Pinilla & Badia-Miro, 2015) and the emergence of water governance and management as an important issue (Jimenez, et al., 2020) could be the main factors behind the conceptualization and increasing recognition of hydro-diplomacy. It is from this conceptualization that 'hydro-communication' is coined and defined as communication on (transboundary) water to form national interest and to ensure sustainable governance and management of it and vital for hydro-diplomacy. The mention of communication as one of the elements in the relational layer of water governance (Hofstra, 2013)strengthens this.

The ability of a country to sustain its economic growth depends on the extent to which its natural resources, including water, are put to efficient use through institutions (Furlong, 2006). Unmitigated hydrological variability compounded by climate change was estimated to cost roughly one third of Ethiopia's growth potential (World Bank, 2006). The launching of the construction of the public funded Grand Ethiopian Renaissance Dam (GERD) in 2011 on Abbay River Basin and the successive phase fillings of the dam reservoir followed by the commencement of initial power generation, have heralded the progress Ethiopia has made in putting its water resource into efficient use. However, ever since Ethiopia wanted to use Abbay River Basin, it faced lots of unprecedented diplomatic challenges which imply hydro-communication and hydro-diplomacy are never ending process and influenced by different factors.

This paper, therefore, aimed at identifying the evolvement of conceptualization of hydro-communication along with major contributing factors and identifying the opportunities and challenges of hydro-communication for hydro-diplomacy with particular focus on Abbay River Basin. Conceptualization refers to the way how hydro communication on Abbay River Basin was and is understood and practiced.

2. Methodology

The rationale of this research are first, Abbay has always been and will continue to be a strategic natural resource where the battle for sustainable development of Ethiopia is going to be hugely won or lost. And being instrument of geopolitical hegemony, it has always been defining and will continue defining the international relation and the image of Ethiopia in both the regional and international arena. Second, negotiation, if it is called, is a never ending process and far-fetched option, third utilizing Abbay is at the point of no return and, fourth, the issue of Abbay entertains two-level interactions (games) theory of Putnam and Wednt (Putnam, 1988; Wednt, 1999) . Constructivism research epistemology which argues that first, reality except physical or natural one is socially constructed through communication, second, looking at the whole of a phenomenon is much more meaningful than singling out one variable causing the outcome because interaction is complex and has no directionality, and everything influences everything else, third it helps to create order out of disorder (Creswell, 2012; Keyton, 2001) was employed. Hydro-hegemony (Zeitoun & Warner, 2006), absence of substantive reason linking scarcity or abundance of resources to conflict or cooperation (Le Billon, 2001), and the existence of conflict and cooperation as neither continuum nor exclusive to each other (Zeitoun & Mirumachi, 2008 a) are manifestations of socially constructed reality with regard to transboundary water resource. Consistent to constructivism, qualitative content analysis which is defined as any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings (Patton, 2002) was employed. Secondary data such as five purposely selected books written on Abbay in the name either 'Abbay' or Nile, five articles on Nile, three interviews and one participant observation to conference on Abbay were used as research data.

3. Results and Discussion

3.1. Evolvement of Conceptualization of Hydro-communication on Abbay River Basin

3.1.1. Hydro-communication on Abbay River Basin (1884-1940s): Subjugated to Colonial Powers (Third Party)

In a secularly recorded history, the first official communication on Nile (technically Abbay River Basin) was the Protocol signed between Great Britain and Italy in 1891. In this protocol Italy pledged not to undertake any irrigation works which might significantly affect the Atbara's flow into the Nile. This happened twenty two years after the opening of Suez Canal in 1869, nine years after Egypt became colony of Great Britain in 1882, and seven years after the Berlin Conference staged "Scramble for Africa" in 1884(19 November 1884-26 February 1885). As these events reinforce each other and the 1891 protocol could be the continuation of them, the events were facilitating factors for such communication.

After four years of the protocol signed between Great Britain and Italy i.e. in 1895 came the popular doctrine- Absolute Territorial Sovereignty- which is also called the Harmon Doctrine which argues a country has absolute sovereignty over the territory and resources within its borders (McCaffrey, 1996). Diametrically opposite to this theory, however, the absolute territorial integrity which argues 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 came. Both have limited support in state practice (Birnie & Boyle, 2002).

Without any clear strict alignment to either of the doctrines, the mention of 'Blue Nile, Lake Tana or the Sobat' in Article III of the 1902 treaty between Great Britain and Abyssinia (Ethiopia) to regulate the frontier between the Sudan and Abyssinia happened. Article III reads as ' The Emperor Menelik engages not to construct or allow to be constructed any work across the Blue Nile, Lake Tana or the Sobat which would arrest the flow of their waters into the Nile, except in agreement with the Governments of Great Britain and the Sudan' (Van der kley, 2009). This hydro-communication instance happened while the Egypt's Aswan Low Dam which holds 4.9 billion cubic meters of water was inaugurated.

However, many argued that this treaty is not binding for Ethiopia. The substantive reasons mentioned among other things are first, Emperor Menelik's tried to present draft to defend his position, but got rejected by Lieutenant Colonel John Lane Harington, British negotiator which implies that the treaty was forceful; second, there was nothing mentioned Ethiopia got in return which is against the notion of reciprocity of treaty; third, the treaty was never ratified by British Parliament and the Ethiopian Crown Council; fourth, Great Britain recognized the attempt of Italy to colonize Ethiopia in 1935 which implies that Great Britain didn't consider Ethiopia as independent state, and the treaty couldn't be valid any longer; fifth, as to the convention of the United Nations, any treaty signed before 1919 is not valid unless it is sent to and registered by the United Nations Head Quarter, but this treaty was not registered; sixth, after Ethiopia reversed the Italian invasion in the 1941, it (Ethiopia) renewed number of treaties, but this treaty was not included in the list, and seventh, the Amharic version of the Article reads as "...ወንዝ ተዳር እዳር የሚደፍን ስራ... or a literal translation of it is "...shall not block the waters from bank to bank" which Ethiopia has never done and is not doing (Gebre Tsadik, 2003; Hailu, 2013; Kinfe, 2004).

Between the 1906 tripartite treaty between Great Britain, France and Italy and the 1925 Exchange of Notes between the United Kingdom and Italy in which hydro-communication took place on Abbay River Basin, economic function (hydropower, irrigation, fishery, and etc.) of transboundary river basins got recognition in the Barcelona Convention in 1921 (Rieu-Clarke, Moynihan, & Magsig, 2012).

The first strong move and pertinent hydro-communication made by Ethiopia on Abbay River Basin which of course couldn't escape subjugation to colonial powers was the effort made by King Teferi Mokonen to undertake development project at Lake Tana in 1927. King Teferi Mokonen sent a special envoy, Workneh Martin, to US and obtained American engineers for the Lake Tana development project survey. However, the survey made by J.G White Engineering Corporation failed to be translated into reality due to the opposition of Britain and Italy (Gebre Tsadik, 2003; Kinfe, 2004), and even after two years of this attempt of Ethiopia, the colonial Great Britain concluded the 1929 Agreement between Egypt and Great Britain (being colonizer of Sudan). It was in this agreement that the issue of 'water security' got birth (Salman, 2012), and it remains to be a hurdle in the hydro-communication on Abbay River Basin to date

3.1.2. Hydro-communication on Abbay River Basin (1950s-1980s): Regional Hegemony

This period is known for end of colonialism and World War II on one hand and experiencing cold war along with its devastating impacts and intervention of developed nations on developing and under-developing nations through education and media (soft power) on the other hand. It was at this period that different development theories, where development communication was one, were proposed. Modernization Paradigm, the first paradigm of development communication which argued that under developing nations should follow the footsteps of developed nations, most notably US, came. The then US president Truman inaugural speech of 1949 marked the conception of Modernization Paradigm of development communication. In the president's inaugural address, the fourth point instigated the conception. The president stated…, 'Fourth, we must embark on a bold new program for making the benefit of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas'. It was following this address that the long trek of the application of foreign assistance, values and ideas to the southern hemisphere began under Point Four Initiative. Modernization paradigm of development communication argues that undeveloped areas should develop by following what US did. Intervention on education and using mass media became common. As to the evolution of the management of water, this period experienced resource development in 1960s and 70s (big infrastructure development on water), environmental security in 1970s and 1980s and the beginning of resource management (national and regional planning instead of project planning).

Although not particular to Abbay River Basin, one of the significant moves Ethiopia made in this period with regard to water resource was the mention of water in The 1955 Revised Constitution of Imperial Ethiopian Government in letter (b), of Article 130 as 'The natural resources in the waters, forests, land, air, lakes, rivers and ports of the Empire are sacred trust for the benefit of present and succeeding generations of the Ethiopian people'. The declaration that Ethiopia reserved its sovereign rights to use the water resources of Nile within the country's territorial bounds (The Ethiopian Herald, 6 February 1956 cited in (Yacob, 2007) could be taken as hydro-communication Ethiopia made. Then, in 1957 Ethiopia wrote circular aide-memoire to the diplomatic community in Cairo. This is practice of hydro-diplomacy. Hence, one could say that hydro-communication and hydro-diplomacy on Abbay River Basin was proactive. The aide-memoire in part reads as:

> *Ethiopia has the right and obligation to exploit its water resources for the benefit of present and future generation of its citizens (and) must, therefore, reassert and reserve now and the future the rights to take all such measures in respect of its water resources (Kinfe, 2004).*

These hydro-communication and hydro-diplomacy efforts of Ethiopia were substantiated by a comprehensive study of Abbay (Blue Nile) which lasted 1957 up to 1962 (Kinfe, 2004), 1958 up to 1964 (Gebre Tsadik, 2003; Hailu, 2013)and 1956 up to 1964 (International Crisis Group, 2019). In this time period, however, specifically in 1959, Egypt and Sudan signed new agreement repudiating the 1929 and divided all the Nile's waters as 55.5 bcm/year for Egypt and 18.5 bcm/ year for Sudan, and the rest 10 bcm/year allowed for evaporation (Mckenzie, 2012). As a reaction to this, Emperor Haile Selassie himself gave a lengthy statement part of which is the following:

We have already explained that the plans are under construction to utilize our rivers as an essential step in the development of agriculture and industry, it is of paramount importance to Ethiopia, a problem of first order that the waters of the Nile be made to serve the life and the needs of our beloved people now living and those who will follow us in centuries to come. However, generally, Ethiopia may be prepared to share this tremendous God given wealth of hers with friendly nations neighboring upon her, for the life and welfare of their people… (Ethiopia Observer, Vol. II, No. 2, 1958: 93 cited in Yacob Arsano,2007).

What is interesting in the 1959 agreement; however, is the stipulation of Article Five-General Provision- discussing the position Egypt and Sudan would take and the apportionment they would offer if any other riparian state claims for its share. Article five, number 1 reads as:

'If it becomes necessary to hold any negotiations concerning the Nile waters, with any riparian state, outside the boundaries of the two Republics, the Governments of the Sudan Republic and the United Arab Republic shall agree on a unified view…' and number 2 reads as 'As the riparian states, other than the two Republics, claim a share in the Nile waters, the two Republics have agreed that they shall jointly consider and reach one unified view regarding the said claims. And if the said consideration results in the acceptance of allotting an amount of the Nile water to one or the other of the said states, the accepted amount shall be deducted from the shares of the two Republics in equal parts, as calculated at Aswan'.

Here, it is possible to say that the proactive steps Ethiopia took in the hydro-communication and hydro-diplomacy on Abbay River Basin forced Egypt and Sudan to both sign the 1959 agreement and stipulate this article-article five.

In 1960 the construction of Aswan High Dam with a capacity of holding 162 billion cubic meters of water began, which is a resource capture or 'active unilateralism' strategy, a situation whereby a state with the ability to plan, construct and operate large infrastructure projects has the physical ability to change the hydrogeology of the resource, thereby creating new hydro-strategic and hydro-political realities to the advantage of the constructor (Zeitoun & Warner, 2006). This has made hydro-communication and hydro-diplomacy on Abbay River Basin difficult to date.

Interesting development this time was the Nyerere doctrine named following the then (1961) president of Tanganyika (today Tanzania) who rejected treaties and agreements made by colonial protectorates. In the subsequent years, the Nyerere doctrine got huge acceptance, and the other two upper riparian states, Uganda and Kenya decided to follow it in 1962 and 1963 respectively (Hailu, 2013). The Nyerere doctrine underpins the clear slate ("Tabula Rasa") principle which states that a newly independent state has the right to either reject or bound by the treaties signed by the colonial protectorates.

Amidst this, the study titled 'Land and Water Resources of the Blue Nile' made by the American Bureau of Reclamation got concluded in 1964, but failed to be materialized as Egypt effectively blocked the credit to be gained from Africa Development Bank (Hailu, 2013). Seemingly taking a lesson from this, Egypt resorted to containment strategy using normative compliance-producing mechanisms like treaties (signing of an agreement to institutionalize the status quo to Egypt's advantage) and utilitarian compliance-producing mechanisms such as incentives (employing trade incentives, diplomatic recognitions, military protection, and so on) to get a riparian states comply with the status quo and Egypt's interest. Hydromet, "The Hydro-meteorological Survey of Lakes Victoria, Kiyoga, and Albert" established in 1967 with the aim to study, analyze and disseminate to member countries meteorological data on the equatorial lakes and rivers was indicative of this. The signatories of Hydromet were Egypt, Kenya, Sudan, Tanzania, Uganda and the donor organizations- UNDP and WMO. In 1971, Ethiopia became an observing member of Hydromet which lasted for 25 years but without having any substantive impact except for Egypt ((Dereje Zeleke, 2010). Notwithstanding the limitations, Hydromet arguably staged the first basin wide forum.

It should be noted that this was the time in which dependency paradigm of development communication which equates modernization paradigm as continuation of colonialism came to exist and became popular, most notably in the Southern hemisphere. Though failed, the New World Information Communication Order which was an effort against inequitable information flow from the west was also experienced this period.

In a way consistent with Nereyere doctrine, Article 16 of the 1978 Vienna Convention declared that the newly independent state has no obligation to inherit previous agreements and to be accountable of them unless it wants to. In 1979, the year after signing the Camp David accord, Egyptian President Anwar Sadat said: "The only matter that could take Egypt to war again is water." (Woodrow Wilson International Center for Scholars, 2007). Fast forward, after eight years, in 1988 then-Egyptian Foreign Minister Boutros Boutros-Ghali, who later became the United Nations' Secretary-General, said that the next war in the Middle East would be fought over the waters of the Nile, not politics (Woodrow Wilson International Center for Scholars, 2007). This was the application of coercion pressure (deploying threats such as military action to make other riparian state drop its claim). Same year, Egypt revealed its plan to take the Nile into Sen'a deseret, another application of resource capture strategy in hydro-hegemony.

In 1983, Egypt initiated "Undugu", "brotherhood" in Swahili language. Its aim was to create cooperation in such common fields such as culture, environment, telecommunication, electric power, trade, and water resource development. Egypt, Sudan, Uganda, Congo Democratic Republic and Central African Republic which is not a Nile basin country were the founding members. This was a pure application of utilitarian compliance-producing mechanisms such as incentives. Ethiopia which chose to take observer status along with Kenya and Tanzania challenged 'Undugu' as having no legal standing and no competence to submit a plan of action for the Nile basin (Van der kley, 2009).

Following the agreement of the Nile basin ministers in 1986 for the need for a basin-wide integrated development, and their decision to commission a basin-wide study to evaluate the state of affairs, a report funded by the UNDP and the Economic Commission for Africa (ECA) was produced. However, the report mainly addressed the needs of additional water supply for the downstream countries while none of the interests of the upstream countries were addressed as a result of which Ethiopia challenged and criticized it as biased. As a reaction, Ethiopia developed a proposal 'Integrated Development of the Nile Basin' and got accepted by the Nile basin delegation except Egypt and Sudan. But unfortunately, it didn't show progress afterwards (Yacob, 2007).

Meanwhile water as natural resource was enshrined in Article 13 (2) of the 1987 Constitution of Peoples Democratic Republic of Ethiopia. The article reads as: "…Natural resources, especially land, mineral resources, waters and forests are the property of the state". Expansion of hydrological and meteorological services, establishment of the Ethiopian Valleys Development Study Authority and Water Technology Institute, and expansion of the functions and mandates of specialized institutions under the Ethiopian Water Resources Commission were witnessed during this time. Here, hydro-communication came to be institutionalized.

Initiated by Egypt, another platform called Technical Cooperation Committee for Promotion of the Development and Environment Protection of the Nile Basin, shortly named TECCONILE, was formed in 1992 with the funding support from the Canadian International Development Agency (CIDA) to fill the void left by the defunct Hydromet. Egypt, Sudan, Rwanda, Tanzania, Uganda and DRC were the founding members; whereas, Kenya and Ethiopia chose to be observers (Paisely & Henshaw, 2013). As to Waterbury, the purposes of these initiatives- Hydromet, Undugu and TECCONILE- were to increase water supply for Egypt, to create divisions and animosity among upstream countries, and to isolate key upstream countries such as Ethiopia in particular (Waterbury, 2002), application of hydro-hegemony strategies and tactics. It is true that these initiatives were to make riparian states accept Egypt's hydro-hegemony as the status quo.

However, to the strong push of Ethiopia, the fact that these initiatives were opportunities for Ethiopia to voice its concerns and develop its bargaining power couldn't be ignored.

3.1.3. Hydro-communication on Abbay River Basin (1990s-now): Ethiopia's Win-Win Approach

As a result of the end of cold war in 1991, the global environment showed changes such as relative weakening of bi-polar tension (East-West tension) resulted in the decrease of inter-state conflicts (end of proxy war), the treatment of water as economic good combined with decentralized management and full participation by stakeholders, availability of instantaneous communications, etc. (Furlong, 2006; Yilmz, 2008). This period is also known for the getting prominence of multiplicity communication paradigm of development. This paradigm argues that communication is a right by itself and stakeholders of development initiative should participate if development is to be sustainable. Here, unlike modernization paradigm, development is not limited to economic growth or GDP rather it includes culture and values of society are vital. This is a period of integrated water resource management.

Some argue that during this period shackles such as cold war politics and donor interventions which used to play a decisive role in shaping relations between the riparian states of the Nile River Basin got removed from Ethiopia. Framework Agreement signed between Ethiopia and The Arab Republic of Egypt between Meles Zenawi, the then President of the Transitional Government of Ethiopia, and Hosni Moubarak, the then President of the Arab Republic of Egypt, in Cairo on 1 July 1993 could be taken as indicative of this. By mentioning specifically Article 5 which reads as "Each party refrains from engaging in any activity related to the Nile waters that may cause appreciable harm to the interests of the other party", some argued that it was a recognition to Egypt's will over the Nile; whereas, others saw it as the first strategic move to the coming of this stage, a stage where Ethiopia has been constructing the Grand Ethiopian Renaissance Dam. Perhaps as a consequence to the global changes mentioned above, the 1997 UN Water Course Convention came out and put for vote. In the voting , 106 countries including Kenya and Sudan , 26 countries including Ethiopia, Egypt, Rwanda and Tanzania of the Nile Basin states were in abstention, three countries (China, Turkey) including Burundi, and thirty one countries including Eritrea, Zaire (Congo) and Uganda of the Nile River Basin states were in favor, abstention, against and absentees respectively (Rieu-Clarke, Moynihan, & Magsig, 2012). May be, encouraged by this and the ideas and direction of debate obtained from the Nile Conferences which started in 1993 staged every year on a rotation basis among the basin countries, the 1999 Nile Basin Initiative with the motto-"Sustainable development of the River Nile for the benefit of all" got established. It was sponsored by World Bank in collaboration with the Canadian International Development Agency (CIDA) and the United Nations Development Program.

As a result of the long time dialogue taking place among all the riparian states except Eritrea being observer and South Sudan which was part of The Sudan, the Cooperative Framework Agreement got produced and opened for signatures in Entebbe, Uganda—the physical home of the NBI- on May 14th, 2010. Because it was open for signature at Entebbe, Uganda, the Cooperative Frame Work Agreement is also termed as "Entebbe Treaty" or "Entebbe Agreement". It remained open for signatures from basin countries for one year until May 13, 2011 before it enters into enforcement. Six countries- Ethiopia, Rwanda, Tanzania, Uganda, Kenya and Burundi- signed, and three of them (Ethiopia, Rwanda, Tanzania) ratified it. Democratic Republic of Congo indicated its support of the CFA, but it has not yet signed it (Salman, 2012; Tadesse, 2017). Egypt and Sudan haven't signed the treaty for the different demand they need to be included in Article 14(b). As to the demand of upper riparian states, Article 14(b) is needed to read as (b) "Not to significantly affect the water security of any other Nile Basin State", but Egypt and Sudan need it to be read as (b) "not to adversely affect the water security and current uses and rights of any other Nile Basin state" (Tadesse, 2017). As a result of these irreconcilable statements, Article 14 (b) is left blank. From its programs (Cooperation and Water Resource Management) and the Cooperative Framework Agreement resulted in from the Nile Basin Initiative, it is possible to say that the Nile Basin Initiative has been both hydro-communication and hydro-

diplomacy platform. It is hydro-communication as states as stakeholder come and discuss basin issues, and it is hydro-diplomacy as it ends up with document to sign. However, as a result of different interests of the riparian states, the efforts of the upper riparian states in general and Ethiopia in particular hardly came to fruition which is a practical indication of the argument of Furlong that cooperation between riparian states is difficult when water resource is understood differently by different riparian states with different socio-political and economic developments and asymmetric gain (Furlong, 2006).

Either having frustrated by the progress made with regard to the Cooperative Framework Agreement or having felt its fruition, Ethiopia launched the fully public funded project, the Grand Ethiopian Renaissance Dam, GERD on 02 April 2011. This is a very strategic move in taking advantage of enabling world realities. The launching of the construction combined with availability of instantaneous communication reaffirms the participation of citizens in forming and crystalizing the national interest on it. Grand Ethiopian Renaissance Dam represents a potent counter-hegemonic measure and the harbinger of change in the status quo over utilization of the Nile River Basin, and it marks the first ever challenge to the lopsided, bilateral and disequilibrium status quo (Dereje, 2017).

In 2015, another instance of hydro-diplomacy on Abbay-River Basin happened. It is The 2015 Tripartite Agreement among Ethiopia, Sudan and Egypt. This was a year after the ratification of the UN Water Course Convention by Viet Nam as the 35th country on 19 May 2014. The convention was expected to enter into force in August 2014 after 90 days of the ratification (IISD, 2014). The 2015 Tripartite Agreement (Declaration of Principles) faced lots of criticisms. Nonetheless, it has never been seen as tangibly blocking Ethiopia's move towards ensuring its fair share of the Abbay River Basin.

Conceptualization of hydro-communication on Abbay River Basin in this time centres equitable and reasonable use of the basin, and it has shown remarkable progress and starts to impact hydro-diplomacy. The decline of Ethiopia to sign the agreement on 27-28 February 2020 drafted by the US administration is a case in point. Ethiopia declined to sign by saying 'more time is needed for domestic consultations' which is consistent with two-level games theory and the argument that communication on transboundary river basin helps decision-makers to make functional, logical and rational decisions, and communication serves information exchange to establishing consensus among divergent opinions and interests, and facilitates the building of know-how, decision making and action capacities at the heart of the delicate cooperation between governments in transboundary water management issues (Willner, 2000). It is also very consistent with the assertion that development projects and programs related to water require the participation and engagement of multiple stakeholders across sectors and all levels (UN Water, 2013), and communication determines the success and failure of development projects and programs (Mefalopulos, 2008).

3.2. Challenges and opportunities of Hydro-communication for Hydro-diplomacy on Abbay River Basin today

3.2.1. Challenges of Hydro-communication for Hydro-diplomacy on Abbay River Basin

Lack of consideration to communication

The frequency of water resources data and information and information dissemination on Abbay River Basin, by and large is event triggered, not on regular basis. As Abbay River Basin, like any transboundary river basin, involves multitude of elements including political and security, it needs the assignment of communication specialists who are expected to produce right quantity and quality multi-media materials employing holistic, integrated, multidisciplinary and inter-sectoral approach in designing and planning communication strategies. This, however, hardly exists.

Lack of Coordination

Partly emanated from lack of communication, strong boundaries between different disciplines (knowledge gap), inability of receiver to understand the information or lack of readiness or preparation to accept it (mind frame) and commitment, there is poor linkage among and between stakeholders which results in poor or absence of linkages between data/information and decision-making and planning process (Mosello, et al., 2015).

External Pressure

External pressure intensifying the ideological clash between Ethiopia and Egypt is extreme. Egypt opts for the argument that without coming to terms, it is impossible to ensure equitable and reasonable use of Abbay River Basin. This is competition oriented and securitization approach which is instrument of securing hydro-hegemony. Ethiopia, on the other hand, opts for the argument that presence of Abbay River Basin itself is an opportunity to cooperate even on other regional issues and enjoy its benefits. It is clash of ideologies. External pressures have recently turned to open concerted and multi-faceted campaign and attack from Egypt and its affiliates, colonial protectorates and alliances around the globe. The Washington Negotiation from 06 November 2019- 27-28 February 2020, the brief the United Nations Security Council demanded under the guise of security on 07 July 2021, the "belligerent threats" Trump, the then sitting president of USA, gave on 24 October, 2020 are the cases in point.

3.2.2. Opportunities of Hydro-communication for Hydro-diplomacy on Abbay River Basin today

Domestic stakeholder participation and huge public awareness and participation on the effort to put Abbay River Basin into sustainable use are irreplaceable opportunity that could make hydro-communication more fruitful and influential.

Availability of instantaneous communication including social media is another big opportunity to enhance hydro-communication for sustainable governance and management of Abbay River Basin. For instance, although Trump administration warned Ethiopia by saying "final testing and filling [of the dam] should not take place without an agreement" with Egypt and Sudan (Mehari, 2020), Ethiopia concluded the first phase dam filling by the end of July 2020. This first phase dam filling was celebrated with a slogan "One Voice for Our Dam" and "Our Voice for Our Dam. This could be labeled as digital diplomacy at its best. In Ethiopia, the celebration was marked by producing different sounds for three minutes at 4PM. Individual citizens, civil society leaders, professionals, public opinion leaders, and generally citizens from any walk of life and institutions participated in this event which gave shape to hydro-communication and hydro-diplomacy on Abbay River Basin. This is consistent with the argument that While the state actors play commonly a key role in conducting hydro-diplomacy, civil society and /or private sector actors, research institutes and universities can significantly encourage diplomatic processes through their interaction, initiating discussion and raising awareness among the general public domestically (Keskinen, Inkinen, Hakanen, Rautavaara, & Niinioja, 2014).

The third phase filling of the Grand Ethiopian Renaissance Dam is a strong indication of the conversion of natural resource into tangible and objective reality which can be used as a base for the social construction of reality. It is connecting hard sciences with soft values. Grand Ethiopian Renaissance Dam is symbol of independence, capacity, unity, identity, and many more. The more GERD gets finalized, the better socio-economic development and stability comes. When the going gets tough, the tough gets going.

Abbay River Basin as resource could be connected to realization of Agenda 2063 and Africa market integration. By doing this, it is possible to make hydro-communication on Abbay River Basin substantive and intergenerational.

4. Conclusion and Points to consider

4.1. Conclusion

The name "Nile" has effectively obscured the fact that 86% of its water is from Ethiopian water resource of Abbay River Basin. Conceptualization of hydro-communication on Abbay River Basin has passed through three distinctive periods and has been coming to hydro-communication proper in the last decade. As a cross-cutting, public and transboundary resource, putting Abbay River Basin into efficient use and securing equitable and reasonable use of it is a moving target. Domestic and global intertwined factors are reasons for this. However, as there are opportunities to capitalize on to secure national interest and sustainable governance and management and thereby impact hydro-diplomacy of Abbay River Basin, there are lots of perennial tasks remain.

4.2. Points to consider

Tangible domestic level hydro-communication should be paid attention. For instance, the Grand Ethiopian Renaissance Dam has started generating power, but how many homes have been lightened or how hospitals, industries or education centers are impacted is not known. When right communication is put in place benefits such as establishing consensus among divergent opinions and interests of stakeholders (Willner, 2000) creating cooperation among stakeholders (Gerlak, Lautze, & Giordano, 2010) are possible.

To take advantage of the current seemingly global power vacuum (as a result of struggle between global super powers to dictate the new world order) to optimally use Abbay River Basin, Ethiopia should think of (if not thought) applying multiple alignment or parallel multilateralism, not neutral position without ignoring the fact that greater foreign policy engagement might foster rather than reduce securitization of water resources (Pohl, Dabelko, Conca, & Kramer, 2014).

Communication on Abbay River Basin, as to transboundary river basin, could be between two land owners, policy makers, scientific experts, students, health professional, tourists and any other public members of different riparian states. To get these very well informed in order to influence communication for ensuring national interest, "extended social learning" (learning in connection to backgrounds), should be introduced. This would impact multi-track hydro-diplomacy too.

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ETHIOPIAN DIGITAL DIPLOMACY ON THE GRAND ETHIOPIAN RENAISSANCE DAM (GERD): PRACTICES AND CHALLENGES

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Abstract

Ethiopia has several major rivers. However, most of the major rivers that originate in Ethiopia cross its borders and flow into other countries. Abay is one of these rivers that flow to Sudan and Egypt. Ethiopia began construction of the Grand Renaissance Dam in April 2011 on the Abay River. This has brought about objection from downstream countries such as Sudan and Egypt. Hence, many efforts have been made to mitigate the conflict and enhance cooperation on the GERD construction and related issues. Now a days, digital diplomacy is becoming one of the tools that are used in diplomatic undertakings worldwide. This is because digital diplomacy is one of the best options for communicating and negotiating with states, non-state actors and people with water riparian state countries. Thus, it is entailed to study to the practices, and challenges of digital diplomacy on GERD. The objective of the study was to examine the practices and challenges to implement digital diplomacy on the GERD issues by Ethiopia. Descriptive and evaluative research type and qualitative survey research approaches were employed. Data were gathered using interviews, and available documents were reviewed and analyzed. Lack of policies and strategies, failure to use modern and appropriate technologies, lack of trained human resources and lack of established institutional and human capacity building programs were limitations ascribed for poor practicing digital diplomacy at all levels. Finally, it is recommended that what are posted on internet should be supported with tangible evidence and need to conform with the global pressing and emerging state of affairs such as "Sustainable Development Goals" particularly dedicated to water usage, women health conditions, promoting the human right to drinking water and sanitation." Besides, a system by which research has to be conducted on diplomacy and related issues on the GERD should be established and the way the findings will be disseminated and communicated should be clearly set.

Key words: Digital diplomacy, the Grand Ethiopian Renaissance Dam (GERD), water (hydro) diplomacy, Nile River, Abay River.

1. INTRODUCTION

1.1. Background

Diplomacy can be referred to as the art of dealing with people in a sensitive and effective way (Sotiriu, 2015). Diplomacy allows states to articulate their foreign policy objectives and coordinate their effort through dialogue and negotiations in order to influence the behavior and subsequent decisions of foreign governments (Rashika, 2019). One of issues that deserve diplomacy among countries is the diplomacy on the trans-boundary water resources, which is called hydro (water) diplomacy.

Water diplomacy is one of the issues that deserve significant and efficient diplomatic practices. Water diplomacy is the systematic analyses of interstate conflict and cooperation regarding international water resources (Femia & Werrel, 2011). A more comprehensive definition of water (hydro-) diplomacy is coined by Meissner (2001) as "the study of water diplomacy is the systematic investigation with respect to the interaction between states, non-state actors and a host of other participants, like individuals within and outside the state, regarding the authoritative allocation and/or use of international and national water resources" (Meissner, 2001).

It has been predicted that future wars and increased civil violence will occur as a result of competition for scarce resources such as water, cropland, forests and fish (Kaplan, 1994). Population growth will place further strain on natural resources as governments try to meet the needs of the growing masses of hungry and unemployed people who continue to migrate to areas where resources are perceived to be available (Rashica, 2019).

To this end, there are many inter-state conflicts over trans-boundary water resources worldwide. For instance, there were conflicts between Lebanon, Turkey and Syria over the basin of the Orontes River, which originates in Lebanon, crosses Syria and flows into the Mediterranean. According to Jankielsohn (2018), the win-win agreement signed between Lebanon, Turkey and Syria is a model for water management in the Middle East. There were also water and military conflicts between Palestine, Libanon, Israel and Jordan over the Jordan River, which was called Jordan River crisis, which affects Palestine, Lebanon, Israel and Jordan (Jankielsohn, 2018).

These national and international water resources conflicts are not only restricted to rivers found inside and outside the territorial jurisdiction of the state. Some countries claim for the water found inside their territories. Others claim for the water outside their territories. For instance, Ethiopia claims to use its own water and Egypt claims for the water coming outside its territories. Ethiopia is where the Blue Nile originates from. What makes Egyptian claim unique is their want to use the water found outside it only for itself, leave alone to share for others, even by prohibiting the countries from where the waters originate (Abdelhady D et al. (2015).

One of the conflicts that occur due to water is the conflict over dams. Conflict over the Kalabagh Dam project in Pakistan is one example (Muhammad, 2012). In the same manner, presently there are conflicts between Ethiopia, Sudan and Egypt over the Nile River on the construction of the Great Ethiopian Renaissance Dam which entailed to establish an extremely dynamic hydro-diplomacy.

Ethiopia is one of the countries from where many rivers originate and cross other countries. Ethiopia's Abay is such a transboundary river which flows to Sudan and Egypt named Nile River. Ethiopia began construction of the Renaissance Dam in April 2011 on the Abay River. The construction of the Grand Ethiopian Renaissance Dam is located in the Benishangul-Gumuz Region, about 30 km upstream from Sudan. But, construction only actually began after surveys in 2009 and 2010 (Mehari, 2017).

The Grand Ethiopian Renaissance Dam (GERD) project that has been underway by Ethiopia on the Nile River near the border with Sudan has recently become a point of antagonism between Ethiopia, Sudan and Egypt. Ethiopia began the dam construction in 2011. To this end, the Egyptian media has continued in its attempts on misinformation campaign since the commencement of the GERD project. Egypt has applied various mechanisms to thwart any attempt by upstream countries, particularly Ethiopia, to use the Nile waters. One of these attempts is by thwarting any external funding requests made by Ethiopia to develop its water resources, using its diplomatic advantage to successfully block external funding (Bitsue, 2012). One of these diplomacy tools Egyptians are using is digital diplomacy. In this regard, successive Egyptian governments have employed their diplomatic clout to block financial assistance for Ethiopian projects on the Nile (Femia & Werrel 2011).

The digital diplomacy is one of the contemporary means for communicating and negotiating with states, non-state actors and people with water riparian state countries. At this juncture then, it becomes imperative to study the practices and challenges of the digital diplomacy that have been exercised on the Nile River and the GERD. Therefore, this could help Ethiopia to begin proactive diplomatic engagement to falsify these fallacies and fake information that are propagated by showing the world the factual background. Therefore, it was necessary to study to what extent Ethiopia has been using digital diplomacy on the GERD, what challenges have been encountered in implementing digital diplomacy on GERD, what existing opportunities are there for Ethiopia to use digital diplomacy on GERD.

1.2. Objectives

General Objectives

The general objective of this study was to examine the practices and challenges to implement digital diplomacy on the GERD in Ethiopia.

Specific objectives

1. To examine the practices in digital diplomacy held on the GERD project;
2. To identify the major challenges and limitations in using digital diplomacy in Ethiopia on GERD project;
3. To identify the major digital diplomacy tools and strategies to be employed by Ethiopia on GERD project; and
4. To document the lessons taken in practicing digital diplomacy in Ethiopia on GERD project and thus recommend accordingly.

2. METHODOLOGY

2.1. Research design

The general objective of the study was to investigate the practices and challenges to implement digital hydro-diplomacy and hydro politics on the GERD. The intent of the study was to describe and interpret the experiences of participants in light of the existing practices, challenges and the opportunities of digital diplomacy and hydro-politics on the GERD. Hence, the study employed the descriptive and evaluative research type. Qualitative survey research strategy and approach were employed.

2.2. Sources of data and Sampling techniques

Primary and secondary data sources that could give information related to the challenges and opportunities of diplomacy and hydro politics on the GERD were used in the study.

Accordingly, the following four organizations were major sources of data for the study

1. Ministry of Foreign Affairs
2. Ethiopian Foreign Relation Institute
3. The Office of Chief Negotiator and Adviser on GERD, Transboundary Rivers
4. The Office of the National Council for the Coordination of Public Participation to the Construction of GERD

These organizations were selected purposefully because they are believed to be viable in having information in relation to the challenges and opportunities of diplomacy and hydro politics on the GERD. The study also employed secondary sources of data collection. The major sources of data are information found from internet. The literature available on the internet and are said to be related to topic under investigation were reviewed. The researcher attempted to browse and analyse the available data using various online media sources. However, only using data from internet as sources for the study might not always be reliable as some writers are biased. Therefore, some documents such as strategies, manuals, legislations and research works were used as secondary data sources.

Purposive sampling method was employed to determine the sample representatives and participants. The organizations and individual participants such as diplomats, researchers, experts, bloggers, tweeters and any other individuals who are concerned with the problem under investigation were selected using purposive sampling.

Table 1. Participants and their respective organization that are involved in the study

No.	Sample representatives	Participants	Number of participants
		Diplomats/experts	Researchers
1	Ministry of Foreign Affairs	1	
2	Foreign Relations Institute	1	1
3	The Office of a Chief Negotiator and Adviser on GERD, Transboundary Rivers	1	
4	The Office of the National Council for the Coordination of Public Participation to the Construction of GERD	1	1
	Total	4	2

2.3. Data gathering, tools selection and analysis

Two data gathering tools were mainly used in this study. These are interview guides and document reviews. The researcher first reviewed different related literature and strategic documents to understand the background of the problem and to see what had been done pertinent to the problem. Literature and strategic documents in relation to digital diplomacy and hydro politics were reviewed. Then, the researcher developed data gathering tools. Accordingly, interview guides were developed for each category of participants. All the interviews comprised in-depth and unstructured and open-ended questions. The interviews were held in the participants' workplace or office as per the participants' preference.

After the data were collected using the designed data gathering tools, the data having common core contents were clustered and organised. In other words, those data that had similarity in their subject matter were grouped and administered together. After the data were categorized on the basis of common characteristics, the information that was gathered from the one organization was merged with the information gathered from another organization. The information gained through interview from the respondents were analysed along with the literature reviewed thematically.

3. Findings

3.1. Introduction

The following were some of the issues raised by respondents regarding the types of diplomacies Ethiopia has been practicing for negotiating and promoting its national interest on the GERD and related issues:

According to the respondents, Ethiopia has been implementing diplomacy in two ways: traditional diplomacy and digital diplomacy. The traditional diplomacy is a means of getting actors communicate face to face and discuss the subject. The second type of diplomacy Ethiopia has been using is digital diplomacy. This is a platform of discussing, dialoging, negotiating and propagating using digital tools such as tweeter, Facebook, telegram depending on the targeted audience. For instance, one can present your credentials as an ambassador just being here without going to the host country.

The respondents explained that both of them should have their own techniques and in order to implement both traditional and digital diplomacy, there should be legal referencing framework for undertaking them and for the institute that organize this.

The respondents noted that one types of diplomacy does not necessarily replace the other ones. So, it is necessary to use both traditional and digital diplomacy. Ethiopia has been using both traditional and digital diplomacy during the negotiations that took place on GERD over the years. For instance, the concerned bodies of Ethiopia have been using digital diplomacy tools such as tweeter and Facebook to explain the indispensable importance of the GERD for Egypt and Sudan. Digital diplomacy is preferable to defend the false narrations and dissemination of baseless information that Egyptian officials are obsessed with. Hence, Ethiopia has been using digital diplomacy for these types of purposes.

3.2. Summary of major findings of the study

Perception on the importance of digital diplomacy

Participants of the studyall believe that Digital diplomacy is highly powerful because it utilizes tools such as You-tube, Facebook, tweeter, telegram, emails, instagram which can easily reach out the global communities. Besides, they said digital diplomacy is suitable to falsify misleading information that are propagated by rivalries.

Evaluation of the practices of digital diplomacy on the GERD

The results regarding the practice of digital diplomacy (both from the primary and secondary sources) yielded the following findings:

- The Foreign Policy and Strategy that were enacted in 2002 has mentioned nothing about digital diplomacy inso far as we reviewed this document.
- Every actor ran on his own derives, pace and interest as there was no references and strategies that guide. As a result, there were no policies and strategies that guide and serve as references and as legal frameworks that would state who was responsible for what at national level.
- Ethiopia, as a source of Nile, should not live in dark; hence there should be a way Ethiopia should get electricity and a means of developing together. Ethiopia should incorporate this issue in its policy. Recommendation?
- Facebook was much more used than other digital diplomacy tools and tweeter was the most poorly used for negotiating and promoting the national interest on the GERD project. However, the number of actors who had tweeter account in Ethiopia was very small compared to the opponents side(Egypt and Sudan).

- The digital diplomacies often used were just as 'fire ceasing", defensive mechanism. However, tremendous games of hydro-politics were played by Ethiopian actors specifically during the Nile Basin Initiatives.

Limitations on using digital diplomacy on the GERD project

- Lack of skills from the users in making the post attractive and user friendly.
- Incapability in identifying which digital diplomacy tools that should be better used and failure to know when, what and when to post and disseminate information

Regarding institutional organizations that were working on Diplomacy on GERD and related issues

1. The institutions that were working on diplomacies on the GERD project and related programmes were not well organized and lacked synergy among them.
2. Most endeavors by individuals were also fragmented, loosely coordinated and lacked internal unity.
3. There were conflict of interest among the institutes that were working on GERD project and related issues.

Regarding limitations on applying what and how to post messages

- Being limited to using very few international languages for posting messages
- Failure to identify the right time when to broadcast messages, tweet and post messages
- Failure to identify target groups and audiences for each public media
- Failure to support information with tangible evidences
- Failure to attach information with emerging and cross-cutting issues such as sustainable development goals, gender mainstreaming, environmental protection,

Regarding what lessons learned from digital diplomacy in Ethiopia on GERD

Lessons were taken in that when project is supported by all citizens, its likelihood to success is high. The contribution of each Ethiopian in cash and moral by itself has significant impact as it resulted in bringing a sense of ownership and synergy among the nations and provides a moral support. This could provide lessons that if citizens stand firm and united, one can be successful.

Available opportunities for using digital diplomacy

Access of internet and ICT facilities for such social media platforms as Facebook, tweeter and so on, the emergence of 5G, the existence/adoption of the 2030 Sustainable Development Goals (SDG) among many others are good opportunities to practice digital diplomacy. Besides, there were different established platforms denoted as 'GERD project support platforms'. There are some voluntary Ethiopian individuals residing abroad who were claiming Ethiopia's right to utilize one of its resources for national development under international law of equitable use of transboundary water bodies.

It is what all Ethiopian, youth, children, the famous and ordinary, the peasants, all individuals participated in one voice at and defend the cause on any access and opportunities and chance and stages they have got. This is a good opportunity as it brings about a significant positive impact.

4. Conclusions

Ethiopia has embarked building the Grand Ethiopian Renaissance Dam by mobilizing domestic resources since 2011. The primary purpose of the dam is to produce electricity that could relieve Ethiopia's acute

energy shortage and for exporting electric energy to neighboring countries. However, there was conflict and dispute on the GERD between riparian countries such as Egypt and Sudan.

Diplomacy is one of the tools Ethiopia has been using for negotiating and promoting cooperation with riparian countries on GERD and related issues. To this end, there are different types of diplomacy. Of these, digital diplomacy is the contemporary one that the world is practicing nowadays as it is very useful to give fast information and used to disqualify the false information and propaganda disseminated promptly and to depict the reality for the global communities.

Ethiopia is at infancy stage in using digital diplomacy notwithstanding the technology is newly emerging. Despite the fact that there were efforts from all actors at all levels, most of the endeavors were fragmented, lacked consistency and exhibited poor time management. The efforts were also haphazard, than being planned.

It can be concluded that the major limitations that Ethiopia had regarding implementing digital diplomacy on the GERD were lack of workable policies and Strategies that would address digital diplomacy. Failure to use modern and appropriate technologies, lack of trained human resources and lack established institutional and human capacity building programmes were also ascribed as limitations for practicing digital diplomacy at all levels.

5. Recommendations

Based on the data gathered, analysed and findings of the study, the following recommendations are put forward:

1. The foreign policy and strategy that Ethiopia has been using is the one that was enacted in 2002. Hence, Ethiopia needs to align it with the current situations and requirements. For instance, Ethiopia, as a major source of Nile, should not live in dark; hence there should be a way where Ethiopia should get electricity and a means of developing together. Hence, these issues and others should be incorporated in policy and strategy documents. There should be legal framework that tells who should use which types of digital diplomacy, how to use it, the issues of responsibility and accountability. Lessons and good practices should be taken from other countries what the legal framework should look like and how they are using and implementing it. There should be also concrete plans or actions, clearly defined objectives and goals regarding digital diplomacy. It should be aligned with cross cutting issues such as Sustainable Development Goals, Green development, Gender mainstreaming and environmental protection.
2. Everything posted and information disseminated using digital diplomacy need to be supported with evidence, and intertwined with the present day pressing global issues and should be dedicated to Sustainable Development Goals (SDGs) such as women health, the right to drinking clean water and sanitation, among many others.
3. Every work and activities regarding digital diplomacy should be done in integral manner among organizations. For instance, after studies are undertaken, there should be support for researchers/ institutes to disseminate their findings. Integrated media campaign is to mean that all implementation styles should be intertwined together before reflected. That is, the information that was crafted by head office should be scaffold by researchers, scholars. And media (public and private) broadcast them. That means it should be worked collaboratively so that one pressing and important issue will be boosted and amplified and the audiences can get similar information from different sources.
4. It is necessary to identify and map which activities deserve undertakings using digital and which ones require traditional diplomacy or public diplomacy. It is also pressing issue to monitor what Egyptian and others are using in terms of digital diplomacy on GERD, what the digital tools they are using,

how they use, and whom they make their target or audience. It is also necessary to identify what audiences want to see and hear to and what and which digital tools, tweeter, telegram, Facebook, chat or any other media they are using. Ethiopia should develop its own narration style. Ethiopia has to work on changing the Egyptians people attitudes, to a greater or lesser extent. Even if that seems impossible, Ethiopia should work on that so as to present the factual information. Ethiopia should also falsify the false information that are given by Egypt.

5. There should be work on domestic public diplomacy by empowering foreigners residing in Ethiopia. It should address and reach those foreigners who reside in Ethiopia such as expatriate teachers, students and those who work at industrial park by using all appropriate diplomacy tools. Because, these are people who can understand the country's interest and take real images and take them abroad thus these people can influence others. Ethiopia should show them the real situations and image of the country. On top of that Ethiopia should use those individuals who go abroad for training, visiting, work, etc. Ethiopia should also train tour guides because their probability to meet and communicate foreigners is high.
6. There should be work on awareness creation for all Ethiopians about the GERD and related issues. There should be mechanisms in which research should be done and the languages to be used are determined, and ways of disseminating findings. The studies that were undertaken so far are very few. Scholars with different and diversified professional should undertake studies. There should be national and international conference/workshops on GERD and related issues. It is necessary to collect all the studies found scattered; select the best and publish or release online.
7. Regarding human resources development and capacity development, the following, inter alia, are the experts that need to be available in the organization that work on digital diplomacy:
    - Software engineers, ICT experts
    - A department for Digital diplomacy work
    - Skilled professionals who can write and post on digital social media
    - Graphics designers
    - Time managers.
8. Diversified languages such as English, Arabic, French, Spanish, Germany, and Chinese among some languages need to be used to disseminate information worldwide when information is broadcast and posted. Ethiopia should produce those individuals expert who can do so. There should be digital mechanisms to translate what were written in Amharic or English or in other languages into languages such as Arabic, French, Spanish, Germany, Chinese, etc. When posting contents, they should be accompanied with interesting programmes that go along with the contents or messages. To do this, it is vital to identify what the target group value most and the issues that concern them. The programmes, for instance, can be accompanied by the audience' favorite music.
9. There were some actors who might emotionally write and post unethically. This could be mitigated through providing building capacity of individuals and institutions. Care must be taken when disseminating information particularly while using digital diplomacy as it is difficult to curb once disseminated. Hence, the importance of working proactively and preventive diplomacy.

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The Ministry of Water and Energy (MoWE) of Ethiopia is a Federal organization established to undertake the management of water resources, water supply and sanitation, and energy. The Ministry is a regulatory body that involves the planning, development and management of resources, preparation and implementation of guidelines, strategies, policies, programs, and sectoral laws and regulations. It also, conducts study and research activities, provides technical support to regional water and energy bureaus.