



T.C

ÇANKIRI KARATEKİN UNIVERSITY

SOCIAL SCIENCES INSTITUTE

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

**THE CAUSES AND CONSEQUENCES OF NILE RIVER
MISMANAGEMENT: A COMPARATIVE OVERVIEW
OF ENVIRONMENTAL IMPACTS IN ETHIOPIA,
SOUTH SUDAN AND EGYPT**

Moumina MOHAMED ADEN

MASTER'S THESIS

**Supervisor
Assoc. Prof. Dr. Burçin DEMİRBİLEK**

Çankırı- 2024

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TABLE OF CONTENT

	Page
SCIENTIFIC ETHICS STATEMENT	iii
THESIS ACCEPTANCE AND APPROVAL	iv
PREFACE	v
ABSTRACT.....	vi
ABBREVIATIONS	viii
LIST OF TABLES	ix
LIST OF FIGURES	x
 1. INTRODUCTION.....	 1
1.1. Literature Review	5
1.2. Research methodology	13
1.2.1. Research Problem.....	13
1.2.2. Research Objectives.....	15
1.2.3. Methodological Framework and Research Design	16
1.2.5. Documentary Sources	17
1.2.6. Case Study.....	18
1.2.7. Ethical Considerations	18
 2. THE NILE'S ESSENCE: A HISTORICAL TAPESTRY OF EGYPT, SUDAN, AND ETHIOPIA	 20
2.1. Egypt: The Nile as the cultural Lifeline	20
2.1.1. Historical Roots: Egypt's Profound Bond with the Nile	20
2.1.2. Cultural Significance.....	22
2.1.3. Traditional Management Practices.....	23
2.2. Sudan: Nile's Role in the Tapestry of Livelihoods.....	25
2.2.1. Historical Nexus.....	25
2.2.2. River-Dependent Livelihoods	27
2.3. Ethiopia: Blue Nile's Historical Significance	30
2.3.1. Ancient Interactions	30
2.3.2. Historical Water Management:	33
2.3.3. Conclusion	34
 3. LEGAL FRAMEWORK AND AGREEMENTS.....	 36
3.1. Background	36
3.1.1. Legal Framework or Legal Agreement?	36
3.1.2. The Importance of Legal Framework in the Governing of Shared Water Resources.	36
3.1.3. Overview of the Nile River's Geopolitical Importance.....	38
3.2. Early Agreements and Colonial Legacy	39
3.2.1. '1902 Treaty between Great Britain and Ethiopia' (Addis Ababa)	39
3.2.2. 1929 Anglo-Egyptian Treaty.....	40
3.3. Mid-century shifts and bilateral agreements	41
3.3.1. '1959 Nile Waters Agreement between Egypt and Sudan' (Cairo).....	41
3.4. Emergence of cooperative frameworks.....	42
3.4.1. '1993 Framework for General Cooperation between Egypt and Ethiopia'	42
3.4.2. 1999 Nile Basin Initiative (NBI).....	43
3.5. The Cooperative Framework Agreement (CFA) and its Journey	47

3.5.1. Detailed Exploration of the CFA from Inception to its Current Status	47
3.5.2. Discussions, Disputes, and Implications	49
3.6. Recent and Miscellaneous Agreements	50
3.6.1. 2010 Entebbe Agreement (Part of the CFA but a significant milestone)	50
3.6.2. 2015 Declaration of Principles on the Grand Ethiopian Renaissance Dam (GERD)	50
3.7. Non-ratified and minor agreements	51
3.7.1. 1906 Agreement between UK, France and Italy	51
3.7.2. 1906 Agreement between Britain and Congo:	52
3.7.3. 1925 Exchange of Notes between Britain and Italy	52
3.7.4. 1949 Exchange of Notes between Egypt and UK:	53
3.7.5. Conclusion	53
 4. ENVIRONMENTAL IMPACTS OF NILE RIVER MISMANAGEMENT 55	
4.1. Hydropolitics of the Nile River	55
4.1.1. Important Hydro political Concepts	55
4.1.2. Complex Dynamics of Nile River Hydro-Politics	56
4.1.3. Hydropolitics of the Nile River	56
4.2. Water Scarcity and Drought	61
4.3. Ecosystems and Biodiversity	63
4.3.1. Rich Biodiversity of the Nile Valley	63
4.3.2. Impact on Aquatic Environments	64
4.3.3. Effects on Terrestrial Ecosystems	66
4.3.4. Climate Change Impact	66
4.3.5. The Role that Researches and Observation Play in Nile Ecosystem Management	67
4.4. Effects of Pollution	68
4.4.1. Pollution and Climate Impact on River's health	68
4.4.2. Ecosystem Health and Issues with Water Quality	69
4.4.3. Sedimentation and Habitat Degradation	70
4.4.4. Chemical Runoff inside the Nile Waters	70
4.5. Main Policies of the Countries	71
4.5.1. Egypt Policies and Actions	71
4.5.3. South Sudan's Policies and Actions	73
4.5.4. Conclusion	74
 5. DISCUSSION AND RECOMMENDATION	76
5.1. The Pollution	76
5.2. Water Scarcity and Drought	76
5.3. Protection the Ecosystem	77
5.4. Political Environment	78
5.5. Flood	78
 6. CONCLUSION	80
 REFERENCE	82
BACKGROUND	HATA! YER İŞARETİ TANIMLANMAMIŞ.

SCIENTIFIC ETHICS STATEMENT

In the process from the proposal stage to the conclusion of the study titled “*The Causes And Consequences Of Nile River Mismanagement: A Comparative Overview Of Environmental Impacts In Ethiopia, South Sudan, And Egypt*”, which I prepared as a master's thesis, I carefully followed the academic ethics and rules, that I obtained all the information in the thesis within the framework of academic ethics and tradition, that I prepared in accordance with the rules of writing the thesis. I declare that I cited every citation as a reference and that the works I have benefited from are those shown in the bibliography.

23/05/2024

Signature

Moumina MOHAMED ADEN

THESIS ACCEPTANCE AND APPROVAL

ÇANKIRI KARATEKİN UNIVERSITY TO THE DIRECTORATE OF THE INSTITUTE OF SOCIAL SCIENCES

This study titled “*The Causes And Consequences Of Nile River Mismanagement: A Comparative Overview Of Environmental Impacts In Ethiopia, South Sudan, And Egypt*” prepared by Moumina Mohamed Aden was found successful unanimously as a result of the thesis defence held on 23/05/2024 and was accepted as a Master's thesis in the *Political Science and International Relations* by our jury.

THESIS JURY MEMBERS (Title, Name and Surname)

Supervisor: Assoc. Prof. Dr. Burçin DEMİRBİLEK

Member : Assist. Prof. Dr. Pelin ALİYEYEV

Member : Assist. Prof. Dr. Çağlar EZİKOĞLU

APPROVAL

This Thesis has been accepted by the jury determined in the session of Çankırı Karatekin University Social Sciences Institute Administrative Board, dated 23/05/2024 and numbered

Prof. Dr. Coşkun POLAT

Director of the Institution

PREFACE

Here is written my master thesis, “The Causes and Consequences of Nile River Mismanagement: A Comparative Overview of Environmental Impacts in Ethiopia, South Sudan, and Egypt”. This year long work was written to fulfil the graduation requirements of the International Relation and Political Science program of the University of Cankiri Karatekin.

During the choosing of my subject, I was tempted to take a more conventional subject, but I wanted my work to be useful and bring as much for people than for me. I also took it to heart to bring light to a subject that I believe is worthy of my time, everyone’s time; and it was fulfilling to educate myself on such subjects.

I believe Africa has so much treasure and potential, but development is hold back by trivial matters, lack of vision and cooperation; and I sincerely wish my work may help in a giving this beautiful continent a chance to thrive.

I discovered new academic websites; new words and in short, a whole brightens my writing skills. If I learned something out of this adventure if I may call it that way, is that nothing comes without a minimum of struggle and effort, life is always that way.

This work would have been impossible without the help of firstly God who kept me focused and patient in all I the steps of this work. Secondly, I would like to profoundly thank my supervisor Assoc. Prof. Dr. Burçin DEMİRBİLEK and also Assist. Prof. Dr. Çağlar EZİKOĞLU for his patience and his help during the Master’s program and for that I am forever grateful. I would also like to thank my mother, for her emotional and financial support, her endless love and total belief in my success, she believed in me when even I did not.

Finally, I would like to thank my sister and my group of friends, who also supported me mentally, through all the stressful work I did. Their effort is part of this work.

23/05/ 2024

Moumina MOHAMED ADEN

ABSTRACT

Thesis Title : The Causes And Consequences Of Nile River Mismanagement: A Comparative Overview Of Environmental Impacts In Ethiopia, South Sudan, And Egypt

Author of the Thesis: Moumina MOHAMED ADEN

Supervisor : Assoc. Prof. Dr. Burçin DEMİRBİLEK

Department : Political Science and International Relations

Type of Thesis : Master's Thesis

Acceptance Date : 23/05/2024

Ineffective management of resources invariably results in complications. This thesis examines the mismanagement of the Nile River, a critical African waterway traversing eleven countries. While Egypt, with its millennia-old history, is frequently associated with the Nile, the river's significance extends to all nations along its course. Relations among these countries are strained due to inequitable water distribution and poor management practices, despite numerous attempts at reaching agreements over the years.

This qualitative research aims to identify the causes and consequences of the Nile's mismanagement and to propose viable solutions. Utilizing a comprehensive review of over one hundred articles, the study focuses on three of the Nile-sharing countries to identify the origins of the conflict and to suggest more effective agreements. The findings indicate that national self-interest, short-sighted policies, and a lack of expertise in water management are primary contributors to political tensions, as well as socio-economic and environmental issues.

The thesis recommends a balanced approach to water management that considers the interests of all parties while respecting each country's needs. It also offers new suggestions and alternative interventions to address the ongoing challenges.

Keywords: Nile river, Ethiopia, Egypt, Sudan, Water Management.

ÖZET

Tezin adı : Nil Nehri Yönetiminin Nedenleri Ve Sonuçları: Etiyopya, Güney Sudan Ve Mısır'da Çevresel Etkilerin Karşılaştırmalı Bir Genel Bakışı
Tezin Yazarı : Moumina MOHAMED ADEN
Danışman : Doç Dr. Burçin DEMİRBİLEK
Anabilim Dalı : Siyaset Bilimi ve Uluslararası İlişkiler
Tezin Türü : Yüksek Lisans Tezi
Kabul Tarihi : 23/05/2024

Kaynakların kötü yönetimi kaçınılmaz olarak komplikasyonlara yol açar. Bu tez, on bir ülkeden geçen kritik bir Afrika su yolu olan Nil Nehri'nin kötü yönetimini incelemektedir. Mısır, binlerce yıllık tarihi ile sık sık Nil ile ilişkilendirilse de nehrin önemi güzergahı üzerindeki tüm uluslara kadar uzanır. Bu ülkeler arasındaki ilişkiler, yıllar boyunca birçok anlaşma girişimine rağmen, adaletsiz su dağılımı ve kötü yönetim uygulamaları nedeniyle gergindir.

Bu nitel araştırma, Nil'in kötü yönetiminin nedenlerini ve sonuçlarını belirlemeyi ve uygulanabilir çözümler önermeyi amaçlamaktadır. Yüzden fazla makalenin kapsamlı bir incelemesine dayanan çalışma, çatışmanın kökenlerini belirlemek ve daha etkili anlaşmalar önermek için Nil'i paylaşan üç ülkeye odaklanmaktadır. Bulgular, ulusal çıkarların ön planda tutulmasının, kısa vadeli politikaların ve su yönetiminde uzmanlık eksikliğinin, siyasi gerilimlerin yanı sıra sosyo-ekonomik ve çevresel sorunların başlıca nedenleri olduğunu göstermektedir.

Tez, tüm tarafların çıkarlarını dikkate alan ve her ülkenin ihtiyaçlarına saygı gösteren dengeli bir su yönetimi yaklaşımı önermektedir. Ayrıca, devam eden zorlukları ele almak için yeni öneriler ve alternatif müdahaleler sunmaktadır.

Anahtar Kelimeler: Nil Nehri, Etiyopya, Mısır, Sudan, Su Yönetimi.

ABBREVIATIONS

CFA	Cooperative Framework Agreement
ENTRO	Eastern Nile Technical Regional Programme
FAO	Food and Agriculture Organisation
GERD	Grand Ethiopian Renaissance Dam
IWRM	Integrated Water Resources Management
LK	Land of Kush
NBD	Nile Basin Discourse
NBI	Nile Basin Initiative
NELSAP	Nile Equatorial Lakes Subsidiary Action Programme
NGO	Non-Governmental Organisation
RPTP	Regional Power Trade Project
RWHP	Rainwater Harvesting Programme
WRPM	Water Resources Planning Management

LIST OF TABLES

Table No.	Page
Table 2.1: Sudan's actual land use	26
Table 4.1: Irrigation and Hydropower Potential of Nile Basin Countries	59



LIST OF FIGURES

Figure No.	Page
Figure 2.1: Egyptian Shaduf.....	21
Figure 2.2: God Hapy following the Egyptian King.....	22
Figure 2.3: Artificial Irrigation System.....	24
Figure 2.4: Seasonal view of the Nile River.....	25
Figure 2.5: Reported Fish production of FAO in 2014.....	28
Figure 3.1: Anglo-Ethiopian Agreement in Amharic.....	40



1. INTRODUCTION

Water management, traditionally, focuses on technical solutions to deal with the issues on meeting the demand for urban population and protecting the cities and agricultural lands from floods (Pahl-Wostl, 2015, p. 2). However, for the long term success in water management, technical solutions may not be adequate by ignoring human dimension (Pahl-Wostl, 2015, p. 2). At this point, 'Integrated Water Resources Management (IWRM)' came to the fore to overcome the problems which cannot be solved by the "technocratic management approaches". IWRM is an integrated approach which refers participatory management of related sectors and users and holds the balance of economic, social and environmental issues (Pahl-Wostl, 2015, pp. 3-4). It also refers to the 'multi-level governance' that refers all related actors should contribute to the decision-making and implementation processes (Pahl-Wostl, 2015, p. 5). Additionally, water governance should be at basin level, which refers an hydrological boundaries (Pahl-Wostl, 2015, p. 100). However, defining the hydrological boundaries is not just related to boundaries of environmental system, it is also related to political process, so transboundary water management is highly related to 'hydropolitics' that local, regional and international cooperations are important to avoid water conflicts amongst the riparian countries (Pahl-Wostl, 2015, pp. 101-102).

Transboundary water management is an important issue and 'case specific'. There are 263 transboundary lakes and river basins in the world which shared by two or more countries and they compose 60% of global freshwater flows (Kim & Glaumann, 2012, p. 6; Timmerman, Koepfel, Bernardini, & Buntsma, 2011, p. 523). There are some reasons that make the management of transboundary waters challenging. Riparian countries have conflicts on shared transboundary waters as their socio-economic development, institutional capacity and purpose of use of waters are different (Kim & Glaumann, 2012, p. 6), as well as water scarcity, climate change, population increase and industrial development are the reasons for the conflicts (Tayia, 2019, p. 1). Therefore, water management is complex, however transboundary water management is more complex because of the negative consequences of climate change, population growth, migration and different consumption purposes (Timmerman, Koepfel, Bernardini, & Buntsma, 2011, p. 525)

There have been several reasons that limits transboundary water management such as weak economic, institutional and technical capacities and political instability at national levels as well as lack of trust and cooperation between the riparian countries. Transboundary water management should cover international water conventions, laws of transboundary water commissions and agreements which include national water policies and procedures. In order to improve transboundary cooperation, transboundary agreements which should include riparian countries' cultural and political structures as well as other related regional and local actors and civil society are important to prevent floods and droughts in transboundary waters. However, transboundary water management is 'context-specific', so there is no single method or policy to achieve this in all transboundary waters (Timmerman, Koepfel, Bernardini, & Buntsma, 2011, pp. 525-526).

Transboundary waters face with several issues such as untreated municipal sewage, water stress, drought, groundwater deterioration and pollution from landfills and agricultural and industry activities. These environmental issues can be solved by developing institutions. In order to deal with these problems at the transboundary waters many actors at local and national levels as well as international actors should involve the water management process (Gooch, 2004, p. 14; Taha, El-Mahmoudi & El-Haddad, 2004, p. 36).

The purpose of water use which can be irrigation or deforestation, has effects on water flow which will also affect the ecosystem and biodiversity. The difficulty in transboundary water management is that downstream and upstream countries in water management focus on social and economic development and without compromising the ecosystems (Falkenmark, 2001, pp. 549-550). Environmental issues can cause security concerns which can destabilise the political, economic and social situations and conflicts (Belluck, Hull, Benjamin, Alcorn & Linkov, 2004, p. 5). Therefore, the integrated water management approach should secure food security, environmental security and water security. 'Environmental security' refers protection against natural hazards such as air pollution, water pollution, water scarcity and floods. Regarding this, it refers public safety from natural hazards, creating a healthy environment and avoidance of conflict (Falkenmark, 2001, pp. 552-553; Belluck, Hull, Benjamin,

Alcorn & Linkov, 2004, p. 5). 'Water security' is associated with having a safe supply of water and sanitation, accessing the clean water and water quality to ensure river, wetlands and aquatic ecosystems are protected. Finally, 'food security' is linked to crop production because it uses a lot of water (Falkenmark, 2001, pp. 552-553).

The Nile River is one of the largest rivers in the world and serve as vital source of live hoods and help in the socio-economic development for multiple countries in the Northeast Africa. It goes up to 6650 kilometres and encompasses eleven riparian countries with three key nations at the centre of discussions about its mismanagement: Ethiopia, Egypt and Sudan (Abusamak, 2022, p. 1938; Adhanom, 2014, p. 3).

The management of the Nile River has been a subject of contention and conflict between these three countries, Ethiopia, South Sudan, and Egypt, for decades. The sensitive situation comes from varying interests, historical frameworks and legal frameworks as well as environmental challenges that used to and still do shapes the utilisation and the allocation percentage of the Nile's water. As time goes the demand for water increase due to the population growth, which leads to a higher agricultural need, energy development, at that time the effectiveness and equitable management of the Nile resources become indispensable (Allan, 1999).

The main point that is causing disagreement is uneven distribution of the water amongst the riparian countries. Egypt has long had 87% of these waters because a deal was signed in 1959 with Sudan called "Nile Waters Agreement" (Abdalla, 1971, p. 331). This agreement gave them about four fifths of all the Nile's flow. If it was not a problem in the past, in contemporary time the shares distributed are not sufficient for a growing economy. Ethiopia, which is the country where the Blue Nile starts, majority of the water Egypt receives come from tis Lake Tana (Abdalla, 1971).

However, they have been feeling left out and limited by old deals that were more only benefiting countries in the downstream part. The building of the big Ethiopian Renaissance Dam (GERD) has caused lots of issues. The country decided that it wanted to benefit from its water at his turn and was considering the old agreement as colonial-era base, so not relevant to their time. This enterprise was boosting their economy, but a concern for Egypt was about possible low water levels and problems with farming life. South Sudan, in contrast, became a separate state in 2011 and the

water still hold means to their economic growth as well, under these circumstances demanded to be included in any decisions regarding the water flow, since it will affect their portion of water. Ethiopia, the source of the Blue Nile, contributes a significant portion of the Nile's flow but has long felt marginalized and constrained by historical agreements that favoured downstream countries. The construction of the 'Grand Ethiopian Renaissance Dam' (GERD) has been a focal point of tensions, as it symbolizes Ethiopia's aspiration for hydropower generation and economic development but this raise concerns in Egypt about potential water shortages and disruptions to its agricultural livelihoods (Zhang, Block, Hammond & King, 2015).

The challenges faced are multiple, such as climate change impacts and water pollution, and in some other parts of the Basin, deforestation, as well as increased sedimentation. These factors add to the complexity of water management and they affect the quality of the water. In recent years, there have been several attempts to address the contentious issues through a cooperative approach. The 2015 Declaration of Principles, the GERD talks under the African Union's and other ones that will be detailed further in the thesis (Salman, 2017). It is important to focus on these environmental issues because of the great amount of lives it affects, resolving this issue can lead to facilitate everyday life for millions of people in Africa. And this thesis focuses on the case of overlooked countries in Africa, this research can benefit even the villages and secluded part of the country.

Several actors participated in the resolving of the Nile River dispute; including regional organizations such as the 'Nile Basin Initiative (NBI)' and the African Union, as well as international mediators and observers. While these forums, discussions and else help calming the tension, but it still does not resolve the issue (Teshome, 2008). In addition to addressing historical imbalances, finding a sustainable solution demand from riparian states to stop thinking only about their benefits and start promotes mutual benefits for all Nile Basin countries. This will help not only the fair distributing of water resources but also making easier the regional cooperation in areas like trade, investment and infrastructure development. Also, this will benefit economic integration and joint projects as well as the nations can focus on shared prosperity and minimize the risk of conflict. The Nile River could become a symbol of commonwealth and agreement instead of conflict if everyone works together for the

same goal. This shared aim should ensure well-being and prosperity for those people who rely on this grand river.

1.1. Literature Review

The Nile is one of the most famous rivers in the world and the right to use its water as wished is highly sought-after. Only two countries, South Sudan and Egypt, were given the right on the water flow for receiving the water at last and being directly affected by any major water activities, happening in upper countries. Unfortunately, it neither solved the maintenance problem, nor did it make the majority content. What keeps it from reaching its peak quality or utility is poor water maintenance. Millions of people living in eleven different countries depend on those waters, and anything affecting the Nile directly affects their everyday lives. Seeing this relatively critical situation, many scholars have been studying the issue and identifying the causes of poor water maintenance in order to find an appropriate solution. The problem addressed by different people from different points of view. Firstly, these authors claim that the problem affects the political situation of the countries concerned.

In the publication of Swain (2002) which is “The Nile River Basin Initiative” the Nile issue and activities that affect its flow are taken seriously to the point where treaties are created to ensure that all parties involved respect their bounds. Beginning in 1891, when colonial Britain and Italy signed agreements to resolve any territorial disputes, the Nile turned into a political issue. Following this line of thinking, Whittington, Waterbury & Jeuland (2014) stated that tensions between Ethiopia and Egypt were caused by the construction of the Grand Renaissance Dam on the basis that this new infrastructure posed a threat to the lower country and might disrupt the flow of water, and this is without considering the potential for military conflict.

Yohannes & Yohannes (2013) came to the same conclusions, stating that after the end of the cold war all the Nile co-basin states tried to construct a water governance regime in their territories, but it did not go only for selfish reasons more of a way for everyone to find their count and to ensure that the flow of water in good all the way. However, this still stoked lingering anxieties and a confrontation between riparian zones. These worries are fanned by the economic and political situations of the countries; six of the ten are among the world's ten least developed and poorest nations. The scientists noted

that as global warming reduces precipitation in the Nile basins, more people are predicted to rely on it in the future - an estimated 850 million people in 2050, according to predictions.

The book, titled as “Mission not yet accomplished: Managing water resources in the Nile” by Swain (2008) focuses on the political issues that surround the Nile River Basin and the difficulties that come with managing the area’s water resources. According to the author, the Nile Basin is marked by unequal power relations with Egypt holding the dominating position and the other riparian governments having little say in how the Nile’s waters are used. In addition, Swain (2008) observes that there is a lack of mutual respect and collaboration amongst the riparian governments, which has resulted in Egypt’s “hydro-hegemony” and conflicts with upstream nations like Ethiopia.

Salman (2011) focuses on the political and economic aspects of the Nile River Basin and the relationship between the riparian states in “The New State of South Sudan and the Hydro-politics of the Nile Basin”. The author explains that Egypt and Sudan continue to assert their claim to the Nile’s water, claiming that history is on their side and the laws protecting their right are international and non-negotiable. Naturally, the other riparian governments disagree with them on this and claim that since most of the water flows through their territory, they also have a part of the rights to it.

There is also the concept of transboundary water, which is the water that goes through several countries, Mirumachi (2015, pp. 1-5) states “These shared rivers are the setting for irrigation, hydropower and flood management projects as well as water transfer schemes. Often, these projects attempt to engineer the river basin with deep political, socio-economic and environmental implications”. Additionally, Uitto & Duda (2002, p. 364), indicate “instead of being zones of conflict, shared water resources can provide a basis for cooperation and benefit-sharing provided that threats to the international waters are recognized and collaborative structures are created”.

Majzoub (2008) contends that the absence of a thorough legal framework for regulating the Nile Basin has posed a significant barrier to cooperation among the nations that share the river. The Nile Basin Initiative (NBI), a regional organization founded in 1999 to foster collaboration on the management of the Nile Basin, has

allegedly had only limited success because of political tensions and conflicting interests among the member nations, according to the author.

Tvedt (2004; 2010) states that, a thorough analysis of the political, economic and social difficulties, the Nile River Basin is currently confronting in the context of globalization. According to Tvedt (2015), the Nile Basin is a crucial place for comprehending the difficulties that water resource management will face in the twenty-first century. Tvedt (2015) looks at the historical and legal contexts that have influenced how Nile waters are used, as well as the rising rivalry for water resources in the area. The significance of comprehending the various viewpoints and interests of the riparian states in the Nile Basin is one of Tvedt's major issues.

“The Nile Hydro Politics: A Historic Power Shift” by Yimer (2015) examines how the Nile Basin’s water politics are evolving, particularly considering Ethiopia’s building of the ‘Grand Ethiopian Renaissance Dam (GERD)’. According to Yimer (2015), the GERD heralds a fundamental change in the balance of power in the Nile Basin as Ethiopia, an upstream nation, seizes control of the river’s resources and challenges the traditional supremacy of nations like Egypt and Sudan, which are downstream. The author points out that this change has led to tensions and disputes in the area, particularly between Egypt and Ethiopia, and that it has brought attention to the need for new water management strategies and collaboration among politics, according to some authors, where not the only one affected.

The mismanagement of the Nile River may have negative effects on the regions agricultural. The value of agriculture in the Nile River Basin and possible effects of water scarcity and poor management on the industry. It also reinforces the belief that without proper management, the water resources of the Nile basin will not be sufficient to meet the needs of the basin’s rapidly growing population, especially for food production (Whittington, Waterbury & Jeuland, 2014; Whittington, 2004).

Biswas (1995) states the difficulties Egyptian agriculture has, such as water scarcity and land degradation. According to the research, inadequate water supply and poor irrigation systems are major constraints to agriculture in Egypt, so better water management is required to ensure the sector’s viability.

In “Water in the Arab World: Management Perspectives and Innovations” by Jagannathan, Mohamed & Kremer (2009) the difficulties in managing water resources in the Arab world, especially the Nile River Basin were discussed. Many countries in the Arab world are heavily dependent on agriculture as a source of employment and income, and the availability of water for irrigation is critical to the success of the sector (Jagannathan, Mohamed & Kremer, 2009).

Waterbury (2008) focuses on the potential effects of poor Nile River management on the region’s energy production. According to the author, the Nile River is a significant source of hydropower for many nations in the area. He contends that the development of major dams, like as the Grand Ethiopian Renaissance Dam, may have both favourable and unfavourable effects on the region’s energy production. According to Waterbury (2008), several countries in the region rely heavily on the Nile River as a source of hydropower. According to him, the construction of large dams like the Grand Ethiopian Renaissance Dam may have both positive and negative consequences on the region’s ability to produce energy. On the one hand, large dams might increase the quantity of electricity available and so support the region's growing energy needs.

Radwan & Farag (2014) argue that Egypt’s tourism industry which is one of the most significant contributors to the country’s economy, might suffer significantly from the mishandling of the Nile River. They point out that the Nile is a vital resource for Egypt’s tourism industry, providing water for lodging facilities, vacation spots and tourist destinations. The poor management of the Nile River could result in less water being available for hotels, resorts and tourist destinations, which could lower the standard of tourism amenities. The mishandling of the Nile River may have an influence on several industries in the area, particularly transportation that is a crucial industry in the Nile River Basin, especially for nations that depend on the river for trade and commerce.

The report titled “Examining the status of Egypt’s river transport system” by El-Nakib (2011) emphasizes that inadequate water supply and poor management may have detrimental effects on regional transportation, particularly for river transportation. According to the research, the factors you can control and those that are not under your power influence the perfect riverside roads plan. It demonstrates a careful balance needed for growth in these systems. El-Nakib (2011) indicates that it is currently really

unbalanced. This problem has caused uneven systems, especially noted in lower amounts of goods moving and no big system set up to help logistics.

Rahman (2013) discusses the difficulties and opportunities in managing the Nile River Basin and its effects on Egypt's water security and other countries which involve 10 countries, including Egypt. Rahman (2013) says the Nile, crucial for economic activities in Egypt, is facing challenges such as resource depletion, climate change and population growth which lead to the issues such as unemployment and hunger. Conflicts over water resources are noted, with upstream and downstream countries vying for allocation. Industrialization further complicates matters, as accusations of diplomatic tactics arise in controlling development projects. Overall, the Nile River Basin faces complex issues requiring collaborative efforts to ensure sustainable water management.

El-Gohary & Armanious (2017) in their article "Environmental Impact Assessment for Projects in the Nile Basin Countries" explore the significance of sustainable development in the Nile Basin countries. They emphasize the importance of sustainable development in ensuring that residents' lives and the environment are not adversely affected by development projects in the area. They stress the importance of conducting impact assessments ahead of the start of any development project in order to find and reduce any potential negative effects.

In "Agricultural development in Egypt and its relation to foreign trade" by Bahloul (1996), there is a significant relationship between two different factors - agricultural trade and exchange rate policies - and the incentives that influence the production of agricultural goods, particularly their prices. This assertion is made in his academic publication related to the economic domain. According to the theory, these policies have a major impact on the incentives for agricultural output, which could change how much agricultural products are priced.

The management of the Nile Basin necessitates a change from a state-centric approach to a more inclusive, collaborative approach, according to Conway (2005) in "The Nile Basin: National Determinants of Collective Action". The author contends that the Nile Basin nations have historically viewed water management as an issue of national security, which has led to a focus on protecting water resources and advancing the

interests of certain nations. According to Conway (2005), management of the Nile Basin needs to take a more collective and collaborative approach that involves all stakeholders and acknowledges the interconnectedness of the basin's member nations.

Okascha (2013, pp. 20-21) argues that the Nile Basin's water shortage has a potential to intensify already-existing social, political and economic problems and to contribute to regional instability. He contends that the Nile Basin nations face serious problems with water scarcity, which are projected to get worse over time owing to things like climate change and population expansion. According to Oestigaard (2018, pp. 11-12), a collaborative and inclusive strategy that acknowledges the interconnectedness of the nations in the region and places a focus on sustainable water resource management is necessary for effective management of water resources in the Nile Basin.

Oestigaard (2012) note in his study, "Water scarcity and food security along the Nile: politics, population increase and climate change" that the Nile Basin is seeing an increase in food demand because of population expansion, urbanization, and dietary changes. The availability of water resources is also decreasing because of pollution, overuse, and climate change. As a result, there will be a growing disparity between water supply and demand, which could result in lower crop yields, increased food costs, and food insecurity.

The study of "Environmental security, regime building, and international law in the Nile Basin" by Tesfaye (2012) explores the intricate political and legal concerns that surround Nile River Basin management. The Nile River Basin has serious environmental issues, such as pollution, population increase and climate change, which jeopardize the region's ecological and economic viability. The author also examines the existing legal frameworks for the Nile Basin, including bilateral and multinational treaties, and makes the case that they have not been successful in fostering collaboration and sustainable water management techniques.

The current legal and political structures controlling the Nile River Basin, according to Nicol & Shahin (2003)'s book "The Nile: Moving Beyond Cooperation" are insufficient to solve the region's environmental and economic concerns. They contend that the region's ecological and economic sustainability is in jeopardy since the current

agreements have not encouraged collaboration and sustainable water management methods among the states of the Nile Basin.

Zeitoun, Mirumachi & Warner (2020) argue in their article “Water and Conflict: Analysis for transformation” that the conventional belief that transboundary water resources always result in conflict between states is oversimplified. Zeitoun & Mirumachi (2008) contend that there are numerous instances of cooperation and collaboration between riparian governments that share transboundary water resources and that a deeper comprehension of transboundary water relations is required. The authors put up a conceptual framework in which transboundary water interactions are divided into four categories: negotiation, cooperation, conflict and partnership. They contend that this paradigm can aid practitioners and policymakers in comprehending the dynamics of interactions involving transboundary water and in formulating plans for fostering collaboration and cooperation among riparian states.

The authors contend that safeguarding freshwater biodiversity is crucial for economic development as well as human welfare in addition to conservation efforts. Although it is acknowledged that desalination and water reuse are crucial, they will not be sufficient on their own. It is believing that to lessen the likelihood of conflict in the area, it will be crucial to address the underlying reasons of water scarcity and encourage better fairness and collaboration in water management (Darwall, Smith, Allen, Seddon, Reid, Clausnitzer & Kalkman, 2009). Freshwater biodiversity is important and is under threat across the world, additionally, they make explicit reference to the Nile River’s biodiversity. The authors point out that a wide variety of species, many of which are native to the area, live in the Nile basin, including fish, crocodiles, and hippos. However, they also draw attention to the fact that numerous risks, including overfishing, pollution, and the building of dams and other water infrastructure, are posed to the Nile River and its biodiversity. They contend that safeguarding freshwater biodiversity is crucial for economic development as well as human welfare in addition to conservation efforts (Darwall, Smith, Allen, Seddon, Reid, Clausnitzer & Kalkman, 2009, p. 9).

Cascão (2008) addresses the shifting power dynamics in the Nile River basin and the difficulties Egypt is facing as Ethiopia asserts its right to utilise the resources of the river. This research makes the case that Ethiopia’s building of the Grand Ethiopian

Renaissance Dam (GERD) poses a substantial threat to Egypt's long-standing hegemony in the area and could tip the scales in upstream states' favour.

According to Cascão (2008) the development of the Grand Ethiopian Renaissance Dam (GERD) poses a serious threat to Egypt's established hegemony in the area and could tip the scales in favour of upstream states, particularly Ethiopia. He contends that this signifies a fundamental shift in the balance of power in the Nile River basin and underscores the need for new strategies for diplomacy and water management in the area.

Waterbury (1987) discusses the challenges that have historically plagued the management of water resources in the Nile River basin. Also, poor governance and coordination among riparian governments have led to conflicts over water resources and hindered sustainable development in the region. The institutional and legal frameworks that have been established, such as the Nile Basin Initiative and the Cooperative Framework Agreement, to address these issues and promote cooperation among stakeholders. Waterbury (1987) evaluates the effectiveness of these frameworks in achieving their objectives and fostering sustainable development in the Nile basin.

To sum up, the literature review above highlights the critical issue of the maintenance and management of the Nile River and its impacts on the countries within the basin. The Nile River, being one of the most famous rivers in the world, holds immense importance for the livelihoods of millions of people living in eleven different countries. However, the maintenance of the river has been poor, leading to various negative consequences. The review reveals that the Nile River's maintenance problem is deeply intertwined with political and economic factors. Political tensions and conflicts amongst the riparian countries, such as Egypt, Sudan and Ethiopia, have hindered effective water management. The construction of infrastructure projects like the Grand Renaissance Dam has further intensified these tensions, as downstream countries fear the disruption of water flow. The unequal power relations and Egypt's historical dominance in the region have also contributed to conflicts and a lack of cooperation.

Economically, the mismanagement of the Nile River has adversely affected various sectors. For instance, agriculture, a crucial industry in the Nile Basin, suffers from water scarcity and inadequate irrigation systems. Insufficient water supply hampers agricultural productivity, which poses a threat to food production and food security in the region. Additionally, industries such as tourism and transportation, which heavily rely on the Nile River, face challenges due to poor water management. Less water availability for hotels, resorts and tourist destinations can diminish the Egypt's appeal as a travel destination, while disruptions in river transportation can have significant economic impacts. To address these issues, scholars and experts emphasize the need for a shift from a state-centric approach to a more inclusive and collaborative approach. A cooperation amongst the riparian countries is crucial for a sustainable water management in the Nile Basin. International organizations like the 'Nile Basin Initiative' have attempted to foster collaboration, but political tensions and conflicting interests have limited their success. Furthermore, the literature review underscores the importance of sustainable development and the assessment of potential impacts before implementing development projects. It is crucial to consider the social, economic and environmental implications of projects in the Nile Basin to ensure the well-being of local communities and the preservation of the ecosystem.

In conclusion, the maintenance problem of the Nile River is a multifaceted issue rooted in political, economic and social factors. The literature review provides insights into the challenges which are faced by the riparian countries and emphasizes the need for cooperation, sustainable development and inclusive water management practices. Resolving these issues and improving the maintenance of the Nile River is essential for the well-being and prosperity of the countries and also communities relying on its waters.

1.2. Research Methodology

1.2.1. Research Problem

“A research problem is a statement about an area of concern, a condition to be improved, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or in practice that points to the need for meaningful understanding and deliberate investigation” (Sacred Heart University Library, 2020). The

management of the Nile River has long been hindered between hardship, difficulties and disagreements amongst Ethiopia, South Sudan and Egypt, leading to a lack of meaningful cooperation. This African waterway plays an important role in the life of several nations along its course. The main question of this thesis centres on the Nile River's mismanagement and its far-reaching impacts on all the selected amount of the riparian states.

It is important to understand in detail the underlying factors that contribute to this predicament and comprehending the multifaceted effects it engenders to be able to reach the point of sustainable development, fostering effective transboundary cooperation and paving the path for harmonious conflict resolution within the riparian state. This thesis will, in these circumstances, provide potential solution that can engage in the nations toward a more equitable, mutually beneficial and environmentally responsible management of this extraordinary water resource. The signification of this research is to understand the historical, legal, economic and environmental factors that have shaped the management of the Nile River over the years. By analysing that caused this discord and inefficiency and find the origin of the problem to be able to identify opportunities for ameliorating the prevailing complexities.

Moreover, this thesis will also analyse the past and present conflicts, agreements and cooperation efforts amongst the riparian countries that help promote future dialogue and conflict resolution discussions. Additionally, this research explores the implications of the Nile River's mismanagement on regional stability and security, and recognizing the potential ripple effects that could reverberate across borders. Backing it with such insights from policymakers, international organizations and scholars, this thesis forges a more informed and constructive approach toward navigating the complexities inherent in managing a shared Trans boundary resource like the Nile River. The findings and recommendations of this study will help to contribute to the future academic research as well as potential decisions making. The aim is that this study will be well useful and well used during dialogues amongst the countries of Ethiopia, South Sudan, Egypt and other riparian nations.

1.2.2. Research Objectives

The primary objective of this thesis is to understand the complex environment surrounding the management of the Nile River. The central research question is: What are the causes and environmental consequences of the mismanagement of the Nile River? To address this overarching question, this thesis examines the following sub-questions: "What are the causes of the mismanagement of the Nile River in Egypt, Ethiopia, and South Sudan?" "What are the consequences of this mismanagement in these countries?" and "How does it affect the socioeconomic and political situation?"

This thesis undertakes a comprehensive analysis of the various agreements and legal frameworks enacted by governments for the management of Nile waters, evaluating their effectiveness and impacts on the riparian states. It further investigates the repercussions of mismanagement on the ecosystem, water availability, and the broader challenges posed by climate change. By exploring the intricate interplay of these factors, the study seeks to provide a nuanced understanding of the environmental implications and the critical need for sustainable water resource management.

In addition, this thesis examines the significant effects of Nile River mismanagement on diverse sectors such as agriculture, energy production, and the prevalence of conflicts. Through detailed analysis, the research aims to uncover the connections between the Nile River's management and the socioeconomic fabric of the nations it traverses. This thesis moves beyond mere analysis to offer practical and viable recommendations that could potentially resolve conflicts and promote efficient and harmonious transboundary water cooperation among the riparian states.

By incorporating insights from historical precedents and contemporary developments, this thesis aspires to outline a path toward an equitable, sustainable, and collaborative approach that respects the shared interests and aspirations of the Nile Basin nations. This comprehensive study embarks on a multidimensional exploration of the Nile River's management, integrating historical, political, environmental, and economic perspectives. By addressing the research goals of examining agreements, evaluating consequences, and scrutinizing socioeconomic effects, the thesis aims to present a holistic understanding of the complexities surrounding the Nile River.

Furthermore, by identifying and analyzing problems and disagreements, and proposing forward-looking solutions, the thesis endeavors to contribute to the ongoing dialogue and initiatives aimed at fostering a more harmonious and prosperous future in the Nile River Basin. Through a steadfast commitment to promoting sustainable development and transboundary cooperation, this thesis aspires to advocate for responsible stewardship of this invaluable natural resource, fostering a spirit of unity and collaboration among Ethiopia, South Sudan, Egypt, and other riparian nations.

1.2.3. Methodological Framework and Research Design

This research employs a qualitative methodology, described as "a situated set of interpretive, material practices that make the world visible" (Payne, 2007, p. 140). The literature review delves into scholarly work, reports, publications, and books to gain more details about how the management of the Nile River works, retrace the evolution of agreements and treaties governing the distribution and utilization of Nile waters, and examine the relevant legal frameworks.

Environmental data is also a vital point in the research, offering critical and decisive insights into the health and sustainability of the Nile River ecosystem. This research considers environmental factors such as water quality, flow patterns, climate change impacts, and the balance between human activity and biodiversity. To understand the socioeconomic dimensions, this thesis delves into diverse areas of socioeconomic indicators, examining aspects such as the agricultural reliance of the riparian states, their energy production, and conflicts related to Nile River management. By observing these factors, the study aims to unravel the far-reaching ramifications that mismanagement or disputes can have on the life and economic progress of the riparian nations.

The qualitative component of the research will help to analyse thoroughly of available data pertaining to various dimensions of Nile River management. The water resources, the environmental factors and the socioeconomic indicators will be examined. By utilizing qualitative research methods, the research design reflects the study's commitment to comprehensively examine the management of the Nile River among Ethiopia, South Sudan, and Egypt and the discrepancy between the representation of these matters and their actual state. In conclusion, with the potential to inform policy

decisions, foster cooperation, and promote sustainable development, this thesis aspires to contribute to a more harmonious and prosperous future in the Nile River Basin.

1.2.4. Data Collection Methods

The data collection process for this thesis encompasses several stages to make sure the exploration of the subject is structured and understandable. The first phase uses the extensive review of existing literature that could provide a background for this thesis. This research also utilises sources in scholarly articles, policy documents, official publications from known academic journals, government agencies websites and international organizations are also included.

1.2.5. Documentary Sources

Documents can be private such as e-mails or diaries or publicly available which are governmental reports and policy statements (Denscombe, 2010). Documentary sources which are electronic or physical sources, can be ‘primary sources’ such as cabinet documents and legal documents; ‘secondary sources’ including governmental reports and publications and finally, ‘tertiary sources’ such as published biographies or unpublished books or articles (Burnham, Lutz, Grant & Layton-Henry, 2008, pp. 165-167). This rich repository of secondary data will furnish the thesis with a critical insight into the management of the Nile Basin and all its actors, facilitating a deeper comprehension of the challenges and opportunities faced by Ethiopia, South Sudan and Egypt. By synthesizing information from diverse sources, this research will construct a comprehensive narrative that traces the evolution of Nile River management. The secondary data will be instrumental in identifying key issues, controversies and points of contention that have historically shaped Nile River management. It will enable a comprehensive exploration of the multifaceted dimensions and complexities involved, offering a broader perspective on the various stakeholders’ interests and aspirations. The second phase being, after all this information gathering to analyse them. Drawing on a wealth of scholarly insights and expert perspectives, all the different point of views, challenges and opportunities, organized and clear analyse and solution will be formulated at the end. To sum up, the research aims to construct a robust and retraceable narrative to explain the source of

this problem between all riparian states which will help governments in the future initiatives to repairs damages and calm tensions.

1.2.6. Case Study

“Case study research involves intensive analysis of a particular event, situation, organisation or social unit. Typically, a case has a defined space and time frame: phenomenon of some sort in bounded context” (Miles, Huberman & Saldaña, 2014, p. 28; Schoch, 2020, p. 245). Hantrais (2008, p. 3) indicates that “comparaison studies should be between countries and cross-national, thereby largely discounting intra-countries comparisons and the temporal dimension as defining properties”. Thus, a case study is important because of all the specific details provided in it and the insight provided. For the case of the Nile River, these three countries (Ethiopia, Sudan and Egypt) were selected because of their geographical emplacement. Egypt is where the Nile ends before joining the Sea, due to its desertic environment it is also one of the countries that also still completely depend on this water basin. Sudan is second in line with also a difficult environment that requires an effective water management system to protect its numerous fauna and flora species as well as being the point of merging of the two Niles (White Nile and Blue Nile). And finally, the reason of the selection of Ethiopia is because the country is the very source of the Blue Nile, originating from the Lac Tana. This legitimates the country’s right to demand authority over these waters. These facts make them important in the water management projects around the Nile River. Finding common grounds for these countries will result on a humongous step toward Nile based problems in Africa. In conclusion, the goal is to achieve a comprehensive understanding of the complex environment surrounding the management of the Nile River among three riparian states: Ethiopia, South Sudan, and Egypt. With a comparative research of these country and a clear, coherent, and organized research process, the findings will potentially be used to foster cooperation among riparian states and promote sustainable development.

1.2.7. Ethical Considerations

“The ethical standards promote the progress of science by encouraging collaboration and trust among researchers, which are also important for promoting the goals of science” (Resnik, 2020, p. 4). During the research process, the ethical aspect should

be considered. There should be a commitment to ethical guidelines and standards relevant to academic institutions as well as research ethic committees. Integrity of the research process and responsible handling of the data is a must. Moreover, this study is engaged in fostering an environment of trust and respect of all stated parties, and generates knowledge that goes beyond mere academic exploration, with a focus on providing practical and actionable recommendations. In conclusion, ethical considerations are considered at the core of this research, guiding every step of the research process until the conclusion; contributing to a comprehensive analysis of the bad management of the Nile River between Ethiopia, South Sudan and Egypt.

1.2.8. The Structure of the Thesis

This thesis consists of four chapters. Following the introduction, Chapter 1 examines the Nile's river and its historical and contemporary importance for the countries which are Egypt, Sudan and Ethiopia. Chapter 2 mainly focuses on the legal framework, early and more recent agreements, how they were introduced throughout the years. For the third chapter, it is about the environmental effects of this mismanagement on the fauna and flora leaving around and in the Nile. In the Chapter 4 the summary of the problem found during this research and potential recommendations are discussed; which concludes this thesis.

2. THE NILE'S ESSENCE: A HISTORICAL TAPESTRY OF EGYPT, SUDAN, AND ETHIOPIA

2.1. Egypt: The Nile as the Cultural Lifeline

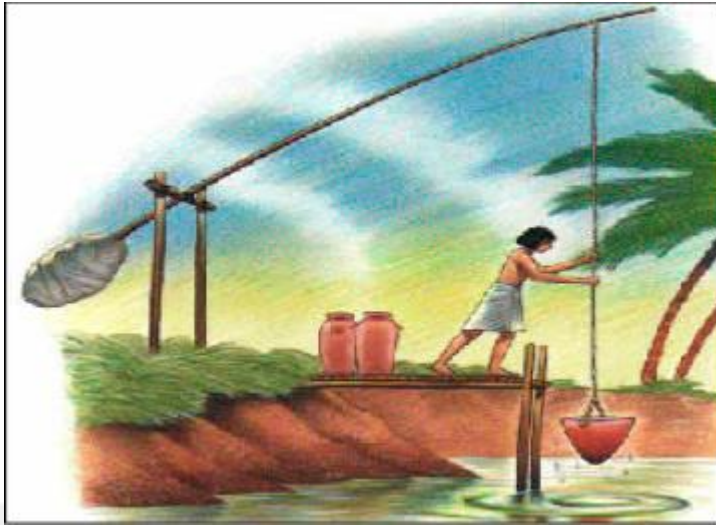
2.1.1. Historical Roots: Egypt's Profound Bond with the Nile

The Nile River has been incredibly rooted into the tapestry of Egypt's history, it represented not only a geographic marvel, but also a source of life in this nation that flows through the biggest desert of the world, the Sahara. As argued by Lowi, (1996) the Nile River is important and the lives of people leaving in the Sahara. A treasure that sustained their existence, and highly assisted in the survival of their civilization. For millennia, the Nile has served as a primary resource for them. This profound and long-standing bond can be traced back, to when the Nile River became a vital source of sustenance and survival for countless individuals.

During this time, the annual inundation of the Nile, something that in the present day is considered as disastrous, was once a seen as divine blessing. It brought water and fertility to the land, irrigating extensive agricultural territories and even providing extra water for everyday life, since rain was not something that occurred a lot. The Nile became a source of pride and love for the ancient Egyptians, providing sustenance, cooling the desertic lands through irrigated grounds, and serving as a means of transportation along its way. The very meaning of Egypt, as known today, is profoundly connected to the flowing waters of the Nile (Thompson, 2008, pp. 85-86).

The river played a decisive role in the shaping of the agricultural practices of ancient Egyptian community. The said community showed themselves resourceful and adaptative during that era, in an impressive way for their time. They were crafting creative irrigation systems, dikes and canals, providing optimal utilization of water for agriculture and the preservation of excess water for daily needs (See Figure 2.1) (Angelakis, Zaccaria, Krasilnikoff, Salgot, Bazza, Roccaro & Fereres, 2020, p. 9).

Figure 2.1: Egyptian Shaduf



Source: (Water Encyclopedia, n/d).

These innovations early for their time, were an only showing their genius and laying the foundation for sustainable agricultural practices that sustained their growing civilization. As the Nile kept providing, it nourished the social progress of the country. More and more people started living around the banks of it, nourished by the animal it was attracting, the plants it was growing and the fertile lands it was creating. One of the most important things, the Basin provided, was job opportunities from fisherman to boat owners as well as clothes cleaners the list is long, the second being the flourishing of the economy, art, culture and science. It also facilitates trade and contribute to the construction of monumental structures like the Pyramids that defined the grandeur and the beauty of ancient Egypt (Wilson, 1956, p. 93; 275-276).

The Egyptians' way of life and their profound relationship with the Nile found expression in hieroglyph symbols in scripted in stone that encapsulated their processes, thoughts, and the entirety of their history. These hieroglyphs revealed the centrality of the Nile in their lives, holding profound spiritual significance. The cycles of the Nile were interpreted as having divine meaning, with the annual flooding symbolizing a cyclical rebirth. As seen in the Figure 2.2, Androgynous inundation God Hapy following the Egyptian King while holding the gift of lotus flower and tall vases of flood water. Temple of Hathor, Demdera. Deities associated with the Nile watched over and protected the people from the harsh desert, elevating the river to a sacred position like Hapi, the god of the Nile. Nile festivals were even held to celebrate the

existence of the river and its immense significance (Bunbury, Cooper, Hoath, Ikram, Johnston & Schneider, 2023, pp. 61-65).

Figure 2.2: God Hapy following the Egyptian King



Source: (Bunbury, Cooper, Hoath, Ikram, Johnston, C., & Schneider, 2023, p. 63)

To sum up, in essence, the link Egypt has with the Nile is deeper than Egypt's historical roots with the Nile Basin run deeper and more significantly than commonly believed. The river, beyond being a vital resource, was a source of inspiration, spiritual connection, and societal progress.

2.1.2. Cultural Significance

The cultural significance of Egypt goes beyond its practical utility; it goes into religious and festive matters that come even to this day. Going to the heart of it shows how much they adore this will help to understand why they are hard during the contemporary discussions over it; the Nile and the spiritual essence of Egyptian society. The religious symbolism profoundly dwelled the Nile reveals a respect for the river as a divine force. When it comes to Nile festivals, which are deeply integrated in the Egyptian's cultural roots, were celebrated with so much joy and honour. They were preparing rituals, ceremonies and communal gatherings to thank the deities protecting the Nile, them and their ascensions. Hafeez (2018, p. 168) states that "Since the dawn of recorded history, the Nile and its inundation have been to all the Nile valley inhabitants their life cord, and the locus of their social, economic, and cultural activities and ceremonies from birth till death."

The kings from that time were also making sure, as the leader, protectors and intermediaries between mortals and Gods that the ceremonies related to the Nile were as perfect as possible and on time, as observed can observe “Thutmose III had, he claimed scrupulously seen to it that the festivals appropriate to the onset of each annual season were performed during each and every year of his reign” (Kadish, 1988, p. 190).

They even constructed temples to pray those deities, full of carvings and adorns beautifully put to tell their story and express their love as well as their respect. Considered as a tangible manifestation of the divine importance accorded to the river. Pilgrimages to these sacred sites were acts of devotion, reinforcing the spiritual connection between the people and the Nile. Exactly like the example observed a bit earlier with the deity named Hapy who had temples in Elephantine, controlling over annual inundation; this example can be seen in the book chapter titled in “Pharaonic Egypt”, “...the foremost city of the district which embraced the sacred town of Abydos. It was near Abydos, with its sanctuary of the god Osiris, that Pétie excavated the huge tombs of the kings of the first two dynasties” (Abu Bakr, 1981, p. 85).

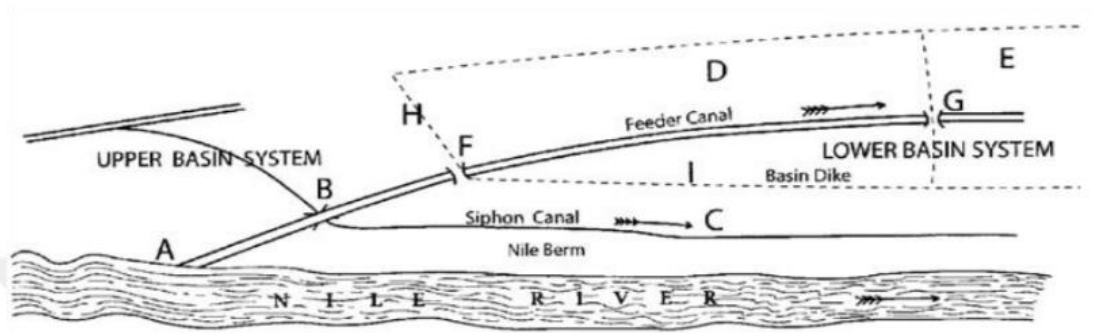
The river is also part of the Literature and art of Egypt; even today its representations. Poems, hymns, and artistic expressions celebrated the river's bounty and transformative power. The Nile wasn't merely a geographical feature; it was a muse inspiring creative expression, reflecting the deep emotions and reverence felt by the Egyptians (Cribiore, 1995, p. 97). To conclude, beyond its practical utility the Nile is deeply rooted in the culture of Egypt, in its religion beliefs, festival traditions, historical, economic and social matters. The Nile was more that only practical but also represented the heart of the Egyptian culture and development.

2.1.3. Traditional Management Practices

Ancient Egyptians developed sophisticated irrigation systems that mirrored their profound understanding of the river's Dynamics (see Figure 2.3). These networks of canals, dikes, and reservoirs were complex and were very useful the Nile's annual inundation, transforming potential challenges into opportunities for agricultural prosperity. Their system was distributing water evenly in the conducts and water the arable lands. This strategic distribution allowed for comprehensive irrigation, ensuring

that the fertile silt carried by the floodwaters enriched the soil and enhanced agricultural productivity. Sometimes they were deliberately flooding and draining the water by using sluice gates and transverse dikes (Mays, 2010, pp. 56-57). This practice is called Artificial irrigation and was established by the 1st Dynasty.

Figure 2.3: Artificial Irrigation System



Source: (Mays, 2010, p. 57)

Figure 2.3 shows how the artificial irrigation was made: (A) Head of the basin canal, (B) Siphon canal, (C) High land under sorghum, (D, E) Basins, (F, G) regulators, (H) transverse dike, (I) longitudinal dike.

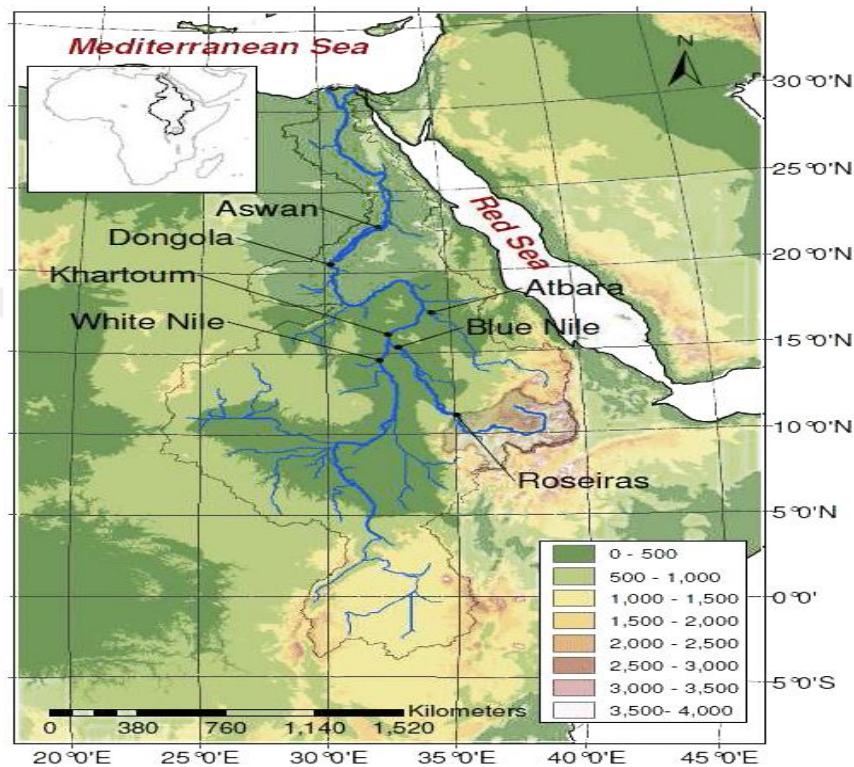
The ancient civilizations were not only working on the irrigation channels, but their practices also emphasized the importance of conservation. It was important to conserve the water to avoid the non-stop movement and making things easier for future generations. They planned their planting and harvesting cycles. This synchronized approach maximized agricultural yields while respecting the natural rhythm of the river, exemplifying a harmonious relationship with the environment (El-Gohary, 2019). “Because of the lack of wells and natural waterholes, due to calcareous and karstic bedrock, drinking water supply in all zones of the region is mainly provided by cisterns” (Vetter, Rieger & Nicolay, 2009, p. 12).

In conclusion, the historical methods of water management employed by ancient Egyptians were not just a proof of their genius and ahead of time thinking but a of their ecological consciousness. The enduring teachings of their methods offer insights, for modern societies facing the complexities of resource management. As the Nile River flows through the pages of history the wisdom embedded in these traditions serves as

a timeless reminder showcasing the possibilities of living with our natural environment.

2.2. Sudan: Nile's Role in the Tapestry of Livelihoods

Figure 2.4: Seasonal view of the Nile River



Source: (Siam & El Tahir, 2015, p. 1182)

2.2.1. Historical Nexus

For the case of Sudan, their historical connection with the Nile is profound; it influences the trade, agriculture, and the emergence of ancient kingdoms. The Sudanese folklore and traditional practices have the Nile integrated in their folklore and traditional practices (Tame & Likeilik, 1934).

The Nile became the conduit for trade and commerce, promoting connection between the regions. The water facilitated the transportation of the goods, merchandises, which also help developing the routes that help the economy of the country. Few graves of black skinned people dating from ancient Egypt were found in Egypt as well as product from the southern land, like ivory, resins, figures of elephants and figures of ostriches appear on drawing of the potteries found there, dating from that period. Lots of

beautiful product were taken from Sudan on the demand of Pharaohs. At the same time, on the northern side of Sudan people were soliciting cloths, faience, articles of ornaments and weapons from Egypt finding them to their taste. These mutual interest toward each other national products created a trade that worked for both of them (Mutwakil, 1970, p. 23).

The agriculture of Sudan is also evolving around the Nile, the annual flooding that is also happening in Sudan brought fertile silt, rejuvenating the soil and creating optimal conditions for cultivation. Sudanese farmers, who were deeply connected to the ebb and flow of the river were utilizing it to grow crops that provided sustenance, for their communities. This harmonious relationship with the Nile enabled the thriving of traditions that played a role, in Sudan's historical progress. But because of the climate change, the amount of cultivated land varies from one year to another depending on the amount, intensity and distribution of rain over the country, especially in the savannah belt (Hamad & El-Battahani, 2005). And the forests and woodlands are observed to be decreasing at an average annual of 1%. “The net irrigated area may drop by 20% in relatively dry years because of water shortages during the winter and early summer months” (Hamad & El-Battahani, 2005, p. 34).

Table 2.1: “Sudan's actual land use”

Land Class	Million Hectares	Year of data
Total area of Sudan	250.0	
Land area	238.0	
Desert	74.0	(1990)
Semi-Desert	95.0	(1990)
Cultivated Land	21.0	(1989/90-1995/96)
Uncultivated Land	39.0	(1990)
Forest and Wood land	60.0	(1990)
Gross irrigated land	2.5	(1989/90-1995/96)
Mechanized rain-fed areas	9.5	(1989/90-1995/96)
Traditional rain-fed areas	9.0	(1989/90-1995/96)
Urban Land	0.3	(1990)

Source: (Hamad & El-Battahani, 2005, p. 35)

Forests and woodlands are decreasing at an average annual rate of the LK, previously colonized area by Egyptian forces that was later taken back by its rightful owners. Long after that this part was still considered as a part of Egypt; It was said that the people from Sudan had never developed either its trade or any industry worthy of mention and said that from their side owed their cultural position to the Egyptian immigrants and to the imported Egyptian civilization, which is of course everything but true (Hamad & El-Battahani, 2005; Reisner, 1918, pp. 65-66).

The knowledge and merits were later restored and accepted; Sudan (even under colonizers treat), especially the Lands of Kush was the first capital of a powerful indigenous kingdom They later expanded and filled the land between and they expanded to fill the land between the first rapids of the Nile in the north side and the fourth one in the south. And they were highly using this land for trade with neighbouring countries, which was successful (Thompson, 2008). From ivory to gold, as well as bronze, ebony and slaves. The goods that were traded on these waters linked people between them, the water made people come together beyond borders. The river, once a barrier, became a bridge that connected communities, contributing to the rich cultural mosaic of Sudan (Mutwakil, 1970).

In summary, Sudan's connection, to the Nile goes beyond ties. It has created a story of agricultural and societal interdependence that holds significance not for Egyptians but also for Sudanese. The rivers multifaceted contributions have made it a lasting symbol in the history of Sudan. As this research delve into the relationship between Sudan and the Nile, it is observable that it is more, than a geographical feature; it is a powerful force that has greatly influenced Sudanese civilization and the development of their economy.

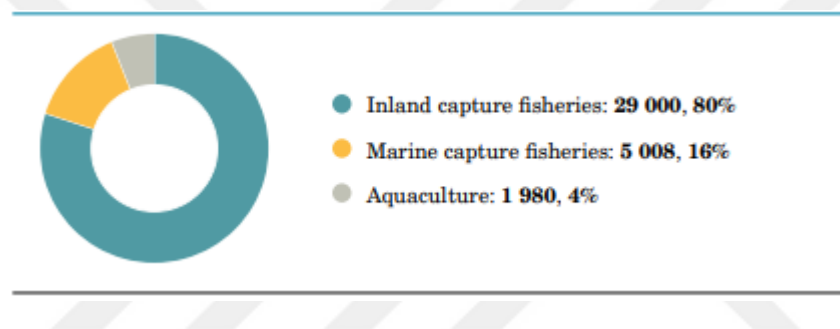
2.2.2. River-Dependent Livelihoods

At the heart of Sudan's River-Dependent Livelihoods are the vibrant fishing communities They are depending on it and living-off it; they were leaving alongside the water and were fishing, hunting, and drinking there. Fishing a survival method that

had been existing and evolving since prehistoric Age, their different fishing methods and evolutions are even documented (Van Neer, 2004, pp. 262-263).

The communities living next to Nile had been completely dependent on its water, it was providing them with sustenance. Fishing any type of fish available in this water, and hunting animals coming to sustain themselves and even crocodiles living in it sometimes. Sometimes even NGOs help them by doing it themselves like it is observable in in Figure 2.5, the FAO that fished in 2014 totalled 35 988 tonnes, and they were in three ways, inland capture fisheries (81 percent), marine capture fisheries (14 percent) and aquaculture (4 percent) (Anton & Curtis, 2017, p. 8).

Figure 2.5: Reported Fish production of FAO in 2014



Source: (Anton & Curtis, 2017, p. 8)

But these blessing do not come alone, unfortunately since they are none prepared and do not have the tools, technology or knowledge helping them protect themselves from the flood they often suffer from the flooding season that forces them to move upper in the hills were the water can't reach them and comeback to their previous location once it ends. Indeed, when the flooding season comes and the river's level goes up, they have no other choice than to move to protect their houses and belongings. It was hard not only for them but also for their animals, because of the feed shortage and prevalence of diseases, "the Nilotic cattle are believed to be poor producers of milk, even though there is currently insufficient evidence to suggest otherwise" (Pitia, Muso & Ahmed, 2022, p. 22). Each house if wealthy enough bovine and goats as extra income does have, to sell off, give as a wedding gift, or to keep for themselves... etc; They keep them alive thanks to the water originating from it (Pitia, Muso & Ahmed, 2022, pp. 22-23). Some of the Nile dependant Sudanese were also practicing agriculture, those were lucky enough to adapt more easily and engage in agriculture.

It was impossible for the region of Nubia before 2009 since it was flooded before the completion of the Merowe Dam. But in other part it started in way before; as observable the early sign of agriculture in Sudan in the second and third BC (the Ptolemaic period). The waterwheel was already used to irrigate plantations in the mid-1st millennium (Ryan, 2016, pp. 1-11). Humans where not the only one profiting of it, a lot of species found home in these waters, especially in the Sudd Wetlands:

“the Sudd wetland falls within the Sudd-Sahelian Flooded Grasslands and Savannas... It is internationally recognised for its unique ecological attributes that include various endangered mammalian species, antelope migrations, millions of Palaearctic migratory birds and large fish populations. Notable wildlife species include the African elephants (Loxodonta Africana), Nile lechwe (Kobus Megaceros) endemic to South Sudan, tiang migration (Damaliscus Lunatus Tiang), white-eared kob migration (Kobus Kob Thomasi), buffalo (Syncerus Caffer), and bird species include the shoebill (Balaeniceps Rex)” (Ministry of Culture, Youth and Sports of South Sudan & UNESCO, 2017; also soo Olson & Dinerstein, 2002).

These and so many other species of fish, mammals and others highly depend on this water and create the beauty of this place. The whole ecosystem of the Sudd depends on these waters, so any damage to it could cause in the worst case another sad extension of wonderful species. The Nile was from now on a conduit for cultural exchange, and trade. The communities started using modern agricultural tools, navigation tools and fishing tools early thanks to the connection the water was creating between the river-dependent communities. Water storage devices and wells were developed and used during flooding period to prevent missing water during times of scarcity. They identified the cyclical nature of the Nile’s inundation and then implemented strategies to optimize the irrigation of the water and store enough food like said:

“A rainwater harvesting program (RWHP) could be used to reduce the negative impacts of climate change, droughts, and floods. The family water tank is a new water harvesting technique that is piloted in the Gedid area in Sudan. RWHP is the starting of a millennium development goals and it fit perfectly the situation of a land with no river, streams, Wadis, and groundwater. The people leaving there are counting on rainwater, and the registered annual rainwater is about 375mm” (Bushara, Mustafa & Eslamian, 2021, p. 155).

In conclusion the reliance, on the River Nile in Egypt goes beyond its borders. Can also be seen in Sudan before the Ptolemaic period. The fertile land along the Nile has

provided sustenance for species attracting settlements and supporting the growth of diverse ecosystems. These small communities have thrived for generations contributing to Sudan's economy and way of life. Moreover, the strategies employed by communities along the Nile extend beyond responses to environmental challenges. They reflect an approach that encompasses cultural, spiritual and social aspects. The Nile is not an entity but also holds deep cultural significance for Sudanese people. Appreciating the depth and complexity of these strategies is crucial for addressing present day challenges and ensuring sustainable coexistence, between communities and the Nile.

2.3. Ethiopia: Blue Nile's Historical Significance

2.3.1. Ancient Interactions

The connection Ethiopia has with the Blue Nile start way far in the antiquity, with early civilization already leaving along its banks, profiting from the abundant water and food supply it provides. Not only the banks of it but also the plains surrounding the waters were benefiting from it. People used to (and still do) harvest lands thanks to its water, and flourish along agriculture (Oestigaard & Gedef, 2011).

As much as any riparian country the Nil carry a huge importance in Ethiopia, it is safe to say that it a bit more important in this case since the origin itself of the Blue Nile is within its border. The beginning of the Blue Nile is situated in located in the Ethiopian Highlands, more precisely in Lake Tana. It is more precisely starting from the shore of Lake Tana, near the of Bahir Dar. It is situated at around 1,788 meters (5,866 feet) above sea level (Biwota & AdemYimam, 2022, p. 6; Arsano, 2007, pp. 25; 72-73). In Ethiopian traditions, the Blue Nile carries sacred symbolism. It is primarily associated with the notion of life itself, renewal, and spiritual meaning. The river's seasonal patterns, resemble the cycles of growth and abundance, and always contribute to fertility and the renewal of the lands.

In Ethiopia the Basin is also deeply rooted in the culture and folklore. Again, like other riparian states the economy of Ethiopia would have not been the same without the presence of the Nile to the point that they talk about in in their literature and poems. Here is an example of a poem:

“Hear ye. Hear ye! All of them that come to know the truth and listen to the tale of the Wisest and the Gentlest of the Races of Men whose faces be Black. Hear ye, hear ye! And learn the ancient Glory of Ethiopia, All-Mother of men, whose wonders men forget. See how beneath the Mountains of the Moon, alike the Valley of Father Nile and in ancient Negro-Land and Atlantis the Black Race ruled and strove and fought and sought the Star of Faith and Freedom even as other races did and do. Fathers of Men and Sires of Children golden, black and brown, keep silence and hear this mighty word” (Moses, 1975, p. 420, also see Du bois, 1969, p. 94).

They also faced the tumultuous inundation period, but well-prepared managed resources that will ease their plans to use the Nile River as a major tool for their ascension. The Grand Ethiopian Renaissance Dam (GERD) being one of the tries for economic growth, which will provide electricity enough for them and for neighbouring countries such as Djibouti that already get electricity from them, and that is without counting the upper hand it provides it over lower countries such as Egypt or even Sudan (Dabar, Awaleh, Kirk-Davidoff, Olauson, Söder & Awaleh, 2019, pp. 884-885). There is a risk of this damn having disastrous repercussion on these said countries, there are possibilities of saltwater intrusion into downstream Nile River under construction upstream of the Nile River, together with the rising sea levels, due to climate change; but nothing confirmed yet which keep it as a possibility for now. But for the Ethiopians the GERD is an empowering development that will contribution to their future. Now no longer its birth right, Egypt sees the Nile Delta gradually disappearing into the Mediterranean Sea which threatens the life of millions of Egyptians that lives at its shores forcing them eventually to move farther as discussed by Yihdego, Khalil & Salem (2017). In Ethiopia the Blue Nile holds a significance that goes beyond its existence as it is deeply ingrained in the spiritual consciousness of the people.

Over centuries agricultural practices in the Blue Nile Basin have adapted to accommodate the ebb and flow of the river. Passed down through generations traditional farming techniques reflect a coexistence with natures cycles. The fertile plains nourished by the waters of the Blue Nile have been instrumental in sustaining communities and fostering cultures. The connection between countries and the Blue Nile goes beyond tangible benefits such as water and fertile soil. Lake Tana, where this mighty river originates, from holds significance. People embark on pilgrimages to

its shores for ceremonies that emphasize how intertwined physical and spiritual realms are. With its seasonal rhythms engrained into practices the river becomes a part of moments centred around purification, renewal and spiritual connection. The Blue Nile is thought to originate from Paradise at the Gish Abay spring in Lake Tana region (Oestigaard & Gedef, 2011, p. 32). Later called Gihon, Ethiopian believe that he cures to sickness, sins, or misfortunes are the baptismal in the Gihon River or being sprinkled with it at least. Oestigaard (2018, p. 70), on behalf of Abune, states that it is also believed that “God bestowed his mercy on up to 70 generations of the descendants of the devotees who made a pilgrimage to the source, prayed, and used the water in rituals”. As the society embraces modernization the Blue Nile continues to inspire us towards development. The GERD a project situated on the Blue Nile exemplifies Ethiopia's ambition to utilize its resources, for growth while addressing energy challenges. Constructing the dam has sparked debates regarding geopolitical implications revealing the balance between progress and conservation. Ethiopia's approach towards the Blue Nile reflects an equilibrium between honouring traditions and navigating the demands of a rapidly changing world. The nations dedication to water management demonstrates their understanding of the river's role in shaping Ethiopia's past, present and future.

“The centrepiece of the plan is the Grand Ethiopian Renaissance Dam (GERD). The GERD, a €3.34 billion hydro-electric dam being built in the Blue Nile River, close to the Ethiopian border with Sudan, has a design capacity of 6000 MW and is reported to be able to produce 15.1 TW h/year upon completion. The dam, which will have a height of 145 m and a total storage volume of 74 km³, is assumed to be used for power generation only. This would mean a massive additional energy source in the country and is expected to create enough supply to meet domestic as well as export demand for electricity” (Kahsay, Kuik, Brouwer & Van Der Zaag, 2015, p. 15).

The construction of this dam was a decision that Ethiopia took on its own and even finished the construction throughout the protestation of other riparian states (Egypt and Sudan) that feared for the water flow. But the argument Ethiopia gave was that the end results will be a new hydropower supply that will be cheaper than others, less flood danger, and saving of an important amount of water by reduced evaporation loss from downstream reservoir as well as trapping silt (Kahsay, Kuik, Brouwer & Van Der Zaag, 2015, pp. 15-17).

In conclusion Ethiopia's relationship with the Blue Nile is multi-dimensional intertwining legacies, cultural significance and contemporary aspirations. The river acts as a meeting point where tradition converges with innovation and where respect for history blends harmoniously with aspirations. As Ethiopia charts its path along the Blue Nile it does so with an appreciation for the river's enduring significance – not as a water source but as an identity defining force that inspires resilience, in generations to come.

2.3.2. Historical Water Management

The traditional water management practices in Ethiopia hold a profound historical significance, shaping their whole relationship with the ancient life-given resource. Throughout the years the Ethiopian communities conserved knowledge from their ancestors and crafted water management practices fitting their lands, in harmony with the natural rhythm of the Blue Nile. They automatically appeased the need of the people leaving off it and preserved the vitality of the flow. It created a vital need to develop resources providing smoother exchange between the water and the people. The governance of water was here long before the creation of a framework. There were treaties mostly controlled by colonial power (Details in Chap 4).

Ethiopia has a standing connection, with the Blue Nile that dates back to civilizations living along its banks. This historical association highlights the river's role in sustaining life supporting agriculture and becoming a part of Ethiopian culture and spirituality. The influence of the Blue Nile extends beyond its presence; it is deeply woven into Ethiopia's cultural fabric and folklore. Ethiopians collectively recognize the importance of this river beyond its benefits. From transportation and agriculture to fishing and as a water source the Nile plays a role, in shaping Ethiopia's economy and daily life (El-Nashar & Elyamany, 2018).

Throughout history Ethiopians have faced challenges posed by inundations caused by the river. However, the strategies they employed were not just responses. They embraced an approach that considered cultural, spiritual and social aspects. The remarkable 'Grand Ethiopian Renaissance Dam (GERD)' serves as a testament, to Ethiopia's determination to harness the Nile's potential for development. In addition to supplying electricity for use and neighbouring nations the GERD showcases Ethiopia's

control over the rivers flow safeguarding against devastating floods and establishing an advantageous position in regional geopolitics (Mulat, Moges & Ibrahim, 2014, pp. 543-545).

In conclusion Ethiopia's relationship with the Blue Nile is a tapestry that weaves together legacies, cultural significance and contemporary aspirations. The river serves as a meeting point where tradition merges with innovation and where reverence for history seamlessly aligns with aspirations for tomorrow. As they chart its course along the Blue Nile it does so with appreciation for the enduring importance of this river – not just as a water source but, as an influential force that installs resilience in future generations.

2.3.3. Conclusion

Egypt has a history deeply intertwined with the Nile River, which has been a lifeline, for the people of Egypt for years. Considered a blessing the river provided water and fertility to the land supporting agriculture and everyday life. The ancient Egyptians held pride and affection for the Nile as it sustained them cooled their lands through irrigation and served as a vital transportation route. The Nile played a role in shaping Egyptian agricultural practices. Resourceful and adaptable they developed irrigation systems, dikes and canals to optimize water usage for farming while preserving water for daily needs. These advancements laid the groundwork for farming methods that sustained their flourishing civilization.

As the Nile continued to provide it also fuelled progress in Egypt by offering employment opportunities and boosting economic growth. It fostered expression, cultural development and scientific advancement. Additionally, it facilitated trade activities while contributing to the construction of structures like the Pyramids that showcased Egypt's grandeur and beauty. The ancient Egyptians expressed their way of life and their deep connection with the Nile, through symbols inscribed in stone. These ancient symbols uncovered the importance of the Nile River in their lives. Carried deep spiritual meaning. The yearly floods represented a recurring rebirth and gods linked to the Nile guarded and shielded the people from the unforgiving desert. Festivals were even organized to honour the presence of the river and its immense significance. Essentially Egypt's historical ties, with the Nile Basin are more profound

than commonly acknowledged. The river acted as a wellspring of inspiration, a spiritual link and a catalyst, for advancement.



3. LEGAL FRAMEWORK AND AGREEMENTS

3.1. Background

3.1.1. Legal Framework or Legal Agreement?

The ‘legal framework’ and ‘legal agreement’ can easily both be mistaken for each other. Although they operate in the same field and are related, they do not stand on the same level in the legal system. A Legal framework is a structured set of laws, principles and regulations. Typically, these rules are implemented by the government or international organisations that has influence and views that order is respected. By the governmental bodies or the international organizations and have a wide-ranging impact. It has authority over precise area of legal practice or activity; and pause standards for boundaries for acceptable and unacceptable actions within a particular jurisdiction or context. Any overlooking of those laws can result in heavy sanctions from the capable authority (Natural Resource Governance Institute, 2015, pp. 1-2).

A legal agreement; on the other hand, is on a lower-level juridical speaking; while it still represents a form of law and dictate a code of conduct, the public affected by it is limited to some parties adhering to a contract or an understanding on a specific matter. Since these parties are willingly binding themselves to respect certain terms and conditions, legal actions can be taken against that party in case of a rupture of trust. It is important to note that these agreements can be either made verbally or documented, and both are receivable in front of a competent jurisdiction. To sum up, it is the practice of the broader legal framework (Cornell Law School, n.d.). While the legal framework operates in the overall guidelines and laws/code of conduct for a specific area, the legal framework is a specific contract between two or more parties that respect and falls under these main rules.

3.1.2. The Importance of Legal Framework in the Governing of Shared Water Resources

When it comes to water which is the most vital resource human possess, people can become greedy and prioritize their need over fairness toward others; and what seem too often forgotten is that the government is just a name for a group of human being coming together and setting rules to live by. So as clear their human nature is, the

overstepping of boundaries and falling into unfairness to make sure their people are out of the danger called 'need' is also clear. Therefore, to protect those who can't protect themselves, and to make sure everyone has a fair share of water, applying legal framework becomes a must (Mechlem, 2016, p. 1). For further details, it:

- Promotes Cooperation and Prevent Conflicts: Rules are known and are basically made to foster cooperation in social or political matters. Therefore, if rules are followed there is no reason for a cross between entities (Uitto & Duda, 2002, pp. 366-368).
- The Establishment of Clear Rights and Responsibilities: Civil rights is a legal concept.

"The right has the nature of freedom, and the right is a kind of power that the law gives people to realize their interests... Obligation refers to the obligatory scope of action, it refers to the people to make legal acts to produce constraints. It refers to whether people have to perform an action" (Lv, 2022, p. 18).

Knowledge of each one's right and responsibilities makes the easily blurred lines of wrong and right clearer and easier to avoid. As an example, stealing bread because your kid is starving at home, and a job opportunity is nowhere to be found can disputably be seen passable morally, but the other party you are stealing from, have also rights and ownership over this bread. Therefore, stealing this bread for whatever reason is considered a break of the law.

- Complimenting of 'Integrated Water Resources Management (IWRM)':
"Integrated Water Resources Management (IWRM) is a process which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare, paving the way towards sustainable development, in an equitable manner without compromising the sustainability of vital ecosystems" (Nkeng, 2010, p. 872).
- A project of this wingspan cannot be working without regulations; and the legal frameworks provide the necessary authority and mechanisms for the entities in charge to take proper actions. In other words, Legal framework make sure that stakeholders, private entities, communities, government agencies; all work together towards common goals.
- Providing Conflict Resolution Mechanisms: The IWRM may not be pleasing to everyone, which can lead to conflicts between the concerned users and

regions. Legal Framework provide a conflict resolving mechanism, an order and set of laws guiding water use and allocations, that provide a grounding for any exchanges. These conflict resolution mechanisms can include mediation, discussion and arbitrage involving imperatively neutral third parties to easy discussions between the concerned parties and give an impartial solution. These parties can be committees, public participation, selected juries, and professional giving their opinions (see Allan, 1999).

- Adapting to Local and Regional Contexts: Since it is bright and general it can be flexible and provide the basic structure while at the same time adapting to the ways of the locals their way social, economic and environmental parameters. This is exactly what is expected from an effective IWRM, so Legal framework does compliment it. Since it gives a value to all the participating parties during the decision making of the water management, including marginalized minorities and vulnerable groups, the percentage of chance of its success are higher. This being the carrot, the stick on its side represents the legal actions and penalties for non-compliers under-doers and people not respecting agreements made. From financial penalties to maybe imprisonments in the extreme, the dissuasive consequences make sure the parties respect their part of the deal (Brunnée & Toope, 2002, pp. 105-110).

In conclusion legal framework is indispensable for the success of the water management system. It provides structure and authority which is never enough for a work of this wingspan, by the way it plays with carrot and stick, if well applied everyone is gaining but in case of under effectiveness or failing in one's duty legal consequences are awaiting.

3.1.3. Overview of the Nile River's Geopolitical Importance

Always been the heart of complex geopolitical dynamics, the Nile River is even today, in the 21 centuries, the source of many quarrels between nations. Its historical and contemporary significance made him one of the most important geological asset in the world; testaments of its profound impact easily found in the countries and communities it traverses. It provides wealth, water, opportunities and primarily sustaining livelihoods of people leaving along its banks; agriculture and industrial activities also

highly depends on it. All these factors make the Nile stands at the intersection of geography, politics and resources for any party initially benefitting from its water, fuelling still ongoing debates, occasional tensions and negotiations over the management rights of these waters. It is basically a war to prove who needs it more and who has more right to authority over any project potentially affecting the flow or quality of these waters (Turhan, 2020, pp. 66-67).

3.2. Early Agreements and Colonial Legacy

3.2.1. '1902 Treaty between Great Britain and Ethiopia' (Addis Ababa)

In the early 20th century, the Europeans imperialists were fast to realize the geopolitical importance of the Nile and the opportunities it represented, but they were far from the only one; the geopolitical chessboard it was representing was a source of concern for concerned countries like Ethiopia. Situated in the headstream of the waterway it has an obligation to fight harder for its right over it, while European's power was doing their best to have a share. In 1902, a diplomatic gathering was organized in the capital of Ethiopia, Addis Ababa. Representative from Great Britain made the voyage to negotiate the power share and management right of the country over the water within its borders. Ethiopia keenly aware of the far from innocent peace seeking discussions the supposed neutral third party was engaging, sought to assert its right and protect their sovereignty over the water and the country. The country positioned in the head of the Blue Nile, where it originates has critical power over the flow and the quality of the water. As the negotiations ended, Ethiopia successfully preserved its rights and maneuverers through the complex dynamics of colonial-era diplomacy. Indeed, the European powers were not only seeking power over these waters but, if possible, over the country which would have made any future discussions easier and more benefiting on their side (Ullendorff, 1967, p. 641).

A treaty was signed with Great Britain recognizing the legal sovereignty of the country over the water in their clearly traced borders, and a protection from any potential colonial encroachment or influence over their decision making. As a counterparty, Ethiopia promises to not undertake or allow to be undertaken any project that could potentially stop the water flow except if they are involved. Sudan was originally participating in these discussions and was even included in the English version of the

treaty but was left out in the Amharic one (see Figure 3.1) (Woldetsadik, 2014, pp. 272-273). The note is available with its translation which reads:

Figure 3.1: Anglo-Ethiopian Agreement in Amharic

፪ተኛ፡ ክፍል ።
 ሻገሆይ፡ ዳግማዊ፡ ሥሌገክ፡ ንጉሠ፡ ነገሥት፡ ዘኢትዮጵያ፡
 ከጥቁር፡ ዓባይና፡ ከባሕረ፡ ዳና፡ ከሶባት፡ ወንዝ፡ ወደ
 ነፃ፡ ዓባይ፡ የሚወርደውን፡ ውህ፡ ከኢገገሊዝ፡ ሥገሥት፡
 ጋራ፡ ከሰቶጽዋ፡ ባይሰማው፡ ወንዝ፡ ተዳር፡ ኦዳር፡ የሚጸ
 ፍን፡ ሥፊ፡ ኢገዳይበሩ። ወይም፡ ወንዝ፡ የሚጸፍን፡ ሥፊ፡
 ሰማሠራት፡ ሰማገም፡ ፈታኖ፡ ኢገዳይበሩ፡ በዚህ፡ ውል፡
 ኢድርገዋል ።

Source: (Woldetsadik, 2014, p. 278).

“His Majesty Emperor Menelik, king of kings of Ethiopia, engages himself towards the Government of His Britannic Majesty not to construct or allow to be constructed any works across the Blue Nile, Lake Tana or the Sobat, which would arrest the flow of their waters into the Nile, except with His Britannic Majesty’s agreement and the Government of the Sudan” (Woldetsadik, 2014, p. 278).

This inked note was a proof of their power and a backup assurance for future potential project surrounding the precious resource, like the GERD (Grand Ethiopian Renaissance Dam). Even today, during discussions the treaties legacy lives on, as Ethiopia insists on its historical rights over the sovereignty of the Nile River.

3.2.2. 1929 Anglo-Egyptian Treaty

The Great Britain, like any imperialist power of that time was seeking more power and was not feeling content with one territory, it is seeking influence in other countries, in this case Egypt. Egypt was the opposite of Ethiopia, it was not in a position of power when it comes to the management of these water, as it depends heavily on it and is situated in a downstream position suggesting it to potential economic and social failure in case of overpowering of other countries. Feeling vulnerable, it was in its advantage to collaborate with the colonial power and secure its water rights. On the other side, Great Britain, has an historical footprint in the region and intended to keep it that way to safeguard their interest. Therefore, as every party was gaining something out of it, collaboration did not seem like the worst option (Carlton, 1970, pp. 163-164).

The final decision was clearly showing how much power the colonial party had over these lands, maintaining in every part of the procedure a strategic influence. Observing how the position of Egypt differ from Ethiopia, how its survival as a state completely depended on the Nile's life-giving water; it made sure that his presence was needed, and that the country heavily relies on them to finally see themselves given their rights over the maintenance. The Sudanese declared non-adherence to the 1929 agreement and demanded a renegotiation of water sharing (Swain, 1997, p. 679).

The main point of this treaty was the allocation of water between Egypt and Sudan, the country's main concern was the problem of the water scarcity and was making sure that the activities of upper countries was not affecting the water flow. Egypt was then, granted exclusive rights to approve or dismiss any project that could potentially affect its water flow. The Great Britain has then, committed itself to make sure Egypt's future water is guaranteed and as observed in this article that

“London also accepted the judicial principle that the first user (the word ‘first’ being interpreted in the historical rather than in the geographical sense) of waters of the stream, i.e., Egypt in this case, should have priority in the disposal of waters it had hitherto utilized. The Treaty made it possible for Egypt to build water control works necessary to itself in the Sudan and other upstream countries, block irrigation works that could harm the Nile discharge in Egypt and reassert historical rights to waters of the river acquired through long use” (Tvedt, 2015, p. 617).

3.3. Mid-century Shifts and Bilateral Agreements

3.3.1. ‘1959 Nile Waters Agreement between Egypt and Sudan’ (Cairo)

In the late 1950, Egypt was gradually aspiring for a colonial power free country, where they will have full sovereignty over any decision making over the Nile Basin or internal matters. As soon as independence was acquired, discussion regarding the management of the Nile were engaged; with on the other side Sudan soughing to assert his rightful place as partner in the decision making regarding the shares of water. Being also a riparian state, they saw fairness in participating in potential project that benefit its people. The allocation of waters was the main theme of these discussions, and Britain was the negotiator as always, seeking to keep as much influence as possible (Salman, 2018, pp. 85-88).

They had to make sure both nations had their fair share and were satisfied enough, to keep being called for these matters. In the late 1950s, a tale of diplomatic significance unfolded in the heart of Cairo, where the Nile River's waters whispered the echoes of post-colonial aspirations and shared futures. Representatives from Egypt and Sudan, two downstream nations intricately linked by the lifeblood of the Nile, convened to script a transformative chapter in the river's history. As the ink dried on the 1959 Nile Waters Agreement, it became more than a legal document; it became a narrative of shared aspirations, regional cooperation, and the ongoing quest for harmony along the banks of the timeless Nile. The discussions kept going until 1959, where the 'final' word was given, and a treaty was signed. The agreement allocated the resource for each country and set a stage for potential future joint projects between Egypt and Sudan. It was not a 'Run for the prize' atmosphere but more of a 'mutual prosperity' (Abdalla, 1971).

Both newly independent countries were creating ties to construct themselves from the ruin of a colonial past and work together for a prosperous future, creating a favourable geopolitical atmosphere for potential collaboration. The intention was indeed there, but it was easier said than done. The agreement was only addressing pressing problems, but the more the discussions were going on the more complex and harder natured the subject was becoming; each action affecting the other party. This treaty was fully recognized by the two signing parties which are Sudan and Egypt but was not considered by other riparian countries as it does not benefit them (Wehling, 2020, pp. 148-149). But this treaty was just the beginning on as lifelong negotiation, actions were finally taken.

3.4. Emergence of Cooperative Frameworks

3.4.1. '1993 Framework for General Cooperation between Egypt and Ethiopia'

During the early 1990s, the Egypto-Ethiopian diplomatic relationship was gradually unfolding, casting a new light and opening potential negotiations surrounding the precious Basin. Representatives from both countries were doing the journey to discuss potential partnership and accord. After the tension easily describable as a Cold War, an important moment occurred in 1993; when Egypt and Ethiopia came together to sign the "Framework, for General Cooperation between Egypt and Ethiopia" (Mtua,

2017, p. 42). The goal of this agreement was bringing to life their shared vision for development and their commitment to managing the complexities of rivers that cross borders. The imbalances and the gap between the desires of the upper stream and lower stream countries was acknowledged and discussed, as well as the benefit of cooperating between them.

Significantly this framework addressed tensions that had strained their relationship at times. It became a tool for fostering understanding acting as a bridge over waters while committing both sides to engage in dialogue. It showed recognition that despite disputes and disagreements surrounding the Nile it could also be seen as a symbol of unity and cooperation. The Nile instead of being considered as a source of conflict and greed was starting to transform to potentially foster unity, prosperity and collective advancement within their evolving relationship (Woldetsadik, 2017, pp. 198-201).

3.4.2. 1999 Nile Basin Initiative (NBI)

The Nile Basin Initiative (NBI) is a major attempt to pursue peaceful water management and regional cooperation among the countries that are closely connected by the Nile River's ebb and flow. The primary goal of the NBI is to reach a cooperative framework agreement which encompasses all of the governments that share the Nile basin and incorporating the organisation's structures and guiding principles (Salman, 2013, pp. 20–25). As an answer to the growing recognition of the mutual need among the nations that exists around the Nile basin especially with regard to water resources, the Nile Basin Initiative (NBI) was approved by the signing in 1999. This shift from the normally one-sided way of thinking to water management was marked by the public's recognition of the fact that the opportunity and challenges posed by the Nile concerns everyone and not only one country specially. The second part of the 20th century saw the growing scarcity of water, with augmented public awareness of environmental problem. In this context, the NBI was founded, with as a primary goal being the creation of a platform that would encourage discussions, understanding, and cooperation between the riparian states (Swain, 2002, pp. 302-303).

Thus, the NBI sought to go beyond political and territorial boundaries, by recognizing the river as a shared asset owned by everyone, one whose benefits could be maximized, and its degradation can be avoided with something as simple as a group effort. And

they are indeed all making efforts under the NBI banner (Nicol & Cascão, 2011, pp. 321-322). The project focused onto eradicate the historical distrust and competition over water rights by promoting a sense of unity and cooperation. It visualizes a time when businesses working all together, like shared agricultural growth and cooperative water architecture and even coordinated electricity generation, would benefit all member states. Building capacity was a very important part of the NBI's plan as well. By giving member countries the knowledge and tools, they need to manage the water more effectively, the program aims to empower each state to make decisions that consider the overall health of the basin.

Several training sessions as well as information exchanges, and workshops contributed to the development of a common learning culture for everyone and a bunch of pooled technical knowledge. Countries were able to get important information about the flow of the water, the usage of it, and the potential impacts of various projects on the river through the systems used for the sharing of data developed by the initiative. Transparency was very necessary to promote fairness and equity since all governments had a fairly clear knowledge of how their decisions and actions, as well as those of others, had significance for those who depend on them and can have positive or negative effects on their lives. Through the procedure for the exchange of data that was established by the initiative, the countries participating were able inform their selves and obtain crucial details about the flow, usage, and possible effects of different projects going on about the river (Cascão & Nicol, 2016, pp. 550-553).

Regarding the administrating of shared natural resources, the NBI was a living proof that the value of cooperation and the success of diplomacy. It's put a point on the benefits of everyone and the fair distribution of the Nile's resources, made clearer how linked the natural and social systems are in the area. In addition to serving as a platform for discussion about it, the NBI cleared the way for real initiatives that highlight the benefits of collaboration between them, like the:

‘Nile Equatorial Lakes Subsidiary Action Program (NELSAP)’: It focus on developing cooperation between Burundi, DR Congo, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, and Uganda. It mainly focuses on hydro power management, irrigation and water shed management (NELSAP-CU, 2017, p. 11).

‘Eastern Nile Technical Regional Office (ENTRO)’: It serves as the technical arm of the NBI, and mainly focus its activities on the Eastern part of the Nile. Their part of the job is conducting studies, providing technical support, and facilitating dialogue about promoting sustainable development and management of water resource among member countries (Belachew & Mekonen, 2014, pp. 1-2).

‘Nile-Sec Capacity Building Program’: The Nile-Support to ‘the Eastern Nile Subsidiary Action Program’ focuses on building and developing the capacity of the institutions and professional working under the NELSAP. They conduct training programs, knowledge-sharing discussions and activities, create workshops, to enhance each one's skill and use them better for the success of the cause. So, they basically form and provide knowledge to those who will be carrying out the given project (Nile Basin Initiative, 2015, pp. 11-13; Attia & Ibrahim, 2018, pp. 319-320).

Water Resources Planning and Manage Net Project (WRPM): In this project they focus on the capacity of the member countries in water resources planning and management. They make sure they are informed and formed; they develop decision support tools, training in programs, and they also establish a regional information system to enhance data sharing among the Nile Basin countries (Seago, 2016, pp. 32-33). Regional Power Trade Project (RPTP): The main goal of this project in the promoting of regional power trade and the development of energy infrastructure in the Nile Basin. The people working under this project explore opportunities for cross-border electricity trade and promote sustainable and integrated energy solutions (World Bank Group, 2005, p. 1; Council of Ministers of Water Affairs of the Nile Basin States, 2001, p. 1).

Nile Basin Discourse (NBD): This is a civil society network working closely with the Nile Basin Initiative to engage local communities and stakeholders in the decision-making processes related to the water resources management. If concerned people's opinions are considered it becomes easier to understand everyone's side and satisfy them, getting closer to the end of the tunnel (Abawari, 2011, p. 28).

These projects are only examples of many more initiatives and programs ongoing under the NBI umbrella. The main goal being the development of connections and cooperation between the riparian states and the promoting of sustainable development in the Nile River region (Nile Basin Initiative, 2015; Swain, 2002). The oldest problem

the NBI faces is the repartition of the usage of the Nile water, the agreements always preferred some countries more than other which was making life difficult on the rest of the riparian states and inevitably creating tensions. A conflict like that is an old disagreement that is still ongoing between Egypt and Ethiopia over 'the Grand Ethiopian Renaissance Dam (GERD)'.

Who should get what from the Nile? Such a question involves interests, and that is the main objective of this initiative making sure each and everyone's part and share is clearly defined, but without specific rules this becomes a utopia. Indeed, some countries' agreement were not considerate of other riparian states while taking decisions. The NBI is deeply engaged in the sustainable development conversation. They are championing collaboration, focusing on critical areas like water security, renewable energy, and agricultural productivity. It's evident they understand the interconnected nature of these issues. By initiating joint projects, they are not just advocating for teamwork; they are actively demonstrating it.

In conclusion, there are a lot of obstacles the Nile Basin Initiative must overcome in order to negotiate fair use of the water resources of the Nile River, they are already working on it as they already presented a portfolio really detailed about how they want to invest and are making project to deliver socioeconomic benefits in energy production, agriculture, basin management, and environmental protection (Nile Basin Initiative, 2015, p. 5). Every problem requires careful thought and creative solutions, negotiations are tricky.

They involve lots of factors. For example, worries over water quality, demands for more water, climate change impacts, history, and world politics. Cases like the GERD disagreement show us tough challenges negotiators face. Missing laws, politics, fears of climate- change, and poor water are just some examples. That is why the ongoing work of the Nile Basin Initiative is important. They show that how countries need to be flexible and work together to manage the water fairly and sustainably. The non-stop efforts of the Nile Basin Initiative to tackle those troubles are a prime instance of how crucial it is to have an adaptable and collaborative method so one can acquire equitable and sustainable water control within the vicinity.

3.5. The Cooperative Framework Agreement (CFA) and its Journey

3.5.1. Detailed Exploration of the CFA from Inception to its Current Status

The CFA was concluded in 2010, several Nile River riparian states were agreed to replace the previous non-inclusive Nile water agreements. “The CFA is a milestone agreement in terms of bringing many riparian states on board and has incorporated many of the recent international water law principles” (Chelkeba, 2018, p. 167). The goal of this project is a bit difficult to achieve due to the concerns around “water stability”. The management organization did not involve Ethiopia, the primary provider of the river's waters, and other surrounding nations in discussions, aiming to supplant outdated empire-era contracts that privileged Egypt and Sudan's access to water supplies; consequently, this fresh arrangement did not fulfil its primary purpose. The upstream countries asked for more inclusive framework that respected their right to sovereignty and development requirements because the previous agreement completely ignored them in the decision making even if the result affect them (Tekuya, 2023a, pp. 160-161).

The purpose was to guarantee an equitable distribution of river water among neighbouring administrations, but conversations became difficult owing to mounting anxieties over “water security”. It became apparent the recent arrangement didn't accomplish its preliminary goal of replacing previous arrangements; and these nations closer to the origin asked for a more inclusive structure accounting for both their autonomy and developmental of their domestic needs in the future agreements.

The CFA was opposed by Egypt and Sudan, primarily due to the wording of Article 14(b), as they felt that even with its forward-looking provisions; it did not sufficiently protect their “acquired rights” under the previous agreements (Talwar, 2013, p. 79; 122). Seeing their plan as an effort to preserve the current uneven distribution of water, the upstream states rejected it. Their proposed amendment would have preserved their rights and uses as they are today. Distributing the water of the Nile River equally to all countries, has always been a difficult issue, with many parties clamming for a fair share. ‘The Cooperative Framework Agreement (CFA)’ becomes obviously important in order to achieve the objectives and challenges associated to the equitable use of the Nile water. The principal objectives of the CFA are to provide a framework of

cooperation and basically to promote coordinated efforts to manage and develop shared water resources among the countries that comprise the Nile Basin. They want to go past their differences and bring to life a space for dialogue and compromise using this cooperative approach. Through the preservation of the concept of equitable and fair usage, they want to ensure that all riparian states have an equal right to utilize the Nile's water (Talwar, 2013, pp. 76-77).

There are several barriers standing in the way of equitable usage; one of the biggest challenges being navigating the previous water usage agreements that have benefited certain countries over others. There is a broad spectrum of interests and priorities among the riparian countries in the Nile Basin. Different demands and needs for water use arise from the unique socioeconomic and environmental backgrounds of each country. In order to foster a common understanding of equitable utilization, the CFA must reconcile these divergent interests. In order to balance the competing demands of upstream and downstream nations, it is imperative to find win-win solutions through skilled negotiation. Climate change exacerbates the issue of unequal water use in the Nile Basin. Because of the growing unpredictability over water supplies brought about by shifting climatic patterns, adaptive methods are critical for the CFA. The task at hand is developing a flexible framework that can adjust to the shifting dynamics of water supplies in the face of climate change. Making the CFA more resilient is essential if it is to maintain its efficacy in promoting equitable consumption in the face of shifting environmental conditions (Mekonnen, 2010, pp. 427-429).

The CFA encounters an additional challenge in attaining fair use: the advancement of infrastructure. For irrigation, water delivery, and storage, many of the countries in the Nile Basin lack suitable infrastructure. To solve these inadequacies, large financial investments and coordinated efforts will be required. In order to ensure that every riparian country can make the most of the Nile's water resources, the CFA provide technical and financial assistance. To create sustainable water management strategies, this calls for financial assistance as well as the transfer of knowledge and technology (Smith, 2017, pp. 27-28).

In summary, the Partnership Framework Agreement is a crucial instrument for addressing the objectives, and challenges associated with the equitable utilization of the Nile's water reserves. In the aim of promoting socioeconomic development in the

region, the main objective is to create a cooperative structure that secure a fair and balanced access to the Nile water by everyone. Even though there will be challenges along the way, such as the need to renegotiate and discuss previous accords, reconcile divergent national interests, adapt to climate change, and address inadequate infrastructure, the road ahead is full of possibility. Success or failure for the CFA will depend on its capacity to get past these challenges and create a structure that works for everyone in the countries surrounding the Nile.

3.5.2. Discussions, Disputes, and Implications

The CFA was meant to replace accords from the colonial era that disproportionately favoured Egypt and Sudan and was signed on May 14 in 2010, by four countries (Ethiopia, Tanzania, Uganda and Rwanda) and after 5 days Kenya decided to join them and also sign under this agreement (Salman, 2013, pp. 20-21). The continuing talks about the- CFA show that a full and fair set of rules is needed. It must protect what all countries along the river can do and must make them follow the rules too.

The politics around the Nile River are not the same in every country. This means each place has its own wants and concerns. Those differences can make it tougher to talk about problems that affect the whole region. South Sudan is a young country near the Nile River. It is having problems with its own government. Issues like that can change how much a nation wants to work on projects with others nearby. That influences how talks about sharing the river go. South Sudan's troubles get in the way of it joining the conversations. Lake Victoria's water levels change a lot, and this shows how climate change also affect discussion between countries; water amounts are not sure because rain and heat change (Elmulthum, Musa & OsmanAli, 2012, pp. 265-267).

The Nile River gives it water too. People talking must know it will be hard to make plans that can deal with the unsure things from a changing world. As time goes on-, the plans are more and needier of an update about water keeping technics that benefits the whole lot. What is worrisome, on one side, are the stresses of growth and population on water resources that have accompanied development along the Nile. For instance, it only takes one look at the rapid population growth in countries on both banks of the Nile to see that metropolitan areas are overpopulated there. For providing water, either to agricultural, industry or resident users; the more populated the city is,

the larger their water needs become. It is up to the negotiators to find a balance between fair sharing of water resources and countries equally great if they wish for continued economic development (Nilsson & Berggren, 2000, p. 783).

However, neglecting growth (both of population and the economy) will merely make things more acute now than they need be, as well as introducing other items into negotiations. The issues with water quality in the Nile River basin, show the tough problems faced by those- working together. For instance, farming and factories could affect the water flowing downstream. What goes into the Nile affects the water quality and nature? To fix these problems, countries along the river must work as a team to make good rules for checking and taking care of the water. This shows why shared duties are indeed important for keeping water cleanness at its maximum.

3.6. Recent and Miscellaneous Agreements

3.6.1. 2010 Entebbe Agreement (Part of the CFA but a significant milestone)

The agreement discussions started in the 1900s and as any other one has as an objective the fair repartition of the resources of the Nile River, with specifications like the engagement of upper stream country to not engage in project harming downstream countries. Representatives were coming together to draft it well enough to please all riparian states. The final agreement was signed the 14th of May in 2010 in Entebbe, Uganda. Several upstream countries signed the agreement, including Ethiopia, Rwanda, Tanzania, and Uganda. But Egypt and Sudan, the traditional beneficiaries of Nile waters, expressed reservations and did not sign the agreement. They argued that the agreement should be negotiated within the framework of the Nile Basin Initiative (NBI). The ratification is still ongoing till this day (Nyaoro, 2016, p. 8).

3.6.2. 2015 Declaration of Principles on the Grand Ethiopian Renaissance Dam (GERD)

Ethiopia has begun constructing what will be one of the largest hydroelectric projects in history in 2011, and it is no wonder that this development produces bitter resentment among Egypt's higher nations. The Grand Ethiopian Renaissance Dam (GERD) has been a complex and controversial project. The dam's owner sees it as an important development project that will aid the national economy and enable it to meet its ever-

increasing energy needs. This is indeed very significant, but Egypt, a downstream country that relies on the Nile for its water resources and already plays host to Eritrea with great unease, will be concerned about it becoming party to causing themselves a water shortage. On the other hand, Egypt, a country that is situated in the downstream part, really depends on the waters of the Nile, is very concerned about the potential effect that this project will have on its water supply, afraid that it will maybe be the reason of a water shortage (Mekonnen, 2017, pp. 262-263; Tekuya, 2020, p. 15). Problems caused by the GERD talks, on the other-hand, show that both upstream and downstream countries are mutually interested in building all along. Ethiopia has finished filling a reservoir needed for a sizeable hydroelectric power plant at the dam on the Blue Nile in September 2023 despite the ongoing negotiation with Egypt and Sudan. This created more tensions between the riparian states; but Ethiopia insisted on its willingness to find a solution that will not affect their plans and note that Egypt is adopting a colonial era mentality and erecting roadblocks against efforts toward convergence (Mekonnen, 2017, pp. 268-269; Tekuya, 2020, p. 10).

On the other side the Egyptian saying that "The meeting was unsuccessful due to Ethiopia's persistent refusal ... to accept any of the technical or legal compromise solutions that would safeguard the interests of all three countries" (Reuters, 2023); it is without counting that Ethiopia only turned on one of the five turbines and that if they do turn on all five the consequences could be disastrous. But after years of stop-start talks, "Egyptian President Abdel Fattah al-Sisi and Ethiopian Prime Minister Abiy Ahmed said in July that they would aim to finalize a deal over the disputed dam within four months" (Reuters, 2023, internet source).

3.7. Non-ratified and Minor Agreements

3.7.1. 1906 Agreement between UK, France and Italy

On 13 December 1906, an agreement was signed between Britain, Italy as well as London when they hear about the health decline of the Ethiopian King whith whom they had good relations; nothing assuring the cooperation of the next leader in case of his death, they signed this treaty about the right of use of the Nile water in Ethiopia's Sub-basin; Article IV (a) of the treaty provided that: "In order to preserve the integrity of Ethiopia and provide further that the parties would safeguard the interests of the United

Kingdom and Egypt in the Nile basin, especially as regard the regulation of the water of that river and its tributaries without prejudice to Italian interests” (Owiro, 2004, cited from Mtua, 2017, pp. 35-36). This treaty was supposed to take back any sovereignty over their water from Ethiopia, but of course the country opposed and rejected the existence of this treaty completely. The countries clearly did not have the best interest of Ethiopia in their head but theirs, Egypt's and Sudan's (Mtua, 2017, pp. 35-36).

3.7.2. 1906 Agreement between Britain and Congo

There was another agreement during this year. The democratic Republic of Congo and United Kingdom that stated, “the government of the independent state of the Congo undertake not to construct, or allow to be constructed, any works on or near the Similki or Isango River, which would diminish the volume of water entering Lake Albert, except in agreement with the Soudanese government” (Mohammed, 2004, cited from Mtua, 2017, p. 35).

3.7.3. 1925 Exchange of Notes between Britain and Italy

There was an exchange an exchange of notes between Britain and Italy in 1925; the subject being, on the government granting permission to construct a dam at Lake Tana. The purpose of this dam is to manage and regulate the flow of water from the headwaters of the Blue Nile. The UK has made it clear that they are committed, to safeguarding Egypt and Sudan's hydraulic interests in this matter. Messages were sent from Italy to Britain:

"In view of the predominating interests of Great Britain in respect of the control of the waters of Lake Tana, Italy offers Great Britain her support, in order that she may obtain from Ethiopia the concession to carry out works of barrage in the lake itself" (Mtua, 2017, p. 36 cited from Kebrom, 2011).

Followed by:

“...Italy recognizes the prior hydraulic rights of Egypt and the Sudan... not to construct on the head waters of the Blue Nile and the White Nile (the Sobat) and their tributaries and affluent's any work which might sensibly modify their flow into the main river” (Mtua, 2017, p. 37; Tariku, 2014).

To which Ethiopia responded:

“The fact that you have come to an agreement, and the fact that you have thought it necessary to give us a joint notification of that agreement, make it clear that your intention is to exert pressure, and this in our view, at once raises a previous question. This question which calls for preliminary examination must therefore be laid before the League of Nations” (Mtua, 2017, p. 37).

And then this letter to Britain:

“The British Government has already entered into negotiations with the Ethiopian Government in regard to its proposal, and we had imagined that, whether that proposal was carried into effect or not, the negotiations would have been concluded with us; we would never have suspected that the British Government would come to an agreement with another Government regarding our Lake” (Mtua, 2017, p. 37).

And when the League of Nations asked the two states for explications, they denied everything and said they never challenge Ethiopia’s sovereignty over Lake Tana (Mtua, 2017, p. 35).

3.7.4. 1949 Exchange of Notes between Egypt and UK

As this point it was more than clear that Britain was here to be part of each step of the story of the Nile and on the side of Egypt, even though they define themselves as neutral mediators. In 1949, another agreement was inked between the UK and Egypt; the exchange had for subject the construction of the Owen Falls dam in Uganda. As discuss the articles of Sorby (2018) states that the plans and specifications of the dam that can be built in Uganda will be accepted by Egypt and Uganda, together. Furthermore, the UK and Egypt approved that Ugandan officials will receive instruction on the dam's outflow from a resident engineer stationed at the dam. Egypt was trying to create an atmosphere where nothing can be done regarding the waters without their approval. This was the same expectation of Egypt that expressed on the GERD, regarding the operations of a sovereign dam.

3.7.5. Conclusion

In this Chapter the subject that is discussed is how the Legal framework is important for the effectiveness of the Nile River’s resources management. These frameworks do not provide structure, authority, and encourage cooperation establish clear rights and

responsibilities support integrated water resources management offer conflict resolution mechanisms and adapt to local and regional contexts. The Nile River holds importance and has been a source of ongoing disputes between nations due to its historical and present-day significance in providing wealth, water and opportunities to countries and communities along its banks. Early agreements like the 1902 Treaty between Great Britain and Ethiopia and as the 1929 Anglo Egyptian Treaty were influenced by colonial dynamics with a focus on securing power and water rights. In years bilateral agreements such as the 1959 Nile Waters Agreement between Egypt and Sudan emerged with discussions centred on water allocation and the desire for decision making. She also discussed the emerging framework like the, 1993 Framework for General Cooperation between Egypt and Ethiopia and the 1999 Nile Basin Initiative (NBI); detailed their content and their effectiveness. Finally, this research briefly talked about unratified and minor agreements between riparian states such as the 1906, 1906, 1925, 1949. All in all, having frameworks and agreements is vital, for effectively managing shared water resources as well as resolving disputes.

4. ENVIRONMENTAL IMPACTS OF NILE RIVER MISMANAGEMENT

4.1. Hydropolitics of the Nile River

4.1.1. Important Hydropolitical Concepts

The first concept is “the sanctioned discourse” that is the dominant discourse and nowhere at any time is such legitimization a monolithic outcome of the discursive elite within the water sector. It which relates to what one may say, who might say it and how many ways there are of interpreting such statement giving rise to a preeminent set of beliefs in the form of a paradigm (Turton, 2000a, p. 3; Turton, 2000b, p. 3). The second being “The Hydraulic Mission” which “is the overarching rationale that underpins the state's desire to establish conditions that are conducive to socioeconomic and political stability. As such it can be regarded as a form of ideology in the study of hydro-politics, infusing itself into the dominant or sanctioned discourse, serving to legitimize (and thereby sanction) this discourse” (Turton, 2000a, p. 3). Followed by “the Hydro-Social Contract” that is the unwritten agreement that the public and the government have. When the individual can no longer mobilize enough water for their own survival that serves as a mandate for the government to take on and carry out this responsibility in the end. Politicians respond to the public’s perception of what is a fair and legitimate practice, such as the desire for ecological sustainability (Turton, 2000a, p. 3; Turton & Meissner, 2000, p. 2). Then, “Reclamation” “is the term used by hydraulic engineers that refers to the act of reclaiming desert land from nature, usually by developing irrigation projects” characterized by unilateral development of water related infrastructure. “With this strongly defined "sanctioned discourse" that was based on the desire to control nature, a number of similar projects were spawned all over the world. Kariba, Cahora Bassa and Gariep Dam are examples in Southern Africa. These dams all sought, in some form or other, to control nature and thus reclaim land that nature had dictated...” (Turton, 2000a, pp. 3-4; Turton, Moodley, Goldblatt & Meissner, 2000, pp. 3-4; Yildiz, Yildiz & Gunes, 2016; Ahmad, 2018).

4.1.2. Complex Dynamics of Nile River Hydro-Politics

The demand for freshwater resources has increased due to population pressures and the region's expanding need for agricultural products. However, in recent years co-basin countries have come to collaborate around this international waterway. All riparian countries are being actively encouraged by the World Bank to adopt a framework for cooperative management that covers the entire basin. However, given that earlier basin-wide initiatives have not succeeded in creating a long-lasting framework for sharing and allocating the Nile's water flows. The efficacy of such an ambitious, basin-wide cooperative framework has been called into question due to a tense relations from the past amongst some of the riparian countries, particularly in the northern part of the basin. Finally, it is not clear that whether a subbasin perspective would be more effective or not (Tayie, 2017).

4.1.3. Hydropolitics of the Nile River

One-sided construction of water-related infrastructure has defined the recent history of riparian relations in the Nile Basin. This has increased competition for limited water resources, particularly in the more arid northern portion of the basin. Lake Victoria and other smaller equatorial lakes, as well as the snows of the Ruwenzori Mountains in western Uganda, feed the White Nile, which has a modest but constant flow of water. The Equatorial Lakes Region, however, accounts for only 14 percent of the politics around the Nile Rivers hydrology are complicated and have different coats, with several nations and players involved in its competing for their own interest (Ashebir, 2009, p. 61). The Nile is one of the longest rivers in the world, it was a source of collaboration and conflict but also a source of life and prosperity throughout history. The river flows through eleven countries: Tanzania, Uganda, Rwanda, Burundi, Kenya, Ethiopia, Eritrea, South Sudan, Sudan, and Egypt, as well as the Democratic Republic of the Congo (Conway, 2005, p. 100; Conway, 2000, pp. 51-52). Average rainfall in Ethiopian Highlands receive between 1000 and 1400 millimetres of rain on average per year while in the southwest, where the Baro of the Sobat has its source, the highest rainfall receives between 1400 and 2200 millimetres/year (Said, 2013, p. 21; Onyutha, Tabari, Taye, Nyandwaro & Willems, 2016). The main problem in the hydro-politics of the Nile are the water rights, allocations, management, and development projects such as the core issues in Nile hydro-politics revolve around

water rights, allocation, management, and development projects such as the construction of a dam (Yimer, 2015, pp. 103-104).

In the past 20th century, the Nile politics were shaped by colonial and legal history, only two nations had rights over the majority of the Nile River, the agreements happened during the colonial era - the 1929 Nile Waters Agreement between Egypt and Great Britain (representing its then-colonies in the Nile Basin) and the 1959 agreement between Egypt and Sudan - There was nothing much left for the upstream nations. These agreements have caused conflict because they did not take the needs of the other riparian governments into account (Kasimbazi, 2010, pp. 724-726). The countries upstream, particularly Ethiopia, which feeds the Nile with the greatest amount of water through the Blue Nile, have long felt left out of these agreements. One of the most recent problems are Ethiopia's plan to construct the GERD will improve their water resource management. Egypt, get almost 100 percent of its fresh water from the Nile, so this GERD represent a risk to their own ability to secure access to water. The Nile hydro-politics is made more complex by population growth and climate change. The lack of water is becoming an increasingly urgent problem, and the effects of climate change on rainfall patterns pose a threat to intensify already-existing conflicts. Water is only one topic of discussion in the negotiations and diplomacy surrounding the Nile; other topics include international relations, economic growth, and regional stability (Mengistu, 2018, pp. 34-39).

What distinguishes the White and Blue Niles, the two that comprise the Nile, is their respective water hues. The Blue Nile's source is Lake Tana in the Ethiopian highlands, which is 6,000 feet above sea level. It receives water from tributaries in Eritrea, Ethiopia, and Sudan over a distance of 1,529 kilometres. The Nile flows northward into Egypt and then on to the Mediterranean Sea from Khartoum, the meeting point of White and Blue. The Nile River has an average yearly runoff of 84 billion cubic meters, which is low when compared to other significant African river systems but significant when considering the demand for water (Swain, 2002, p. 292). Lake Victoria, a number of smaller equatorial lakes, and the snows of the Ruwenzori Mountains in western Uganda feed the White Nile's moderate but constant flow. However, the Nile's annual flow is only contributed by 14% by the Equatorial Lakes Region. This is partly due to the fact that the White Nile loses a lot of water to marshes at its source and then

evaporates as it flows northward into the arid Sudanese highlands. On the other hand, 86% of the annual flow originates from the Blue Nile, though there are significant seasonal fluctuations (Ashebir, 2009, p. 61). Egypt is more dependent on its neighbour for freshwater resources during flood season because the Ethiopian highlands supply up to 95% of the Nile runoff during that period. A similar decline in the average annual flow of the Nile has occurred over time. Aswan, where Egypt built a sizable dam in the 1960s, was estimated to have an average annual flow of 110 billion cubic meters in the late 19th century (Ashebir, 2009, pp. 17; 24). Though their requirements have recently increased, Egypt's freshwater needs have decreased dramatically since then to slightly over 80 billion cubic meters (Ashebir, 2009, pp. 13-15; Yimer, 2015, pp. 101-105).

Egypt avoids the Nile River entirely, and as Table 4.1 shows, compared to other nations that share these waters with them, such as Ethiopia and Sudan, they have been able to utilize a significant portion of the hydroelectric potential present within its boundaries. So far, political and economic issues in Ethiopia and Sudan have hampered the development of water resources, including the construction of dams and other water infrastructure projects. Due to the growing demand for fresh water supplies, both countries, particularly Ethiopia, which is known as the basin's "water tower," are exploring various options for improving the Nile tributaries that pass through their borders (Swain, 1997, pp. 675-677).

1929 saw the signing of the first agreement pertaining exclusively to sharing and allocating the Nile water by Egypt and Sudan, then represented by Great Britain. According to the agreement, Sudan was given four billion cubic meters of water, and Egypt was given 48 billion (Waterbury, 1987, p. 95; Kimeyni & Mbaku, 2015). The early 1930s saw Sudan begin to gradually adopt irrigational agriculture, which increased the demand for water (Waterbury, 1987, p. 93; Kimeyni & Mbaku, 2015).

Table 4.1: Irrigation and Hydropower Potential of Nile Basin Countries

Irrigation and Hydropower Potential of Nile Basin Countries						
Country	Area (000 km ²)	Arable Land (000ha)	Irrigated Area (000ha)	Irrigated Potential (000ha)	Hydropower Potential (MW)	Hydropower Installed (MW)
Burundi	26	770	14	185	1.366	36
Congo	2.345	6.930	11	n. a	530.000	2.829
Egypt	1.001	2.800	3.266	4.434	3.210	2.825
Eritrea	118	n. a	28	n. a	n. a	n. a
Ethiopia	1.104	11.300	190	3.637	162.000	378
Kenya	583	4000	67	352	30.000	611
Rwanda	26	850	4	160	3.000	59
Sudan	2.506	12.920	1.946	4.843	1.900	225
Tanzania	945	3.100	190	828	20.000	339
Uganda	236	5.060	9	202	10.200	155

Source: (Adapted from the Table of “Illustrative data for African countries”, by Agarwal, Bhatia, Chéret, Davila-Poblete, Falkenmark & Wright, 2000, p. 7).

As a result, when Sudan was about to gain independence and after the 1952 revolution in Egypt, the Sudanese government started to insist that the agreement with Egypt be renegotiated. After a tense period between the parties, negotiations were resumed, and a new agreement was reached in 1959. According to updated estimates, which put the annual runoff at eighty-two billion cubic meters (the rest being lost to evaporation and marsh areas), Egypt received 55.5 billion cubic meters, with 18.5 billion going to Sudan. The amended agreement also included a few provisions about the reservoir's replenishment in relation to the proposed Aswan Dam (Waterbury, 1997, pp. 290-291; Kimeyni & Mbaku, 2015).

Following the completion of the Aswan Dam, Egypt maintained a favourable rule in the next 25 years until President Numayri of Sudan was ousted in 1985. For Numayri's retaining power, Sudan promised to build the Jonglei Canal. As construction was set for 1978 (Scott, 1985, p. 70). This, however, was around the time of that combination-demographic growth and continuing drought in good upper basin (above Aswan). Lake Nasser's water supply had clearly begun declining. But the Egyptian government was sincerely hoping that this situation would be rectified by Ertugu Amassaai I phase. It was constructed specifically to reduce the amount of water lost by the White Nile as it travels through Sudd marshes. One of the world's largest swamps, known as Sudd wetlands, is located in Southern Sudan. The Jonglei canal system would have siphoned off up to 4.7 billion cubic meters of water each year from the marshes, diverted into

the Nile (three-and-a half or so for Egypt and one a bit less set aside as compensation project funds intended at improving Lake Nasser's water level) (Swain, 2002, pp. 296-297). In 1984, however, the Sudanese People's Liberation Army halted construction on the canal. It was generally believed among southerners that the Jonglei project had been designed only to supply water to Egypt and northern Sudan, at the expense of southern Sudan (Swain, 2002, p. 297; Allam, Bekhit, Elzawahry & Allam, 2018, pp. 1-4).

Since the deposition of Numayri in 1985, Egypt's relations with Sudan have deteriorated sharply. Since the mid-eighties, Sudan has had its own water development plans that will bring about more food. The water used for irrigation could rise by as much 10 billion cubic meters a year were the country to attempt a new irrigation system, and this is being studied at present. Sudan recently sought changes to the 1959 agreement in order to increase its share, but Egyptian opposition has stymied any attempts to revise it. Sudanese officials used threats of withholding Nile freshwater from Egypt to bolster their claims throughout the 1990s (Abdalla, 1971).

Egypt sees itself as particularly vulnerable to such threats of water abstraction by its two largest upstream neighbours, Ethiopia and Sudan, as the Nile River system's downstream riparian country. Ethiopia, of the two, is the more capable of carrying out these threats. In fact, Ethiopia is where nearly 80% of the Nile's flow begins. Despite the absence of any hydrological catchment areas within its borders, Egypt utilizes most of the annual discharge of the Nile (Ashebir, 2009, pp. 16-17). Ethiopia opposes Egypt's claim of "acquired right," or historical consumption pattern, which maintains a quasi-monopoly over Nile water consumption. Ethiopia feels that because of its upstream location, it has "natural rights" over the Nile's water. As a result, Egypt has historically been hesitant to change the status quo and begin any kind of cooperative river management with its upstream neighbours. Egypt has traditionally obstructed upstream development in order to maintain control of the Nile while pursuing its own, independent initiatives (Gebrehiwet, 2020, p. 3; Abdalla, 1971, p. 334).

However, Egypt has been dealing with a serious threat to its water supply, primarily from Ethiopia, since the early 1990s. Due to its rapidly expanding population and rising food demands, Ethiopia has become increasingly reliant on water for domestic use. Unaffected by any water-sharing agreements with Egypt or Sudan, it devised an

independent strategy to redirect Blue Nile water for its own agricultural endeavours. Despite protests from Egypt and Sudan, Ethiopia insisted on its sovereign right to use water resources within its borders. When Egypt succeeded in preventing Ethiopia from receiving financial assistance from the African Development Bank Group for planned water development projects, the conflict heated up.

In addition, even after political turbulence at home and technological backwardness abroad (or economic constraints), Ethiopia's objective has yet to catch up with the twentieth century. However, in the recent few years things have taken a sharp turn for the worse. Devastating civil war and famine came to an end and Ethiopia today is doing very well economically. Even if Egypt continues to use its diplomatic clout to limit foreign funding for Ethiopian initiatives, individual Western contributions have recently increased significantly. As a result, Ethiopia has gained confidence and has been able to overcome Sudanese and Egyptian diplomatic opposition to its water development projects. The Ethiopian government built several small dams and had several others planned by the end of the 1990s to increase the nation's capacity for irrigation and hydropower. In comparison to potential future demand, Ethiopia's current water development plans only use a small portion of the Nile's water supply (Alexander, Yang & Addisu, 2021, pp. 210-212; Tekuya, 2023b, p. 239; Goldberg, 2023, pp. 8-10).

4.2. Water Scarcity and Drought

Dealing with the problems of drought and water scarcity in the Nile River basin, particularly in Egypt, is a complex and multifaceted subject. Egypt relies heavily on the Nile River for its industrial, drinkable, and agricultural water demands because it is largely a desert nation with little rainfall. Egypt has the right to use the majority of the waters in the Nile thanks to agreements reached in 1929 and 1959, which is where this reliance has its historical roots. The fact that these accords are not recognized by other nations in the Nile Basin adds yet another level of complexity to the issue (Apondi, 2002, pp. 47-49).

The Nile River is more than just a geographical feature; it is Egypt's lifeblood, impacting many facets of the country's existence. The river's waters are vital for irrigation in the field of agriculture in a nation where arid conditions are the norm.

Water from the Nile is essential to the industrial sector for a number of manufacturing processes, which has an effect on the national economy. The river is important in daily life because it provides millions of Egyptians with their main source of drinking water. A key component of Egypt's water management strategies has been the historical agreements that gave it a sizable portion of the Nile's waters. International relations and the management of water resources are hampered by other Nile Basin nations' lack of recognition of these accords (Okoth, 2007, pp. 81-82).

The issues of drought and water scarcity related to the Nile River are deeply ingrained in Sudan's political, social, and economic structure. Sudan's reliance on the Nile is remarkable, considering its historical status as an agrarian nation. A sizeable portion of the Sudanese population depends on agriculture and pastoralism, two activities that are strongly linked to the water supply from the Nile. This dependence is rendered even more risky by the several natural and man-made elements that endanger the country's water security.

The amount of water available for agriculture in Sudan is directly impacted by seasonal changes in the Nile's flow. The frequency of droughts and the success of upstream development initiatives are likewise impacted by these changes. Even though controlled flow and less flooding can be beneficial, the Sudanese people suffer greatly as a result of these changes. Large-scale land purchases for agriculture, deforestation, and the use of conventional flood irrigation methods to cultivate water-intensive crops have all altered the hydrological profile of the region. These modifications have led to inefficient use of water, which has had an adverse effect on groundwater recharge and river flows.

These environmental issues have far-reaching repercussions and often lead to migration from the most affected areas to urban areas. This migration not only increases the load on already overburdened municipal water systems, but it also makes urban overcrowding worse. In Sudan, national policies and legislative frameworks handle these issues related to the distribution and use of water. The various obstacles that appear when these plans are implemented reflect how complex the issue is. Sudan's water scarcity is made worse by problems with inadequate management, which has negative effects on the environment such as soil degradation, biodiversity loss, and wetlands shrinkage. There are risks to human health as well as effects on agricultural

productivity as a result of these environmental changes. These problems are made worse by pollution, which degrades water quality and increases health risks (El Kharraz, El-Sadek, Ghaffour & Mino, 2012, p. 21; Abdalla, 2008, pp. 18-22).

After all, the management of water resources in the Nile River basin, particularly in Egypt and Sudan, is a critical issue that depends on several factors. Geographical conditions, previous agreements about water sharing, seasonal variations, environmental changes, and socio-political issues are all examples of these variables. A coordinated and diversified plan from the nations that comprise the Nile Basin is necessary to manage the region's drought and water scarcity, which is a challenging task. Due to the intricate relationships between these elements, this is the case.

4.3. Ecosystems and Biodiversity

The Nile River supports a big variety of species living inside or around it. The ecological causes and effects need a more profound exploration to be able to understand how the mismanagement of the Nile River affects the ecosystems, especially in Egypt, Sudan, and Ethiopia.

4.3.1. Rich Biodiversity of the Nile Valley

The Nile basin has within its banks an amazing collection of plants and animal life making it an important biodiversity hotspot; so many amazing species of bird, animal, amphibians live there. The river start in Ethiopian Highlands, passes through the Sudd in Sudan, and flows out into the wide Egyptian delta. Every piece of the river and its nearby regions offers unique ecological spots. These represent an important part in forming the whole biodiversity of the basin. As an example, in the Ethiopian Highlands side of the Nile, an array of avian treasures such as the vibrant Ethiopian Black-headed Oriole (*Oriolus monacha*). Going a bit down to the Sudanese Sudd, the extensive wetlands possess diverse aquatic life, including the African lungfish moving downstream to the Sudanese Sudd, the extensive wetlands harbour diverse aquatic life, including the African lungfish (*Protopterus annectens*), an incredible species capable of surviving in oxygen depleted environments. Further along the river's journey, the Egyptian delta is a critical breeding ground for the enigmatic Nile soft-shelled turtle

(*Trionyx triunguis*), contributing to the unique mosaic of life within the basin (El-Ramady & Abdalla, 2021, p. 226; Amer, 2018).

The impressive diversity shows how the Nile Valley is important not only for its geographical position and the advantages it provides but also for all the beautiful creatures that for some of them can only be found there. Preserving and working on the understanding of the relation between the Nile the communities and the biodiversity leaving there, so the management and co-existence becomes easier for a sustainable life while protecting the diverse flora and fauna that call the Nile Basin home becomes a priority (Paltenea, Viforeanu, Bulgaru & Jecu, 2008, pp. 81-83). On Ethiopia's side of the river, it can be observed an incredible biodiversity, on its highlands, plateaus and the beautiful Great Rift Valley; It contributes to a rich tapestry of ecosystems, ranging from Afroalpine to Desert. "Crop plants such as coffee (*Coffea arabica*), Safflower (*Carthamus tinctorius*), tef (*Eragrostis tef*), noug (*Guizotia abyssinica*), anchote (*Coccinia abyssinica*), enset (*Ensete ventricosum*)" (Azamal, Mishra & Semwal, 2012, pp. 32-34).

Burullus Lake, is a Ramsar Site in the Nile Delta, it confronts critical biodiversity problems, like as an example: a loss of 37% of its open water. And in marsh 85%. The lake face lots of poachers because of its vast bird's biodiversity, as well as its huge contribution to the fishing industry by providing 52,000 tons of fish annually. Its protection becomes imperative. For the side of the Egyptian Ramsar site, which is a part of the bigger wetland complex (with Manzala, Edku, and Maruitt), the studies are mostly made about the danger of the pollution, but the biodiversity related research is important too (El-Ramady & Abdalla, 2021, p. 225).

4.3.2. Impact on Aquatic Environments

The mismanagement of the Nile River has highly affected the aquatic environment. Reducing of water flow was observed, mainly caused by the excessive extraction of the water for agricultural and industrial purposes. The drop in the flow of water is becoming a serious concern. Not only does it seemingly threaten this fragile balance of riverine ecology, but more immediately alludes to affective damage for the fauna dependent on definitively determined points which have suddenly been reduced due

to large dams built upstream from their environs or measures taken by them worse irregular (Aleem, 1972, p. 200).

Besides, pollution from all directions Environmentalists express great concern about the seriously bad side effects of widespread same river polluted by urban wastewater and industrial discharges. Add to this agricultural runoff generated on tremendous quantities of farmland within a short distance upstream unmanaged a grain rivers' irrigation system has captured many tributaries. That the pollution not only lowers water quality but similarly and directly threatens the health, fishing exploitation of aquatic organisms. This complicated sticker becomes even more complex when you add the invasive species that come into humans attacked countries because of their various activities. These alien species interfere with the native biodiversity. The ecological dynamics and compositions of different kinds are thrown out of whack, leading to enormous fluctuations in abundance among various groups for normalization purposes (or rejuvenation) (Al Nagggar, Khalil & Ghorab, 2018, pp. 1-3; Dumont, 2009).

To sum up, with weaker flow rates and pollution together with the foreign intrusion of species contributing their share to drain away carp right from north to south, this story is not a heartening one for the Nile's aquatic quarters. Apart from endangering the ecological balance of the river, this multipronged interference poses a very real-and even greater threat to all kinds of aquatic creatures; its existence depends on it. Fixing these problems demands a holistic, long-term strategy to ensure the plants and creatures that live in Nile water survive. Risks to Wetlands and Riparian Ecosystems. The riparian and wetland ecosystems around the Nile River are particularly vulnerable to mismanagement. Since many species depend on these places for mating and foraging, degradation of these areas has led to a decline in bird numbers and other wildlife. The natural flooding cycle of the Nile has been disrupted by dam construction, which has altered the wetland habitats and their ability to support a variety of living forms. In addition, land use changes like the conversion of wetlands for agriculture or urban development have resulted in habitat loss and fragmentation (Aleem, 1972, pp. 200-202).

4.3.3. Effects on Terrestrial Ecosystems

The mismanagement of the Nile River does not only affect the aquatic real, but it also affects the terrestrial ecosystems as well. When the rivers flow dynamics and the quality of the water are affected, it had devastating effect on the soil moisture content and nutrient availability within flood plains which nothing less than crucial. And why does this matter? Well, these aspects are essential for sustaining the diverse plant and animal life on land, leaving them incredibly vulnerable to the shifting conditions caused by this mismanagement. This concern does not only evolve around the Nile, it goes up to the whole food chain present in the Nile River, which will throw off the fragile balance of interactions between species. The first and most affected ones are local communities who depend on these ecosystems to live. If the river is unwell, they are unwell as well, their environment has a huge effect of their living condition and even their health. It can be perceived as a domino effect, starting with the health of the Nile declining, since its water is used for agriculture then agriculture is also affected. Then communities living of it end up starving (Sabae & Mohamed, 2015, pp. 304-306).

The inability of the riparian states through which the Nile runs to implement comprehensive and well-coordinated management policies makes the conservation of these species way harder. To guarantee the survival of endangered species three action must be taken: The protection of all and mostly endangered ecosystems, the reduction of pollution in the water and on lands, and sustainable management of water resources (Mostafa & Peters, 2016).

4.3.4. Climate Change Impact

For the Nile basin, the climate change still represents a challenge difficult to overcome as it become worse. There are altering patterns of precipitation as well as the temperature that keeps going up affecting the living and the availability of water resources, also alter the breeding and migration behaviours, and finally a possibility of new species potentially toxic for this exact environment or other species getting drawn due to the shifting of temperature. As temperatures rise and precipitation patterns undergo transformations, species within the basin are being forced to adapt to adapt. The increase of vulnerability to invasive species further complicates the ecological

balance of the Nile River Basin. Managing the Nile River becomes not only very important for addressing existing challenges but also urgent for stopping and repairing the impacts of climate change. By implementing effective river management strategies, it is possible to better the basin's resilience to the multifaceted challenges posed by a changing climate, safeguarding the intricate web of life that are dependent on this vital waterway (Taye, Ntegeka, Ogiramoi & Willems, 2011, pp. 209–211).

4.3.5. The role that researches and observation play in Nile Ecosystem

Management

To make sure the ecological balance of the Nile River is maintained, there should be scientific research conducted to have access to important information about the biodiversity of the river, as well as monitoring its health and its state. This is an important aspect and complete research should be done to understand the complex problems in Nile ecosystems. The scientific research is in whatever subject economics, biology or anything else is a continual process of rigorous reasoning supported by a, theories, and findings which it indicates it self-useful to development (Feuer, Towne & Shavelson, 2002). Like this, some scientific research can indicate important details about the places where certain animals live, which helps understanding how to protect them better. As an example, research on the African Queen Loach (*Eutropiichthys vacha*) indicate where it likes to live which is slow-moving or standing waters like rivers, ponds, favouring areas with moderate water flow and vegetation (the Sudd being the perfect place). It also indicates how this research can save it from harm; by preserving its natural habitat that they choose themselves to control the pollution level of the water, conserving aquatic plants and so on... And the water quality data analysis, help in keeping check on the health of the water and help to make policies to prevent pollution and protect the river's aquatic environment. This scientific research informs about the current situation of the Nile River. And then from what the proposed solutions helps improving the management of Nile. Through researching the issue, it is possible to figure out the best way to fix the problem and then act to prevent it from happening again.

4.4. Effect of Pollution

4.4.1. Pollution and Climate Impact on River's Health

It is observable that the reason for the poor health of the Nile River is the pollution of its water and in some place the temperature getting higher due to climate change. Issues like global warming, affected the precipitation structures and even intensified weather events like drought, inundations or other resulting from climate change is something incredibly large. The issue of climate change is worsening the already difficult and desertic lands and harming the already fragile ecosystem (Brown, El Gohary, Tawfic, Hamdy & Abdel-Gawad, 2003, pp. 3-6).

The hotter the water gets; the faster bad algae grow in it. This bad alga is very harmful to the environment it grows in, one example of one of them being the Microcystis, it produces toxin called Microcystis. These toxins can pose serious risks to aquatic ecosystems, wildlife, and even to human health if present in high concentration. Microcystis, known for producing toxins called Microcystis. These toxins can pose risks to aquatic ecosystems, wildlife, and even human health when present in high concentrations. And this with other factors lead to the oxygen level going down harming any living thing there. It is important to understand the correlation between the pollution, the climate change and the Nile River's health, The pollution is created by human activity is affecting the Nile's River ecosystem and creating climate change that is at its turn increasing the temperature of the water and the environment around the Nile; this can cause the death of some species, the migration of others, and the creation of bad ones (like the Microcystis) (Ajiere & Nwaerema, 2020, pp. 276-278; Mohamed, 2001, pp. 213-214).

It becomes primordial to find proper strategies against both pollution and other climate-related factors which has a serious impact on the delicate ecosystems of the Nile Basin. And the Climate change create unusual and frequently rainfall brought, the amount of the Nile water decreases. Some parts of it remain stagnated or in small volume increasing the risk of contamination. The Nile is vulnerable to the significant amount of untreated sewage, industrial waste, and agricultural runoff that it receives.

4.4.2. Ecosystem health and issues with water quality

The decreasing quality of the Nile Basin is putting the ecosystems that exist there in a dangerous situation. These concerns have been amplified by the impact of the decline on the environment and biodiversity. Surface water contamination has severe effects on the environment and the creatures that dwell in it. Birds that feed on fish from polluted rivers can have their reproductive capabilities and overall health harmed because of the toxins stored in their bodies (El-Sheekh, 2017; Pacini, Donabaum, Henry de Villeneuve, Konecny, Pineschi, Pochon, Salerno, Schwaiger, Tartari, Wolfram & Zieritz, 2013, pp. 208-209; Pacini & Harper, 2016).

Poor water quality affects not only aquatic life, but it also impacts the growth and variety of plants near water bodies. This plant, important for preserving riverbanks and providing living spaces for animals, encounters barriers as it grows. Water quality has a huge impact on the growth of aquatic flora, and a lack of safeguards to protect water quality can limit its flourishing in specific eco-systems, like that of Nile Basin. It is necessary to acknowledge the interrelatedness of water quality and ecological well-being to create successful conservation practices. The sentence is introducing the complexity of the issue with declining water quality and how it impacts not only bodies of water but also the land and all living beings in the Nile Basin. This topic seems very complex and important to understand. It has been highlighted that protecting water quality in the Nile is essential to keep the ecosystem intact and to protect the various species that make their home there (Wahaab & Badawy, 2004, pp. 90-91; 94).

The Nile Basin's ecosystem well-being and water quality are two significant challenges that depend on each other and need to be addressed. Various factors contribute to these challenges, and they are interconnected. Some of the key causes of these challenges are climate change, overuse of water and pollution. These challenges affect local communities, agriculture, and industries. To resolve these problems, the implementation of sustainable conservation practices, adoption of water-efficient technologies and promoting water reuse becomes imperative. It becomes imperative to resolve these to make sure the Nile's ecosystem and people living off it survive (Stanley & Warne, 1993, pp. 628-630).

The effects of pollution go beyond just killing living organisms. Even low concentrations of pollutants can have serious consequences on aquatic life. Pollution results in lots of bad consequences. It can cause a reduction in fertility and prevent growth as well as increase the risk of diseases, which is scary. The interdependent relationship between different organisms in a marine environment is disrupted, which eventually lead to a decline in overall species richness.

4.4.3. Sedimentation and Habitat Degradation

As this study shows, the Nile River has a lot of sedimentation, which results in high pollution levels. There are several factors that contribute to this pollution, such as the changes in land use and deforestation upstream. Sedimentation is a natural process where rock is created from tiny fragments of sand, stone and other materials that have been deposited by water (Hamza, 2014; F Hasaballah, A Hegazy, S Ibrahim & A El-Emam, 2019, pp. 56-57). Sedimentation happens when there is a creation of dams and change the land around bodies of water. This can keep aquatic creatures from living their normal lives. Furthermore, sedimentation decreases the amount of light that reaches the water, leading to a disruption in the balance of aquatic ecosystems. It is very important to understand the relationship between sedimentation and habitat degradation in order to develop effective strategies to address these environmental issues. The environmental issue that happens because of sedimentation is also bad for fish spawning places and bird nesting sites. The sedimentation process may result in the loss of these vital habitats, amplifying the ongoing loss of biodiversity in the Nile. Sedimentation and habitat degradation are leading to the destruction of aquatic ecosystems which are highly dependent on rivers. It is crucial to take immediate steps and adopt effective conservation measures to preserve this network of life (Hamza, 2014; Elewa, 2010, pp. 2-4).

4.4.4. Chemical Runoff inside the Nile Waters

In Agriculture chemicals are often used to ensure the good growth of the plants; pesticides, fertilizers as well as other things caused eutrophication. The influx of nutrients upsets the whole balance of the ecosystem and increase the number of plants and algae. And when these plants and algae grow and spread, they gradually break down, consuming oxygen in the water, making life harder for fishes and other creatures

leaving inside of it. And it is clear that if a decrease of the number of aquatics lives is observed then, other animals living off them as well as people will suffer at their turn; the whole ecosystem is affected by it. Agricultural runoff causes a lot of pollution in water bodies (Dahshan, Megahed, Abd-Elall, Abd-El-Kader, Nabawy & Elbana, 2016, pp. 1-3). But the solution to that cannot be achieved by just treating the water, rather this research helps address the root causes like planned farming, efficient irrigation, and proper fertiliser management. Implementing sustainable agricultural practices and responsible land management can help reduce eutrophication which helps protect the Nile's biodiversity and maintain its recreational appeal.

4.5. Main Policies of the Countries

4.5.1. Egypt Policies and Actions

Egypt's policies regarding the Nile Basin revolve around ensuring the equitable and sustainable utilization of the Nile River's resources, maintaining its historical rights, and securing water for its population and agricultural needs. The main aspects of Egypt's policies concerning the Nile Basin are:

- **Negotiations and Dialogues:** Egypt has engaged in continuous diplomatic efforts to negotiate water-sharing agreements and ensure that upstream projects do not threaten its water security (Howe, 2010, p. 34; Luzi, 2010, p. 103).
- **Regional Cooperation:** Egypt participates in regional initiatives like the Nile Basin Initiative (NBI), aiming to promote cooperative management and development of the Nile's resources (Luzi, 2010, p. 103).
- **Aswan High Dam:** Completed in 1970, the Aswan High Dam is a cornerstone of Egypt's water management strategy, providing water storage, flood control, and electricity generation (Howe, 2010, pp. 30-31; Kendie, 1999, p. 144).
- **Modernization of Irrigation Systems:** Egypt has invested in modernizing its irrigation infrastructure to improve water efficiency and reduce wastage (Luzi, 2010, p. 93).
- **International Advocacy:** Egypt has sought international support to ensure its water rights are respected, lobbying organizations like the United Nations and the African Union (Kendie, 1999, p. 153).

- National Legislation: Egypt has developed laws and policies to manage and protect its water resources, emphasizing efficient usage and conservation (Luzi, 2010, p. 104).
- Water Conservation Programs: Egypt has implemented various programs to promote water conservation, reuse, and the development of new water resources like desalination (Luzi, 2010, pp. 96-97; Kendie, 1999, p. 144).
- Environmental Protection: Efforts are made to protect the Nile ecosystem from pollution and overuse, ensuring the river's health for future generations (Kendie, 1999; Howe, 2010, p. 39; Luzi, 2010).

4.5.2. Ethiopia's Policy and Actions

Ethiopia's policies regarding the Nile Basin focus on asserting its rights to utilize its natural resources for development, particularly through hydroelectric power generation, and ensuring equitable and reasonable use of the Nile waters. Here are the main aspects of Ethiopia's policies and perspectives concerning the Nile Basin:

- 'Grand Ethiopian Renaissance Dam (GERD)': The GERD is a central element of Ethiopia's development strategy, aimed at generating over 6,000 MW of electricity, which is crucial for its economic growth and electrification efforts (Moges, Abtew & Melesse, 2021, p. 5).
- Hydropower Potential: Ethiopia aims to exploit its significant hydropower potential to become a regional energy hub, exporting electricity to neighboring countries.
- 'Cooperative Framework Agreement (CFA)': Ethiopia is a proponent of the CFA, which seeks a fair and equitable allocation of Nile waters among all riparian countries, countering the historical agreements that favor Egypt and Sudan.
- Sovereign Rights: Ethiopia emphasizes its sovereign right to utilize its water resources for national development, which includes irrigation, industrial use, and hydropower.
- Nile Basin Initiative (NBI): Ethiopia is an active participant in the NBI, promoting cooperative development and sustainable management of the Nile waters.

- **Tripartite Negotiations:** Ethiopia engages in negotiations with Egypt and Sudan over the GERD, aiming to reach mutually beneficial agreements while protecting its interests.
- **Sustainable Development:** Ethiopia aims to develop the GERD and other projects in an environmentally sustainable manner, minimizing adverse impacts on downstream countries.
- **Water Resource Management:** Ethiopia has established policies and institutions to manage its water resources effectively, ensuring that development projects are aligned with national goals and environmental standards.
- **Legal Framework:** Ethiopia supports legal frameworks that recognize the rights of upstream countries and promote fair utilization of transboundary water resources.
- **Capacity Building:** Ethiopia invests in building local capacity for water management and development projects, enhancing technical expertise and institutional capabilities.
- **Conflict Resolution:** Ethiopia seeks peaceful resolution of disputes through dialogue and negotiation, emphasizing cooperative approaches over unilateral actions (Moges, Abtew & Melesse, 2021; Tekuya, 2021).

4.5.3. South Sudan's Policies and Actions

- **South Sudan, as one of the Nile Basin countries, has specific policies and perspectives regarding the Nile Basin that focus on sustainable development, equitable use of water resources, and regional cooperation. Here are the main aspects of South Sudan's policies concerning the Nile Basin:** Infrastructure Development: South Sudan is in the early stages of developing its water infrastructure, which includes plans for irrigation projects, water supply systems, and hydropower development to support its economic growth and food security (Michael, 2018, p. 3)
- **Hydropower Potential:** The country seeks to exploit its hydropower potential to provide electricity to its population and stimulate economic development.
- **Support for Cooperative Framework Agreement (CFA):** South Sudan supports the CFA, which promotes equitable and reasonable use of the Nile waters

among all riparian countries. This agreement aims to replace the historical agreements that have predominantly favored Egypt and Sudan.

- Nile Basin Initiative (NBI): South Sudan is a member of the NBI, actively participating in regional dialogues aimed at the cooperative management and sustainable development of the Nile Basin.
- Environmental Considerations: South Sudan is committed to developing its water resources in an environmentally sustainable manner, minimizing negative impacts on the ecosystem and downstream countries.
- Water Resource Management: South Sudan is working on establishing comprehensive water resource management policies and institutions to oversee the development and use of its water resources.
- Legal Framework: Developing a robust legal framework to govern water usage and protect the rights of its citizens while ensuring sustainable development is a priority for South Sudan.
- Water Supply and Sanitation: Improving access to clean water and sanitation for its population is a critical aspect of South Sudan's policies, addressing both humanitarian needs and long-term development goals.
- Rural Development: Focusing on rural water supply projects to support agricultural development and improve livelihoods in rural areas (Swain, 1997; Allan, 1999, pp. 1-10; Howe, 2010; Michael, 2018).

4.5.4. Conclusion

In conclusion, the impact the pollution and climate change have on the ecosystems is demanding more attention. For that, a comprehensive strategy that incorporates technology, policy reform, community engagement, and regional collaboration is needed. The future well-being of the Nile River and the millions dependent on it.

Expanding on the environmental impacts of Nile River management highlighted in section 5 shows the complexity of hydro-politics and the challenges of sustainable river basin management. Historical unilateral development and competition for scarce water resources in the Nile Basin have resulted in significant environmental and socio-political challenges, particularly in arid northern regions. The transition to cooperative frameworks, endorsed by international bodies like the World Bank, signifies a significant stride towards more sustainable and equitable resource management.

However, uncertainties linger regarding the effectiveness of these cooperative efforts given historical tensions and diverse riparian interests.

The intricate hydro-political landscape of the Nile River is further complicated by water scarcity, climate change, and population growth. These factors intensify competition for water resources, adding layers of environmental stress impacting ecosystems and communities alike. Balancing economic development, water rights, and environmental sustainability poses a continual challenge for Nile Basin countries. Consequently, Nile River management demands a holistic approach encompassing historical and legal water rights, current and future environmental and socio-economic contexts. A fair water allocation, a sustainable development practices, and a proactive engagement in climate change adaptation becomes important. The regional cooperation and innovative water management technologies have an important role in taking care of the Nile Basin Challenges.

Emphasizing the involvement of local communities in decision-making processes is primordial. Community engagement and education are indispensable for implementing sustainable practices successfully. Empowering local communities ensures active participation, fostering a more inclusive and effective management framework benefiting all stakeholders. The future of the Nile River and its ecosystems is counting on the collective work of the riparian nations, international organizations, and local communities. Wishing to create a sustainable balance between human needs and environmental protection is important for the river's long-term health. Through concerted efforts between all concerned parts, informed policymaking, and a commitment to cooperation, the Nile River can keep being the source of life and prosperity for millennia.

5. DISCUSSION AND RECOMMENDATION

To fight these life-threatening consequences, a lesson must be learned from past mistakes. The following sections indicate solutions proposal for the current problems.

5.1. The Pollution

For the case of pollution policy alterations, community engagement, technological innovations, and international collaboration is required. The government must concentrate on their side of the Nile and enhance waste management practices, work on how to reduce their annual discharge in term of industrial waste. Undertake more internal discussions, engage the local communities in workshops and seminars to inform them on the situation and help them be more aware of the importance of each one's action in the saving of the water biodiversity.

An effort from all riparian state can lead to the saving of the natural environment of so many unique species. Advocating and engaging in sustainable farming can also help in the enterprise, the first step would be to show the local farming communities' way to save water and use less nature harming tools, providing those tools through concours or even as help from the government to help them get used to this way would be a faster solution. It is without a doubt important to always work on improving the technology around farming, and the government has the necessary funds to take actions. Decreasing punishing laws against a transgressor would also help show how important it is. The industrial waste management can help significantly decrease the pollution rate, by recycling the waste to reuse it, it saves from creation of more business, engaging the local communities during workshops, and taking high schoolers on cleaning activities more often can cheapen the cost for states.

5.2. Water Scarcity and Drought

For the problem of water scarcity and drought the obvious first recommendation I can provide is working on water conservation policy, limiting the amount of water used in agricultural areas as well as domestical areas. Working on water recycling technologies is also important to conserve salvable water. Developing water saving infrastructure like cisterns, create refillable wells, as well as reservoirs and save rainwater for use in areas where drought is frequent.

Water scarcity is a problem easily solvable with the right amount of finance. With the help of external entities such as non-governmental organisations (NGO), the riparian countries can create desalination usine and use the see water for coastal regions who have access to it. Converting sea water to freshwater, proving in that case an alternative source for Egypt who is the most concerned by this problem. The flora can also be a great ally through the drought, by cultivating drought-resistant crops, not only those one, but the afforestation should also be a common practice in all countries regardless of their location. This help prevents soil erosion, by retinting water and moisturising the lands to give the chance for other plants to naturally grow.

Raising awareness of the situation of the country is a must, nothing comes from hiding problems from citizens, educating them about the positive part they can play in solving the problems can help solve it faster. In parallel research about new water purification technologies and satellite controlled (awareness of the situation) can help prevent incoming drought of find potential endangered areas. All parties should work together in this research, NGO are also available for the founding of any fruitful project.

5.3. Protection the Ecosystem

To protect the ecosystem from further degradation, establishing protected areas, where any human activity is banned is a great project, especially areas who serve as a natural habitat for endangered species. This practice help prevents further damage, but to restore the place, and repair the harm that has been done, habitat restoration practices should be started, replanting certain plants and labelling certain species as protected while helping them help them procreate, maximising their environment during mating season should help in this situation.

FAO state that fished in 2014 totalled 35 988 tonnes, and they were in three ways, inland capture fisheries (81 percent), marine capture fisheries (14 percent) and aquaculture (4 percent) (Anton, & Curtis, 2017, p. 8). The fishing practices should be regulated to help protect the aquatic ecosystem from instinct ions. In parallel establishing more fishery reserves to allow the fish population to recover from heavy fishery throughout the year. Developing and implementing programs to control invasive species that threaten native flora and fauna and the implementational help alongside the promotion of ecotourism, a controlled tourism that shows the beauty of

the ecosystem of the Nile River. This will bring founds in the countries treasury and control the damage done by uneducated tourists.

5.4. Political Environment

All riparian countries have their best interest in the Nile River, some depending on it more than others, in this perspective the best action to take will obviously be collaboration, it did not work out in the past decencies. Anarchy is not an option neither, so the best option is indeed collaboration, but this time they should think about other countries' interest more. Shared projects and initiatives that benefit all nations can contribute to stability. The ratification and implementing of already existing agreement such as NBI and CFA can provide a legal basis for equitable water use. The help of a neutral third-party mediator can also help with the feeling of fairness and build trust during discussions.

Creating a scientific central in all countries and send Scientifics to fellow riparian neighbour in the quest of searching and developing Nilotic technology, share data related to water resources, climate change, and the environmental impact of projects like the GERD is also a good recommendation.

5.5. Flood

The first thing to do is zoning out flood risk area and land-use planning to restrict or guide development in flood-prone areas. Following with the creation of green areas to absorb all extra water. In parallel creating early warning system, to alert regions in time so preventive solutions can take, will be of a great help. The construction of anti-flood infrastructure should be considered, elevating buildings to pass the possible flood levels. Constructing dams and reservoirs helps regulate the water flow during periods of heavy rainfall and mitigate downstream flooding. And finally implementing sustainable river channel management practices in order to maintain the natural flow of the river as well as preventing excessive sedimentation that can favour flooding.

This thesis aimed to provide a deep understanding of the historical context, legal framework, environmental impacts, socioeconomic implications, challenges, and controversies surrounding Nile River management. And the case study takes one of the main actors of this millennia long dispute, Egypt, Ethiopia and Sudan. The

proposed solutions and recommendations if well implementation, can help ease political tensions between country, foster sustainable water cooperation and promote the equitable and effective management of the Nile River for the benefit of all riparian nations.



6. CONCLUSION

This conclusive section provides put every in place, the acquired information and be able to provide solutions that could possibly help the actual situation of the riparian states. The research shows that the Nile River one of the largest rivers in the world and serves as vital source of live hoods and help in the socio-economic development for multiple countries in Northeast Africa. And the management of this basin was all but successful throughout the years, regardless of how many discussions the actors had, and the agreements made. For all it is, it even created politic tensions between them. The earliest attempts made were Ethiopia and Britain came together in Addis Abeba both with the intention of gaining the most possible, the colonial power wanted the power over the Basin, but Ethiopia successfully kept it, it followed with Egypt and Britain in 1929, where the country was granted a decisive right over any construction made on the Nile, regardless of the size. The country (Egypt) does not have the upper hand in this situation which is why it is reaching for any help possible and Britain eternally looking for a chance to benefit from this wonder was more than willing to land a and to them.

The 1959 agreement after their independence, where Egypt and Sudan engaged themselves for “a mutual prosperity” without the presence of any colonial power. 1993, where was signed a "Framework, for General Cooperation between Egypt and Ethiopia” (1999), (Salman, 2013, pp. 20-23; Mekonnen, 2018, p. 67). And finally, in 2010, with the CFA taking up on NBI’ work (which still exist) and had for objective to provide more satisfying share to upper stream countries that felt left out in all the precedent agreement. Indeed, since all the previous one where one way or another benefiting the downstream countries (in this case Egypt and Sudan) and was depriving others from their right to the water under the explanations of the crucial need of water in their country. “The CFA is a milestone agreement in terms of bringing many riparian states on board and has incorporated many of the recent international water law principles” (Chelkeba, 2018, p. 167). But this clearly didn't worker, creating more tension between them as, Egypt and Sudan did not want to cede their share, supporting their refusal with the very same colonial agreement they were claiming to “grow from” in 1956. Both CFA and NBI are still ongoing project with all riparian country more or less participating in discussion to finally resolve these millennia old issues.

There also was another discussion in 2015 between the Ethiopian and Egyptian presidents after the construction of the GERD, where a declaration of principles on the grand Ethiopian renaissance dam was discussed. But the outcome as expected where unfruitful, Egypt declared that Ethiopia was “uncooperative” regarding this issue which Ethiopia completely denied stating that they are willing to cooperate as long as it does not affect their personal growth as a country.

At this point, Britain was out of the big picture, but still get involve through organisations, committees and any other entity involved in it. It was not the case decencies earlier where when they felt their grip slipping, made agreements with other colonial powers (France and Italy) to conserve power in case of death of the President of Ethiopia who has felled ill at the time. As expected, it was not received on a positive tone by Ethiopia who warned them with the help of the League of Nations, which led to their denial of such actions, even though it was clearly the case (Mtua, 2017, p. 1).

To respond to our research question which is “The causes and consequences of Nile River mismanagement: A comparative overview of environmental impacts in Ethiopia, South Sudan, and Egypt”; the political relations between countries is affected by this disorder, there is tensions between them and a race take place where the winner is the one who gets the higher share of water, and it keeps growing to the point that mediators and external entities, such as NGO and other nations interfere to insure the fair sharing of the water and its resource. The environment is also affected in a negative way by this management problem, the ecosystem of the Nile in all side from Ethiopia to Egypt while passing by Sudan is degrading. The aquatic and terrestrial species are seeing their environment changing in the best case migrating to other parts and in the worst one facing extinction. The climate change caused by industrial pollution and humans in general is not helping the case. Too focused on the water flow they are neglecting the very soul of this water, which can later cause grave consequences such as loss of biodiversity, Nilotic fishing industry closing doors, water scarcity, drought, definitive migration of species ... etc.

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