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**Articles**

# The Nile River Water Conflicts and Cooperation:

## The 'Grand Ethiopian Renaissance Dam' Construction and 'Hydro-Hegemony' Change

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**Abstract**

A large part of the Nile basin is considered as one of the poorest regions of the world. Water scarcity is a major challenge for this already closed basin. The challenge is further exacerbated by climate variability. Thus, the immediate national interests of the riparian countries are taking priority over the basin based strategy. After a decade of failed attempts to initiate cooperation, the countries of the Nile basin have again started adopting conflicting postures over the water. Political tensions between Egypt and Ethiopia as a result of the unilateral construction of the Grand Ethiopian Renaissance Dam (GERD), and the Ethiopian refusal to halt construction until the required studies were concluded, have fed the historical mistrust between the two countries. Each country has sought to maintain old alliances and form new regional relations to influence the interests of the other in the Nile basin and the Horn of Africa. This approach continued even after the two countries reached a general understanding on resolving the crisis over the GERD. It is necessary for the important riparian states of the Nile basin to abandon their state-centric water development approach and develop sustainable cooperation over the shared water to meet the climate change challenges.

## I. Introduction

Water, as a vital resource not only for human beings but also for whole life on the Earth, has become one of the most important issues in international relations. Even though water is a renewable resource, degradation on ecological systems, mostly due to human activities of last centuries, has begun to destroy water cycle which ensures the sustainability of waters on Earth. Whilst the quantity of freshwater on the world is limited and main freshwater resources (rivers and lakes) are not distributed evenly, struggle on these resources, especially on transboundary waters, turns into a challenging problem. The developing ecological cooperation set up for fair, equitable, and sustainable use and sharing of transboundary waters would eliminate security risks in the basin and could ensure the development of a common objec-

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tive towards the improvement of socio-economic, political and ecological conditions.

In this article, dealing with the Nile River water case, the current situation of water resource conflicts are analyzed: first, sustainable development and water control; second, the Grand Ethiopian Renaissance Dam construction and hydro-hegemony change in the Nile River Basin; third, changing geo-politics, climate change, and ecological security.

## II. Sustainable Development and Water Control

### 1. Source of Conflict or Opportunity for Cooperation

Water is an important component of sustainable development, Rani explains, and without it survival is not possible. Although it is available in great quantity but accessibility to fresh water is limited, which makes it an important element for lives. Water supply has become unhygienic to people due to reasons like lack of economic infrastructure and poor conditions. There are several countries in the world which face acute water shortage as well as poor water quality. It hampers their water security and also brings negative impacts on food security and the livelihood of people as well. Lack of water resources invites droughts which further make lives of people more miserable, exacerbate starvation and cause malnutrition. Global warming has made water a restricted resource which is very much important for human lives. Therefore the proper management of water resources must bring sustainable development. Water plays a vital role in strengthening the economic and social existence of human beings (Rani: 1). The term water security means when there is a threat to sustainable and secure water utilization from both natural and manmade forces on water resources. It is also society's ability to ensure sustainable access to safe, hygiene and sufficient water resources (Rani: 4; Takemura).

There have been several examples of countries which are dependent on other/neighboring countries for water resources, according to Rani. Six European countries (Switzerland, Liechtenstein, Austria, Germany, France and Netherlands) share the water content of Rhine River. Nile River, the longest river in the world, is a source of life for countries like Rwanda, Burundi, Uganda, Congo DR, Tanzania, Kenya, Ethiopia, Eritrea, South Sudan, Sudan and Egypt. Mekong River flows through China, Myanmar, Laos, Thailand, Cambodia and Vietnam. The river acts as a main trade route between China and Southeast Asian countries (Rani: 4-5).

The competition to acquire more water resources has led to conflict between countries, Rani continues. Those which are already sharing water resources are fighting for the quantity and quality of its water content (Rani: 5). There is serious concern of gradual decrease in water quantity and quality which may cause internal instability in a country in future. It can also become a reason of conflict between particular groups or within states which can further affect the security environment at international level (Rani: 8). Global water crisis is a serious concern to human security. Millions of people lack access to sufficient quantity of fresh and safe water for their wellbeing. At present this is the greatest threat humans are facing. To counter the threat of water crisis and conflict, countries should frame better policies for the management of scarce water resources (Rani: 9; Petersen-Perlman et al.; Waslekar et al.; Kliot et al.).

In short, Rani concludes, water management is significant for achieving sustainable development as sustainability is not just minimizing the personal needs. It is optimizing them for the future generations. If we manage water resources now then only we will be able to save it for our future. If we maintain and sustain the available water resourc-

es at present only then we and the generations to come will be able to use it for long term in the future. And countries should also make efforts to keep all the resources of water clean so that living beings can use it for their survival now and in the coming future. This goal of sustainable water security can be achieved with mutual cooperation only. Therefore the water resources should be converted into a source and opportunity for cooperation rather than merely conflict for sustainable development (Rani: 9; Wouters).

### 2. Conflict over Common Property Resources (CPRs): Global Strategies over Water Management

In the present world, proper management of common property resources (CPRs) are crucial, Ahmad explains, since CPRs are present on the earth in abundance and people tend to over-exploit for their economic and political interests. Particularly in the case of transboundary CPRs such as water, unsustainable and political interests based utilization results in disputes among riparian. Therefore, proper management is required for sustainability of transboundary water resources for its dependent countries (Ahmad: 1).

CPRs are owned by a community and managed by government or other such potential organization. Additionally, Ahmad continues, no rules restrict consumption of these common resources that results to overexploitation and to the disturbance and degradation of ecological niche. Water resource management is a complex procedure, particularly in the case of transboundary water resources as they don't recognize human made political boundaries which hold major water management challenges. The possibility for conflicts seems to be highest where most of the land is either arid or semi-arid and much of the untapped water resources are there in international water courses (Ahmad: 14).

In short, since transboundary waters are serving for more than half of the global population, Ahmad insists, their appropriate planning, management and development are vital to satisfy our present and future demands for water and to avoid possible water scarcity, crisis and conflicts in future. However, unfortunately most of waters have been and continuously inappropriately managed and developed. This trend is emerged due to lack of adequate agreements among the riparian countries and to some extent due to the lack of financial resources, particularly in developing countries. Consequently, these waters have been the roots of several conflicts among the water sharing countries (Ahmad: 14)

## III. The 'Grand Ethiopian Renaissance Dam' Construction and 'Hydro-Hegemony' Change in the Nile River Basin

### 1. Transboundary Water Disputes and Conflicts over the Nile River

The impacts of the Nile on the politics of the North African region have been so significant that they threaten to spark an interstate conflict, which could potentially destabilize the whole area. The countries in the Basin depend heavily on the Nile, which is the only major renewable source of water in the area, consequently, it is essential to their food and water security (Di Nunzio: 1).

The Egyptian and Sudanese monopoly over the water resources in previous years had served to exacerbate regional tensions, Di Nunzio explains. The signing of various agreements during colonial times allowed for this distribution. The two most prominent agreements were signed between Egypt and Britain (1929) and Egypt and Sudan (1959). Increased co-operation between upstream nations has resulted in the binding Entebbe Agreement, which is restructuring allocations and control over the Nile's resources. The geo-political shift in the

region has led to a proliferation of upstream developments, including dams and irrigation networks. These developments are often met with threats from Egypt, which is extremely protective over its decreasing share of the Nile's water. However, Egypt must engage in peaceful interstate co-operation to secure its water supplies. The Nile faces an uncertain future amid developmental and environmental pressures (Di Nunzio: 2; Swain 2008).

Egypt's extreme reliance on the Nile for its electricity, water and food security is the major


***Fig.1***. White and Blue Niles, and the site of the Grand Ethiopian Renaissance Dam. Source: Yihdego, Y., A. Khalil, and H. S. Salem (2017). Nile River's Basin Dispute: perspectives of the Grand Ethiopian Renaissance Dam (GERD), *Global Journal of Human-Social Science: B. Geography, Geo-sciences, Environmental Science and Disaster Management* 17(2): 7.

source of conflict in the river basin, Di Nunzio continues. A tenth of Egypt's electricity generation capacity comes from the Aswan Dam alone. Egypt already overdraws on its water allocation but is still extremely water scarce. As the population booms, the country will require more water than it currently has available. However, shifting geostrategic alliances among upstream nations mean that its allocation is likely to decrease. Unless it embarks on a large-scale overhaul of its inefficient water networks, Egypt could experience major water crises in coming years that could trigger conflicts with its neighbors (Di Nunzio: 4). More recently, Ethiopia's the Grand Ethiopian Renaissance Dam (GERD), 50 kilometers from the Sudanese border, has drawn substantial criticism, largely due to Egypt's hostile response to its construction. Sudan, on the other hand, has been largely peripheral in the disputes over the GERD, downplaying the dam's potential negative effects and throwing its support behind Ethiopia. Egypt views the construction of Africa's largest dam as a threat to its national security, given the vulnerability of its declining water supplies (Di Nunzio: 6).

In short, Di Nunzio concludes, though international conflict still presents a risk, several factors, including pre-existing domestic unrest in the region, leave the countries with little option other than co-operation and thus diminish its likelihood. The internationally recognized Entebbe Agreement leaves Egypt and Sudan outnumbered, while other geo-strategic alliances severely limit Egypt's military options. It is in the interests of all the riparian nations to preserving regional stability. As already mentioned, even in the absence of international tensions over its distribution, the river's water resources would still be depleting. Consequently, the ensuing situation will demand other alternatives, which could stabilize North Africa's water and food security. International cooperation is thus the only viable and peaceful solution to this growing problem (Di Nunzio: 8-9; Mohamed et

al.).

## 2. Modern Water Disputes and Management in Nile River Basin

In 2011, Abdellauf refers, Ethiopia —the greatest contributor to the stream flow, supplying around 86% of the Nile's water — launched the Grand Ethiopian Renaissance Dam project, which was considered the largest in the world. The huge reservoir behind the dam will hold up to 67 billion cubic meters of water, and will take up to seven years to reach its capacity. This matter aroused the Egyptian concerns as the Nile flow into Egypt could be cut by 25% during the filling period, while most of the water resources of Egypt and Sudan originate outside their boundaries: 77% and 97% respectively (Abdellatif: 1; Ahmed et al.)

Over the past five years, Abdellauf explains, a dispute has aroused between Egypt, Sudan, and Ethiopia. While Egypt holds to the no-harm doctrine, and its historical rights based on the colonial treaties, Ethiopia argue that the unfair treaties made by the colonists should not be in action after the independence of the riparian states. Finally on March 2015, the three countries signed an agreement which defines the main principles of water use and rights (Abdellatif: 1). Egypt's argument has always been based on its historical rights in the water of the Nile, and the no-harm doctrine, while the Ethiopian argument is based on the equitable use principle and territorial sovereignty over its own resources. Due to the weak authoritative power of the Nile Basin Institute (NBI) over the basin, it could not resolve the dispute between the countries. That dispute has shown the disability of the NBI in front of the power and interests of the riparian states (Abdellatif: 9). The colonial agreements are mostly the reason behind the dispute. The negative effects of those treaties are still traceable, which were formulated to serve the sovereignty of the Britain colony and its hegemony over the water resource of the Nile River. The complexity of the dispute comes from the Egyptian persistence on its historical rights based on the colonial agreements, and the planned massive development projects of Ethiopian on the Blue Nile, which will give it a total domination over the main water source of the river. Therefore the only way to resolve the current dispute would be through multi-lateral agreements between the countries, but it will not be a guarantee of non-occurrence of other future disputes. (Abdellatif: 9)

The unbalanced distribution of power and interests in the basin still puts a burden on formulating a strong governance framework, Abdellauf insists. The absence of a strong regional authoritative entity — like the European Union in Europe— which can resolve the disputes, led to a trembling political relation between the riparian states. The formation of such an entity can raise the trust between the states, and set down the main principles of governing the Nile River (Abdellatif: 10). It was hard to implement a bottom-up approach in the governance of the Nile River basin, due to the weak political situation of most of the riparian states and the unbalanced distribution of power. The riparian states were left to meet on the common ground of the international principles of the UN convention. However, the top-down norm diffusion was not successful in the case of the Nile River basin, mostly due to the left traces of the treaties made under the colonial rule. These traces were represented in the norm clash between the up-stream countries and the down-stream countries, where the up-stream countries used the equitable utilization and the territorial sovereignty principles as their argument, while the down-stream countries used their historical rights and the no harm doctrine as theirs (Abdellatif: 10).

In short, the UN Convention principles have not met the interests of most of the riparian states. This was clear in the voting for the adoption of the UN convention principles, in which most of the states abstained. Egypt, Ethiopia, Rwanda, Tanza-

nia have abstained, while Burundi voted against it. Eritrea, Uganda, and DRC were absent, and only Kenya and Sudan voted in favor of the principles. Egypt and Ethiopia, who have opposite political interests, have both abstained which shows that neither the up-stream nor the down-stream riparian states believed that the convention principles do not serve their arguments (Abdellatif: 10).

### 3. Confrontation of Nile Riparian 'Hydro-Hegemony'

Freshwater is essential to life, intrinsically, according to Nielsen, so the fight to secure access to water becomes the fight to secure the survival of a civilization. In certain regions of the world, the groundwater — and the rainfall that replenishes it — is so scarce that the civilizations have to rely solely on rivers that originate thousands of kilometers away. Egypt is such a civilization, prompting the Greek historian Herodotus to comment "Egypt is a gift of the Nile" — it would simply not exist without this river (Nielsen: 3-4)

The Nile is shared by eleven riparian states, Nielsen continues, but the allocation of water shares is highly asymmetric. Historically, Egypt receives the lion's share of the benefits but attributes no water to the Nile, while Ethiopia as the main contributor of water utilizes a meager 1 percent of its available water from the Nile. However, in recent years Ethiopia has challenged Egyptian hydro-hegemony on multiple arenas and through a multitude of tactics (Nielsen: 71). At the source of the Nile, Ethiopia is battling against recurring famines, drought and enduring poverty. The Nile represents an enormous potential to alleviate this hardship. Contrary to Egypt, which has already built an industry around the Nile that it wishes to protect, Ethiopia has little industry but is eager to harness the power of the Nile to develop the country's economy and living standards (Nielsen: 4).

Through the analytical framework of 'hydro-hegemony', Nielsen emphasizes the role of power asymmetry in establishing and maintaining a favorable position in regional hydro political questions. 'Hydro-hegemony' is a reflection of one state's ability to dictate the agenda on a transboundary river basin through tactics such as coercion-pressure, treaties, knowledge construction, etc. Due to historical factors, Egypt has been able to successfully maintain its hydro-hegemonic status through employing an array of the tactics mentioned above (Nielsen: 71; Obengo; Okascha: Ibrahim).

Political tensions between Egypt and Ethiopia as a result of the unilateral construction of the project GERD, and the Ethiopian refusal to halt construction until the required studies were concluded, according to Tawfik, have fed the historical mistrust between the two countries. Each country has sought to maintain old alliances and form new regional relations to influence the interests of the other in the Nile basin and the Horn of Africa. This approach continued even after the two countries reached a general understanding on resolving the crisis over the GERD, pointing to continuing mutual suspicion that will require time and effort to overcome. This raises doubts about the contribution of the GERD to cooperation beyond the project. More generally, the visions of Egypt and Ethiopia for the bases of regional cooperation remain at odds (Tawfik: 39; Abdelhady et al.; Martens).

However, according to Bodin, the real issues that need addressed are much more odious. Explosive population growth, climate change effects, unresolved differences among riparian states, and extensive selling and leasing of arable basin land to foreign states and multinational corporations threaten to diminish the Nile's water volume and flow, which will lead to a massive humanitarian crisis. The only way these issues can be resolved is that the 11 riparian states find common ground and form a comprehensive water management regime which can effectively tackle the four issues

(Bodin: 2; Tsega; Mckenzie; Al Hajjaji; Yimer).

In short, Grandi concludes, the historical inter-state dispute over the allocation and utilization of the Nile River waters has endured ever-evolving patterns of intra-basin relationships, multi-level dynamics of water policy making and fluctuating intensity in conflictive and cooperative interactions. The transboundary nature of the Nile waters reveals the interconnectedness of the Nile states, which rely upon the Nile ecosystem not only for the satisfaction of economic, social and cultural needs, but also for the maintenance of peace and security in the region (Grandi: ix).

## IV. Changing Geopolitics, Climate Change, and 'Ecological Security'

### 1. Challenges for Water Sharing in the Nile Basin: Changing Geopolitics and Climate Change

Since the late 1990s, with the encouragement and support of the international community, the Nile basin countries have made some attempts to establish basin-wide cooperative institutions. This process of engagement and collaboration is presently under severe stress due to increasing demand and decreasing supply of water resources in the basin. This situation may be complicated further by the global climate change, which is anticipated to result in long-term changes in the volume and pattern of runoff in the Nile River system (Swain 2011: 687).

Most of the areas covered by the Nile River basin are projected to become warmer during this century, increasing the demand for freshwater, Swain continues. On the supply side, there are quite a few question marks over water availability. There is still lack of consensus about the projected changes in the basin's climatic means and extremes. Due to substantial inter-model differences of precipitation, quantitative estimates of projected water supply changes are not easy to determine in an exact manner. There is also the possibility of local climate changes making it further difficult to assess a basin-wide trend. However, there is a strong likelihood that the climate change is going to multiply the uncertainty factor of the Nile River flow and may bring steady and significant reduction to it (Swain 2011: 697).

Moreover, Swain insists, climate change can further influence the sharp variability of the Nile water flows, which can possibly pose serious challenges for the water management in the basin. As global climate change might bring longterm changes to the volume and pattern of runoff in the Nile River systems, it is crucial to assess the quality and capability of on-going sharing arrangements to address this challenge. Climate-related changes require comprehensive adjustments in the on-going water management structure of the Nile River. This comprehensive effort might ask for the water sharing arrangements to be flexible and adaptable in allocating reduced and surplus water flow, maintaining a certain water quality level, sustaining ecosystems, controlling flood and protecting existing water development infrastructures. Thus, the river sharing arrangements need to have provision for information sharing, conflict management mechanisms, flexibility to adjust to uncertainties and endeavor for basin-based development strategy (Swain 2011: 698; Zedan; Mostafa et al.).

In the Nile basin, Swain analyzes, the agreement among the disputing lower riparian countries to constitute the Nile Basin Initiative in 1999 was certainly a right step towards basin-based water management. However, more than a decade has passed, and no concrete progress has been made. In reality, very little progress has taken place to establish effective and cooperative water management institutions in the basin. Most of the riparian countries seriously continue to pursue large-scale unilateral dam construction. The international

community, particularly the World Bank, has been claiming the credit since 1999 for creating a platform for a basin-based water cooperative framework. However, the on-going stand-off between Egypt and Sudan with the upper riparian countries over an article of the Cooperative Framework Agreement shows shallowness in the claim. In fact, the Nile basin is far from achieving a basin-based water management institutional structure (Swain 2011: 698; Woldetsadik).

In short, Swain concludes, a large part of the Nile basin is considered as one of the poorest regions of the world. Water scarcity is a major challenge for this already closed basin. The challenge is further exacerbated by climate variability. Thus, the immediate national interests of the riparian countries are taking priority over the basinbased strategy. After a decade of failed attempts to initiate cooperation, the countries of the Nile basin have again started adopting conflicting postures over the water. It is necessary for the important riparian states of the Nile basin to abandon their state-centric water development approach and develop sustainable cooperation over the shared water to meet the climate change challenges (Swain 2011: 701).

## 2. Transboundary Rivers within 'Ecological Security' Perspective

Beyond the sustainable security, Atvur explains, the concept of 'ecological security' which brought a new discussion to the security literature, also offers an appropriate basis for linking environmental protection, and equal and fair distribution of natural resources by developing binding regulations for states or elaborating new international regimes. Maintaining a dynamic balance between nature and human societies, needs of human beings and other species is the focus of the ecological security. Furthermore, ecological security could be linked to common security by prioritizing 'interdependence, complexity, uncertainty, harmony and sustainability' for preserving the long-term ecological equilibrium (Atvur: 230).

The importance of water for life and the pursuit of ecological cycles that guarantees the functioning of ecosystems shifted the global agenda in order to cope with deepening interdependent problems and new challenges, Atvur continues. In this context, ecological security is one of the new approaches that offer a new perspective to environmental problems by changing classical security agenda. In an ecological perspective, the nature is the core value. Ecological approach underlines the interconnections, mutual benefits and harms with the aim of dealing with the main cause of the environmental issues and related security problems. Especially by improving water security concept which is accepted as an important tool for ensuring social, political, economic and environmental stability, it is possible to set new regulations for management and protection of water resources. Moreover, regarding transboundary waters which have been at the focus of security and conflict studies, it is argued that ecological security approach would deepen cooperation instead of conflict between riparian states, and also improve the natural condition of watercourses as ecological entities (Atvur: 239; Swain 2012; Paisley et al.).

In this perspective, Atvur analyzes, the Nile Basin as a transboundary river with its potential of conflict and cooperation is examined in order to discuss the possibilities and difficulties to elaborate ecological security. It is obvious that transboundary water issues have generally been linked to state politics or positions regarding state interest, even though international conventions suggest a balanced structure considering ecological priorities, social development and state's sovereignty. The Nile case shows that despite conflicts or disagreements between riparian states, transboundary cooperation with the aim of environmental protection could be built and it can be functional for solving the transboundary problems. Howev-

er, whilst there are no coercive mechanisms or binding regulations towards cooperation and protection, different challenges to the ecological integrity and security in the region continue (Atvur: 239-240).

Even though the riparian states' interests have mostly been controversial, Atvur insists, transboundary impacts of ecological degradation and interconnection between ecological, socio-economic and political problems necessitate the cooperation and elaboration of a common perspective. It could be suggested that ecological security which considers natural resources as an independent entity and aim to ensure the safety of common interests, would help to solve existing problems in transboundary basins through the cooperation (Atvur: 240).

In sum, Atvur concludes, cooperation between riparian countries instead of competition would be an important step towards conservation, equitable sharing and inheritance to next generations of these vital resources. Ecological security of the transboundary river maintained by cooperation could become the keystone of egalitarian, ecological and fair regime that would ensure equitable use of water resources. Hence, if security concerns prioritize interdependent ecological problems instead of states' interests or strategic superiorities, cooperation in transboundary basins might solve ecological, socio-economic and political problems, contribute to ensure regional stability and peace between riparian states, and protect ecological integrity of the transboundary resource. Adoption of ecological security approach by riparian states could transform political choices towards common interests and cooperation for sustainable protection of natural resource and peace at the basin level as well (Atvur: 240).

## V. Conclusions

Global climate change will pose a wide range of challenges to freshwater resources, altering water quantity, quality, system operations, and imposing new governance complications. For countries whose watersheds and river basins lie wholly within their own political boundaries, adapting to increasingly severe climate changes will be difficult enough. When those water resources cross borders, affecting multiple political entities and actors, sustainable management of shared water resources in a changing climate will be especially difficult. Shared waters can be a source of conflict, but they can also be a source of cooperation and negotiation. Future pressures, such as population and economic growth and climate change, could increase tensions, even in areas that in the past have been characterized by cooperation.

Yet, shared challenges may also be a platform for developing new institutional arrangements to plan for the future. Joint monitoring programs can improve cooperation among nations and data collection capacities. This exchange of information provides a number of benefits, including expanding and deepening our understanding of climate change impacts and vulnerabilities, and improving hydrological and socioeconomic models. Such programs should include water flow and a range of water-quality parameters. Additionally, early warning systems should be developed in order to reduce the impacts of extreme events. Riparian countries should work on common scenarios and models to develop a joint understanding of possible impacts. Transboundary cooperation can broaden our knowledge base, enlarge the range of measures available for prevention, preparedness and recovery, and so help identify better and more cost effective solutions.

Now the very famous "Egypt is a gift of the Nile." (Herodotos, B.C. 5C) should be changed

to “The Nile basin countries are gifts of the Nile” (A.D. 21C).

**[Notes]**

1) This article is based on the paper titled ‘Intensifying Global Natural Resource Conflicts, Climate Change, and Introducing International Environmental Court’, and presented at the 75th Annual Meeting of the American Society of Criminology, 13-16 November 2019, San Francisco, CA, U.S.A.
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3) Although the author arranged the on-the-spot investigation of the Nile basin to visit some places and institutes in August 2019, Japanese Ministry of Education warned us for the danger in front of us: deadly outbreak of Ebola in Democratic Republic of Congo and a part of Republic of Uganda. As the author could not visit there, this research is based on not the field research but the literature research.
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**[References]**

Abdelhady, D., K. Aggestam, D.-E. Andersson, O. Beckman, R. Berndtsson, K. B. Palmgren, K. Madani, U. Ozkirimli, K. M. Persson, and P. Pilesjö (2015). The Nile and the Grand Ethiopean Renaissance Dam: Is there a Meeting Point between Nationalism and Hydrosolidality? *Journal of Contemporary Water Research and Education* 155: 73–82.

Abebe, D. (2014). Egypt, Ethiopia, and the Nile: The Economics of International Water Law. *Chicago Journal of International Law* 15(1): 27–46.

Abdellatif, M. (2015). *Water Management in Africa: Nile River Basin Case study and the modern water disputes*. Hamburg: HafenCity Universität.

Ahmad, I. (2018). Conflict over Common Property Resources (CPRS) – Global Strategies of Water Management. *International Research Journal of Human Resources and Social Sciences* 5(12): 1–17.

Ahmed, A. T., and M. H. Elsanabary (2015). Hydrological and Environmental Impacts of Grand Ethiopian Renaissance Dam on the Nile River. *Eighteenth International Water Technology Conference, IWTC18, Sharm ElSheikh, 12–14 March 2015*. 336–347.

Al Hajjaji, S. A. D. (2013). The long empty canyon: A study of the old/new legal problems of the Nile basin. *Journal of Water Resources and Ocean Science* 2(5): 141–154.

Atvur, S. (2019). Transboundary Rivers within Ecological Securityperspective: The Nile River Case. *Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, sayi 35, Denizli: 227–243.

Bodin, D. L. *On the ‘Real’ Nile Question: Confronting Riparian Hydropolitics and Wrangling for Dominance*. The Pennsylvania State University.

Bruce, S. (2016). An International court for the environment? *Climate 2020*. 64–6

Chelkeba, A. (2018). The Influence of the UN Watercourses Convention on the Development of the Nile River Basin Cooperative Framework Agreement (CFA). *Mizan Law Review* 12(1): 165–190.

Cooley, H., J. Christian-Smith, P. H. Gleick, L. Allen, and M. Cohen (2009). *Understanding and Reducing the Risks of Climate Change for Transboundary Waters*. Oakland, California: Pacific Institute.

Di Nunzio, J. (2013). *Conflict on the Nile: The future of*

*transboundary water disputes over the world's longest river*. Future Directions International.

Grandi, M. (2016) *Hydropolitics in Transboundary Water Management: Conflict, Cooperation and Governance along the Nile River*. Pisa: Scuola Superiore Sant'Anna di Studi Universitari e di Prefezionamento.

Ibrahim, A. M. (2011). The Nile Basin Cooperative Framework Agreement: The Beginning of the End of Egyptian Hydro-Political Hegemony. *Missouri Environmental Law and Policy Review* 18(2): 283–313.

Kliot, N., D. Shmueli, and U. Shamir (2001). Institutions for management of transboundary water resources: their nature, characteristics and shortcomings. *Water Policy* 3: 229–255.

Martens, A. K. (2011). *Impacts of Global Change on the Nile Basin: Options for Hydropolitical Reform in Egypt and Ethiopia*. International Food Policy Research Institute.

McKenzie, S. O. (2012). Egypt's Choice: From the Nile Basin Treaty to the Cooperative Framework Agreement, an International Legal Analysis. *Transnational Law and Contemporary Problems* 21: 571–599.

Mekonnen, D. Z. (2010). The Nile Basin Cooperative Framework Agreement Negotiations and the Adoption of a 'Water Security' Paradigm: Flight into Obscurity or a Logical Cul-de-sac? *The European Journal of International Law* 21(2): 42–440.

Menga, F. (2017). Hydropolis: Reinterpreting the polis in water politics. *Political Geography* 60: 100–109.

Mohamed, Y., and M. Loulseged (2008). *The Nile Basin Water Resources: Overview of Key Research Questions Pertinent to the Nile Basin Initiative*. Colombo, Sri Lanka: International Water Management Institute.

Mostafa, H., H. Saleh, M. E. Sheikh, and K. Kheireldin (2016). Assessing the Impacts of Climate Changes on the Eastern Nile Flow at Aswan. *Journal of American Science* 12(1): 1–9.

Nielsen, M. D. (2015) *The Water of the Nile: Ethiopia Challenging Regional Hydo-Hegemony*. Copenhagen: Center of African Studies, University of Copenhagen.

Obengo, J. O. (2016). Hydropolitics of the Nile: The case of Ethiopia and Egypt. *African Security Review* 25(1): 95–103.

Okascha, R. (2012). *Water Scarcity and Regional Security in the Nile Basin*. Marburg: Philipps-Universität Marburg.

Paisley, R. K., and T. W. Henshaw (2013). Transboundary governance of the Nile River Basin: past, present and future. *Environmental Development* 7: 59–71.

Petersen-Perlman, J. D., J. C. Veilleux, and A.T. Wolf (2017). International water conflict and cooperation: challenges and opportunities. *Water International* 42(2): 1–16.

Rani, N. (2018). Sustainable Development and Water: Source of Conflict or Opportunity for Cooperation. *American Research Journal of Humanities and Social Sciences* 4: 1–11.

Swain, A. (2008). Mission not yet accomplished: Managing Water Resources in the Nail River Basin. *Journal of International Affaires* 61(2): 201–214.

Swain, A. (2011). Challenges for water sharing in the Nile basin: changing geo-politics and changing climate. *Hydrological Sciences Journal – Journal des Sciences Hydrologiques* 56(4): 687–702.

Swain, A. (2012). Global climate change and challenges for international river agreements. *International Journal of Sustainable Society* 4(1/2): 72–87.

Takemura, N. (2010). Water Crisis, Water Justice and Water Democracy: One Aspect of Struggle for 'Green Social Justice' as 'Applied Complexity Green Criminology'. *Toin University of Yokohama Research Bulletin* 23: 45–65.

Tawfik, R. (2015) *Revisiting Hydro-hegemony from Benefit-Sharing Perspective: The Case of the Grand Ethiopian Renaissance Dam*. Bonn: Deutsches Institut für Entwicklungspolitik.

Teshome, R. G. (2015). The Disagreement on Utilization of Nile River-Ignited by the Construction of the Grand Ethiopean Renaissance Dam (GERD): A Quest for A Legal Regime. *International Journal of Legal Studies and Research* 4(2): 123–147.

Tsega, A. H. (2017). *The Geopolitics of Water Negotiations succeeding the GERD Projection in the Nile River Basin: The Case of Ethiopia, Egypt, and Sudan*. Ihh Insani ve Sosyal Arastirmalar Merkezi/ Ihh Humanitarian and Social Research Center.

Waslekar, S., and I. Futehally (2015). *Water Cooperation Quotient*. Mumbai: Strategic Foresight Group.

Woldetsadik, T. K. (2017). The Nile Basin Initiative and the Cooperative Framework Agreement: Failing Institutional Enterprises? A script in Legal History of the Diplomatic Confront (1993–2016). *Mizan Law Review* 11(1): 196–228.

Wouters, P. (2013). *International Law – Facilitating Transboundary Water Cooperation*. Stockholm: Global Water Partnership.

Yimer, M. (2015). The Nile Hydro Politics: A Historic Power Shift. *International Journal of Political Science and Development* 3(2): 101–107.

Zedan, B. A. (2013). Water Conflicts in the Nile River Basin: Impacts on Egypt Water Resources Management and Road Map.