Prospects of Ethiopia's Energy Led Integration with the Horn of Africa: Opportunities and Challenges[1]

Abera Tadesse*

Injibara University, College of Social Sciences and Humanities, Department of Civics and Ethical Studies

Article History: Received: November 25, 2021; Accepted: May 1, 2022; Published: December 16, 2022

Abstract: Energy led cooperation has been seen in different parts of the world as a strategy of attaining energy security and regional economic integration. Since recently, it has been also seen in different regions of Africa including the Horn of Africa (hereafter HoA). Energy cooperation in the HoA has been regarded as a good step to promote relations between countries in the region in various forms. This study has two separate but interrelated objectives. Firstly, it assesses Ethiopia's energy led integration efforts with the HoA and major opportunities therein. Secondly, the paper discusses the key challenges of Ethiopia's energy led integration efforts with the region. The study uses both primary and secondary data. To substantiate the analysis, theoretical assumptions of Realism, Functionalism, and Neo-Functionalism are utilized. The findings of this study indicates that Ethiopia's energy led cooperation schemes with the HoA are increasing from time to time and have a good prospect for further regional energy integration. Thus, Ethiopia's energy led cooperation with the region is incrementally and functionally becoming more in line with theories of functionalism and neo-functionalism. However, it also asserts that political instability of the region, lack of trust among countries, and hydro politics of the Eastern Nile basin inform that assumptions of realism are also important to explain energy based integration in the HoA region. Nonetheless, if due attention is given by political elites, energy led integration schemes in the HoA are with great potentials in addressing the unresolved political, economic and social crises of the region.

Keywords: Energy; Integration; Horn of Africa

[1]This work is derived in large part from MA thesis submitted to the Department of Political Science and International Relations (PSIRs), Addis Ababa University in 2021 in partial fulfilments of the requirements for the award of MA Degree in International Relations and Diplomacy.

*Corresponding author. E-mail: tadesseabera21@gmail.com
ISSN: 2521-2192 (print), 2959-149X (electronic)

1. Introduction

Energy[2] is increasingly becoming essential in day to day activities of human beings in modern times. Energy plays key role in a given country's economic and social development. However, access to energy is becoming a serious issue and pressing challenge in developing countries around the world. As a result, countries all over the world are progressively focusing on energy led cooperation as a tactic for achieving sustainable socio-political and economic development (Economic Commission for Africa(ECA), 2010: xix; Samson and Halidu, 2014). For instance, energy cooperation has long existed in North America where energy markets across the United States, Canada, and Mexico are highly integrated (United States Government Accountability Office [GAO], 2018). Energy led cooperation was mostly seen to have political and economic goals as in the case of integration strategies of the early European Coal and Steel Community (ECSC). There is increasing energy cooperation in Latin America the continent which has plentiful hydro and hydrocarbon resources, with some countries in excess and others in deficit (David and Martin, 2012). Energy led cooperation has also been made in different parts of Africa mostly in the forms of regional electric power pools.

Energy cooperation is critical for growing regions like the Horn of Africa (HoA)[3] sub-region, which is experiencing rapid population growth and energy supply shortages and distribution bottlenecks.[4] Despite its abundance of renewable and nonrenewable energy resources, the HoA has one of the world's lowest electrification rates (United States Energy Information Administration, 2019). Moreover, the HoA is one of the most unstable and insecure areas in the world (Tadesse, 2004; Lata, 2004; Healy, 2011). The name HoA itself is mostly associated with disease, frequent famine, poverty, border dispute, and civil war (Ashine, 2012). The region therefore, would benefit greatly from this aspect of functional energy cooperation that would contribute at least to minimizing its multifaceted problems and bringing sustainable regional development (Samson and Halidu, 2014).

Energy cooperation in the HoA has been seen as a good promise to promote relations among countries and regional economic integration in various forms such as road, pipeline, railway and port linkages (Tadesse, 2004). According to Verhoeven (2011), regional energy integration in the HoA could also help to avoid conflict among countries and build mutual trust and cooperation.

As of rationales and expectations, the most recent years have witnessed energy led cooperation efforts in the region. Ethiopia is the pioneer in establishing energy based cooperation with the Horn countries. For instance, Ethiopia's electric power system is interconnected with Sudan and Djibouti, and the one with Kenya is currently at its final stage. There are also additional and proposed power system interconnection projects between Ethiopia and the Horn countries. Other than electric power interconnection, natural gas transmission line, road, railway, and port projects which are expected to boost existing level of Ethiopia's energy cooperation with HoA are underway in the region.

This paper examines the existing status of Ethiopia's energy led integration with the HoAand the prospects for further regional energy integration. To date, there have been some contributions to the literature that have discussed and promised the importance of Ethiopia's energy led integration with the HoA for promoting regional relations (Tadesse, 2004; Verhoeven, 2011; Bayeh, 2014). Tadesse (2004) noted that Ethiopia's energy led integration with the HoA has been seen as a good promise to transform relations between states, and acts as an incentive to other areas of cooperation such as infrastructural and port linkages. Verhoeven (2011), in his part, asserts the importance of regional cooperation around oil and Ethiopia's hydro in the HoA region. Bayeh (2014) also raised similar argument and examines the role of Ethiopia's hydro dam constructions in boosting regional relations. However, no

[2] In this article, energy means renewable and non- renewable resources that used to generate power. Renewable energy can be defined as energy used without reducing its availability in the future. In contrast, non-renewable energy is energy sources that are finite and run out through time or will not be replenished easily (International Renewable Energy Agency, 2018).

[3]For the sake of this paper, the Horn of Africa region geographically encompasses Ethiopia, Eritrea, Djibouti, Somalia, Kenya, South Sudan, and Sudan (i.e. the IGAD region except Uganda).

[4]Gosaye Mengiste, senior Ministry of Water, Irrigation, and Energy (MoWIE) energy advisor to the minister, Addis Ababa, April 9, 2021)

comprehensive study has yet been conducted in examining the achievements made so far by Ethiopia's energy cooperation schemes with the Horn countries. This paper comes up with the new findings different from earlier contributions by exploring the existing status of Ethiopia's energy cooperation with the HoA and the prospects for further energy led integration. The paper also examines opportunities to and challenges for further Ethiopia's energy led integration efforts with the region.

This article is organized in four main sections. The first section is the introduction part. The second section discusses the research methods and sets out the theoretical frameworks that could help to discuss the findings of the study. The third examines the existing status of energy based cooperation schemes of Ethiopia with the HoA countries by looking in detail at the opportunities surrounding energy led integration efforts in the region and the key challenges therein. The fourth section is conclusion and recommendation.

2. Research Methods

The study has employed qualitative research method. Qualitative research, as described by Goundar (2012), is concerned with qualitative phenomena affecting quality. It is non-numerical, descriptive, reasoning-based, and verbal. Its goal is to determine the significance, emotion, and description of a situation. In qualitative research, it's critical to look into questions about people's objectives and goals, or about a specific circumstance (Cropley, 2019).Therefore, prospects of Ethiopia's energy led integration with the HoA can be clearly understood through qualitative research and qualitative data.

The author utilized both primary and secondary sources to gather the necessary data. Key informant interview with pertinent bodies and personalities has been conducted as a key instrument of data collection. To this end, the researcher had conducted in-depth interviews with key informants from Ministry of Water, Irrigation and Energy (MoWIE), Ethiopian Electric Power (EEP), Eastern Africa Power Pool (EAPP), Ministry of Foreign Affairs (MoFA) and scholars at Addis Ababa University (AAU) and Institute of Peace and Security Studies (IPSS). Books, journals, articles, reports, official documents, newspapers, magazines and internet sources have been consulted as secondary sources. Since the data collected through key-informant interviews and document analysis are largely qualitative (Creswell, 2007), the study employed a qualitative content analysis method.

Table 1. Summary of research method and data collection

Data on	Type	Source	Collection method	Size	Data collection time
Ethiopia-Djibouti power system interconnection	Secondary	World Bank	Online download	7docs	Sept, 2021
Ethiopia's hydro power capability	Secondary	MoWIE/EEP official doc.	Document review	6 docs	Aug, 2021
Ethiopia Kenya power system interconnection	Secondary	World Bank Magazines	Online download	5 docs	Oct, 2021
Ethiopia- Sudan power system interconnection	Secondary	World Bank AfDB/MoWIE	Online download document review	6 docs	July, 2021
Ethiopia-Djibouti natural gas pipeline	Secondary	Reports, magazines	Online download	4 docs	Feb, 2021
The Horn of Africa initiative	Secondary	WB/AfDB official doc.	Online download	8 docs	May, 2021
Opportunities and challenges surrounding Ethiopia's energy led integration	Primary	Energy and hydro politics experts	Key informant interviews	8experts	Sept-Dec, 2021

Theoretical perspectives

In this study, three regional integration theories namely Realism, Liberalism and Functionalism/Neo-Functionalism are selected to explain existing achievements of Ethiopia's energy led integration with the HoA and opportunities and challenges thereof. Hence, the paper first looks at their respective assumptions with an attempt to link with the topic of study.

Cooperation among states and regions has long been a challenging issue to explain for realist school of thought (Donney, 2005). This school of thought considers the state to be the only significant player in the international system, with distinct national interests (McDonald, 2005). This theory assumes that states are fundamentally skeptical of one another, and that there is a constant fight for power and supremacy, leaving little place for trust or cooperation (Donney, 2005). According to the realist premise, meaningful energy cooperation among the Horn countries will be difficult to create since there will be no mutual trust between countries in the region, and most states will act unilaterally to promote their own national interests.

Liberalism, on the other hand, is positive about the possibilities of establishing peaceful relations between states- claiming that governments must work together more closely to avoid numerous dangers and evils (Rourke, 2007). Cooperation and interdependence among states, according to liberal assumptions, can provide a competitive advantage and make interstate competition easier (Rourke, 2007). Institutional liberalism, for example, contends that institutions are important because of their influence on political outcomes, and that institutions serve as a buffer between actors' preferences and policy outcomes (McDonald, 2005). According to this view, Ethiopia can create harmonious connections with the Horn countries, readily engage in energy-led cooperation, and benefit from institutional structures to aid its efforts.

Functionalism/Neo-Functionalism is primarily concerned with states' common interests and needs (Obydenkova, 2006). The functionalist assumptions emphasized a practical approach to issue solving-claiming that this could be accomplished by prioritizing functional areas of common interest and that proper administration of things would result in more appropriate outcomes (McDonald, 2005). As a result, functionalists regard regional integration as being of a technical and non-political nature, and they secretly believe that the process of integration may be carried out without the sanctioning of power (McDonald, 2005). What makes neo-functionalism different from functionalism is that this theory is based on the assumption that the forces pushing regional integration frontward are endogenous and self-reinforcing (Obydenkova, 2006). The neo-functionalist viewpoint believes that regional integration is achieved through gradual and incremental collaboration among players, with the end result that cooperation in one economic and social sphere may eventually spill-over into other economic, social, and political fields (McDonald, 2005). In neo-functionalist interpretations of regional integration, terms like 'spillover,' 'incremental integration,' and 'ramification' are highly essential. (Hass, 1958; cited in Ashine, 2012). Especially, 'spillover' is important because it appeared to convey much of the explanatory weight in the neo-functionalism account of how integration deepens moves from one sector to another (Ashine, 2012). Neo-functionalists also mostly place major emphasis on the role of non-state actors and external actors (i.e., regional and international organizations) in a given regional cooperation of functional issues (Ashine, 2012). From this point of view, for example, we can say that the neo-functionalist assumption promotes the role of development partners and donors such as Power Africa (USAID)[5], African Development Bank (AfDB), European Union (EU), and World Bank (WB) in providing the dynamic for Ethiopia's energy led integration with the HoA.

[5] Power Africa is a U.S. Government Led partnership coordinated by the U.S. Agency for International Development (USAID). It has an aim of bringing cleaner, more efficient electricity to sub-Saharan Africa. For more see https://www.usaid.gov/powerafrica/partners

3. Result and Discussions

3.1. The Status of Energy based Cooperation of Ethiopia with the HoA

There are many reasons for Ethiopia and the countries in the Horn of Africa to engage in energy led cooperation initiatives. Even though the region is endowed with renewable and nonrenewable energy resources, the HoA regularly suffers from deficits in the supply and distribution of energy.[6]The region has one of the lowest rates of electrification in the world, and energy availability is one of the Horn's biggest challenges to social and economic development (United States Energy Administration Agency, 2019). Because there is a shortage of power within Horn countries, greater cross-border trade in hydro-electric power is a potentially effective way of connecting excess capacity in one country to the other (Medinilla, Byiers and Karaki, 2019). This is why energy cooperation was mainly established between Ethiopia and the Horn countries. Additionally, it is also driven by an aim of achieving cooperation in economic, social and political issues.[7]

However, energy cooperation in this region is a recent phenomenon and it is mostly power system interconnection in its kind.[8]Power Purchase Agreements (PPAs) were started in mid-2000s and power trade was functional in early 2010s. Unlike other countries in the region, Ethiopia's main potential source of energy is hydro-electric power, which makes costs cheaper than elsewhere in the region.[9] Motivated by this potential, Ethiopia is seeking to advance a market for its energy exports and the neighboring countries are, in turn, looking for cheaper energy resources (Medinilla *et al*., 2019). This convergence of interests has led Djibouti, Kenya and Sudan to enter into power purchase agreements with Ethiopia (World Bank [WB], 2020). As part of these agreements, power-grid interconnection projects have been launched and the Ethiopian grid system is now connected with Djibouti and Sudan, the one with Kenya being under construction (Gebrehiwot, 2016).

3.1.1.Ethiopia-Djibouti power system interconnection

In terms of regional power cooperation, the Ethiopia-Djibouti power system interconnection was a pioneer in the HoA. The Ethiopia-Djibouti interconnection project aimed to promote electric power exchange between the two countries and enhance electricity access at a low cost. The Power Purchase Agreement (PPA) initially was signed in April 2006 and was amended in March 2011 between Ethiopian Electric Power Corporation (EEPCO) and Electricité de Djibouti (EdD) (African Development Fund [AFD], 2011). A first power system interconnection between Ethiopia and Djibouti which has been providing about 80 percent of total power demand in Djibouti was completed and operational in May 2011 (WB, 2020).Since this period, Ethiopia and Djibouti are tied by a first double circuit 230 kilo volt (kV) double circuits electric power transmission lines (WB, 2020).

In order to increase the consistency of power supply to Djibouti, the two countries decided for the second Djibouti-Ethiopia Power System interconnection project (WB, 2020). The second Djibouti-Ethiopia power interconnection project is a construction of a new double circuit 230 kV transmission line from Galafi (Ethiopia) to Nagad (Djibouti) of 190 km length. Each circuit is expected to have a rated electric power of 200 Million Volt-Amps (MVA) (WB, 2020).After the completion of the second power system interconnection project, capacity for power trade would increase between Ethiopia and Djibouti from the current 80MW to 220MW (equaling almost to a three-fold increase in power trade) with enhanced capability and reliability of supply, reserve capacity management, and operational efficiency (WB, 2020).

[6]Yiheyes Eshetu, senior MoWIE energy official, Addis Ababa, April 8, 2021
[7]Asfaw Setta, senior Ministry of Foreign Affairs (MoFA) expert on trans-boundary resources affairs, Addis Ababa, May 31, 2021 and
Gosaye Mengiste, senior Ministry of Water, Irrigation, and Energy (MoWIE) energy advisor to the minister, Addis Ababa, April 9, 2021)
[8]Andarege Gizaw, senior Ethiopian Electric Power (EEP) energy official, Addis Ababa, April 22, 2021
[9]Yiheyes Eshetu, senior MoWIE energy official, Addis Ababa, April 8, 2021

This bilateral power system interconnection between Ethiopia and Djibouti goes in line with the argument of liberalism and functionalism that there is a high possibility of cooperation between states over common interests and needs shared by them. Likewise, both countries managed to agree on some terms of bilateral cooperation and established power system interconnection among them.

3.1.2. Ethiopia-Sudan power system interconnection

The Ethiopia-Sudan power system interconnection was the second in the HoA in terms of regional power cooperation next to the Ethiopia-Djibouti power system interconnection. It was aimed at further consolidation of economic relations between the two countries by the construction of 230 kV transmission line between their power systems (EEPCO and NEC, 2009). The Power Purchase Agreement (PPA) had been concluded in August 2009 on the foundation of the previously "Construction Agreement" signed by Ethiopian Electric Power Corporation (EEPCO) and National Electricity Corporation of the Sudan (NEC) in July 2008 (EEPCO and NEC, 2009).

The first power system interconnection between Ethiopia and Sudan was completed and started in 2013. The Ethiopia-Sudan Power Systems Interconnection goes for 321Km, connecting Gonder, Shehedi, and Metema in Ethiopia with Gedaref State in Eastern Sudan. Constructed with 35 million dollars, it has a transmission capacity of 100MW of electric power (Addis Fortune, 2018; Horn of Africa Initiative, 2019). Since then, the two countries remained connected by a first double circuit 230 kV electric transmission line.

The current maximum energy export to Sudan is not more than 100 MW despite the growing potential of Ethiopia and demand in Sudan (Horn of Africa Initiative, 2020; Ethiopian Herald, 2020). Therefore, in addition to existing power interconnection, a 500 kV double circuit line interconnector are planned between the two countries (Wyatt*et al.,* 2015). In 2018 Ethiopia and Sudan exchanged a bilateral agreement for the installation of the second power interconnection line, which could enable Ethiopia to provide 1000MW of electric power to Sudan (Horn of Africa Initiative, 2020). The proposed interconnection line runs from the Grand Ethiopian Renaissance Dam (GERD) to Khartoum Sudan passing through Rabak, a city in South-Eastern Sudan (Horn of Africa Initiative, 2020). The feasibility study of the project was carried out by Centro Elettrotecnico Sperimentale Italiano with 2.5 million Euros paid by the two countries (Addis Fortune, 2018; Horn of Africa Initiative, 2020; Ethiopian Herald, 2020).

Here also the bilateral power system interconnection between Ethiopia and Sudan strengthens the argument of liberalism and functionalism that cooperation between states is much more possible over the interests and needs the two countries share in common. However, it is expected that the recent Ethiopia-Sudan border dispute and the hydro politics of Eastern Nile basin will challenge this initial energy cooperation, which amounts to the assumptions of the realist thinking.

3.1.3. Ethiopia–Kenya power system interconnection project

Another power system interconnection project in the region is between Ethiopia and Kenya. This Project was considered by governments of the two countries as a sign to future energy trade between the two countries and in the region as part of the Eastern Africa Power Pool (EEPCO and KETRACO, 2012). On May 7, 2006 the two countries signed a memorandum of understanding that stressed the need to recognize the comparative advantage of Ethiopia over Kenya in terms of hydropower generation, and cooperate technically in power generation, transmission (AfDB, 2011). Following the memorandum of understanding, the two countries have reached an agreement to implement a power interconnection project between the two power systems (AfDB, 2011).

The project contains establishing power transmission facilities (power transmission line and substations) between the two countries to export up to 2000 MW of electricity (EEPCO and KETRACO, 2012). The finally-adopted transmission line is nearly 1045 km long (433 km in Ethiopia and 612 km in Kenya) the longest in East and Central Africa (African Energy Portal, 2019).

When completed the Ethiopia-Kenya power system is expected to maximize the regional power trade in the HoA and Eastern Africa. The development objective of the project is to enhance power trade and regional integration, add to social and economic development of the East African countries, and lessen poverty in those countries (EEPCO and KETRACO, 2012). The project targets at improving the supply of electricity in Kenya and other Eastern Africa Power Pool (EAPP) countries in the long run by exporting power from Ethiopia (Africa Development Fund, 2011).The Ethiopia-Kenya power system interconnection project is also a regional scheme that has the potential of developing into a vital part of electricity power exchange in Africa.[10] The proposed high voltage transmission line linking Ethiopia to Kenya will form a major part of the interconnection and could serve to close a major gap on the high voltage grid within the Eastern Africa Power Pool countries (EEPCO and KETRACO, 2012).

The bilateral power system interconnection between Ethiopia and Kenya also strengthens the assumption of functionalism/neo-functionalism that cooperation between states is possible over specific-functional areas and that can spill-over to other areas of economic and political cooperation and integration.

3.1.4.Ethiopia-Djibouti natural gas pipeline construction project

In addition to the existing power system interconnections and projects mentioned above, Ethiopia has got other energy cooperation initiatives with the HoA. Ethiopia- Djibouti natural gas pipeline project which are expected to enhance the regional energy led cooperation and regional economic integration is under construction in the region.

Ethiopia has extensive gas deposits in its Eastern part. However, being landlocked it is unable to extract and export the resource for the long period of time. In February 2019 Ethiopia and Djibouti signed a memorandum of understanding for the building of natural gas pipeline from the Hilala and Calub gas fields in Ethiopian Somali region- to a new port east of Djibouti City in Djibouti (Xinhua, 2019; Horn of Africa Initiative, 2019), which will help Ethiopia to export natural gas through the Port. This comes over a year after China's POLY-GCL Petroleum Group Holdings[11], an energy firm, signed a Memorandum of Understanding with the Djibouti government to spend US$4bn in natural gas infrastructure (Horn of Africa Initiative, 2019). This latest agreement paved the way for construction of a 767-km natural gas pipeline (most of which will be in Ethiopian territory) to begin in 2019 (The Economist, 2019). The natural gas pipeline is expected to transport 12bn cubic meters of natural gas annually. The liquefaction plant has a target annual capacity of 10 million tones of liquefied natural gas (The Economist, 2019; Horn of Africa Initiative, 2019). Currently the natural gas pipeline project is under construction and when completed it is expected to enhance the existing regional energy cooperation and mutual benefits of the two countries.

[10] *Ibid*

[11] POLY-GCL Petroleum Group Holdings Limited (“POLY-GCL”) is a Chinese integrated mixed ownership clean energy enterprise specializing in exploration and development, storage, transportation and processing, trading, sales and terminal utilization

Table 2. The energy based cooperation statusof Ethiopia with the HoA

Project name	Year started	Countries involved	Current status	Completion year
Ethio-Djibouti power system interconnection 1	2006	Ethiopia Djibouti	Completed	2011
Ethio-Djibouti power system interconnection 2	2021	Ethiopia Djibouti	Project structuring	-
Ethio-Sudan power system interconnection 1	2009	Ethiopia Sudan	Completed	2013
Ethio-Sudan power system interconnection 2	2017	Ethiopia Sudan	Project structuring	-
Ethio-Kenya power system interconnection project	2016	Ethiopia Kenya	completion stage	-
Ethio-Djibouti natural gas pipeline project	2019	Ethiopia, Djibouti	Initial stage	-

Source: *AfDB, 2011; EEPCO and KETRACO, 2012; EdD and EEP, 2017; WB, 2019; WB, 2020*

3.2. Opportunities Surrounding Energy based Cooperation of Ethiopia with the HoA

Other than the existing achievements, energy based cooperation of Ethiopia with the HoA is surrounded by a number of opportunities. The first opportunity is the completion of Grand Ethiopian Renaissance Dam (GERD). Since recently, Ethiopia has developed an electric power sector and started production on a massive scale (Medinilla *et al*., 2019). The country is one of the rising power production zones in the Horn and Eastern Africa and is currently constructing GERD - an upstream dam and hydro plant along the Abay/Nile River (Medinilla *et al*., 2019). The completion of the GERD will bring a significant importance regarding the energy cooperation efforts of Ethiopia with the Horn.[12] With an energy potential of more than 5100 MW, the GERD would be one of the largest producers of electricity derived from hydro on the African continent (Maupin, 2013). It is expected that GERD's completion will double Ethiopia's power generation capacity and its energy export potential.[13] After the completion of GERD, Ethiopia sets to extend its power export towards South Sudan, Somaliland, and other Horn and Eastern African countries (AU, 2013; Ethiopian Herald, 2020).

According to a senior energy official in Ethiopian Electric Power (EEP)[14], the completion of the GERD alone will be the turning point for further regional energy integration efforts,

> First of all, it will assure in practice that the dam does not harm downstream countries and, in turn, it will lead to mutual trust among countries in the Eastern Nile basin. Secondly, the mutual confidence will help to foster further regional energy integration in the HoA and also in the Nile river basin.[15]

The other opportunity surrounding energy based cooperation of Ethiopia with the HoA is Eastern Africa Power Pool (EAPP).[16] EAPP was established in 2005 by seven Eastern African countries [17](Medinilla*et al*., 2019). The power pool is expected to assist nations in the HoA region in connecting their power systems to the larger market, promoting energy-led integration and regional energy security. Likewise, it will also increase the region's electricity market, and enhance existing bilateral power export agreements into institutionalized and regionalized form (EAPP, 2016).

The third opportunity surrounding energy based cooperation of Ethiopia with the HoA is the Lamu Port-South Sudan-Ethiopia-Transport (LAPSSET) corridor program. LAPSSET is a regional flagship project that aims to build transportation and logistical infrastructure to connect the Horn countries, i.e. Kenya, Ethiopia, and South Sudan (LAPSSET Corridor Development Authority, 2016). The LAPSSET

[12]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[13]Yiheyes Eshetu, senior MoWIE energy official, Addis Ababa, April 8, 2021
[14]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[15]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[16]Daniel Mulatu, senior Eastern Africa Power Pool (EAPP) energy official, Addis Ababa, April 13, 2021
[17]The EAPP was established by seven Eastern African countries: Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda and Sudan.

program includes a number of subsidiary and energy-related projects, including the construction of a crude oil pipeline from Lamu to Isiolo, Isiolo to Nakodok, and Nakodok to Juba (South Sudan). The project also includes product oil pipeline from Lamu to Isiolo, Isiolo to Moyale (Kenya), and Moyale to Addis Ababa (Ethiopia) (LAPSSET Corridor Development Authority, 2016).

These energy-related projects of LAPSSET are expected to play positive role in enhancing energy infrastructure interconnection between the three countries and energy led integration in the HoA region. The project also includes infrastructure corridor for road, rail, pipelines, power transmission, and other projects, as well as an Economic Corridor of 50 kilometers on either side of the infrastructure corridor for industrial investments (LAPSSET Corridor Development Authority, 2016). To this respect, cities are expected to develop along the project corridors and industries will expand in the meantime. These all will necessitate the need for electricity and other energy facilities which will reinforce energy cooperation along the project corridor and the three Horn countries.[18]

The fourth opportunity surrounding energy based cooperation of Ethiopia with the HoA is the Horn of Africa Initiative. The governments of the HoA region have prioritized the development of regional corridors to enhance economic diversification and trade competitiveness, as the key pillars of intervention (World Bank, 2020). The HoA Initiative was launched in October 2019 by the Ministers of Finance of Djibouti, Ethiopia, Eritrea, Kenya and Somalia with the backing of three Development Partners: The African Development Bank, the European Union and the World Bank. Over the next decade, the program aims to invest almost 15 billion USD in the development of economic corridors (transport, energy, and digital), trade, and the promotion of value-added regional value chains in the region (World Bank, 2020).

Power integration through regional energy interconnections and power trading amongst Horn countries is one of the main goals and priorities of the initiative in the HoA.[19]Power system integration projects prioritized by the initiative includes: Power system interconnections between Ethiopia-Somalia, Ethiopia-Eritrea, Ethiopia-Somaliland, and Kenya-Somalia (Horn of Africa Initiative, 2019). The Initiative provides USD 1.84 billion for the HoA energy interconnection and power trade between countries based on prioritized energy projects (Horn of Africa Initiative, 2019). The initiative is expected to alleviate lack of finance in Ethiopia's energy interconnection efforts, and will also enhance the existing status of regional energy cooperation among countries in the Horn into further energy led integration.

These power projects and energy based cooperation status of Ethiopia with the HoA are also expected to promote peace and stability in the region through scalability and "spillover effect" to other areas of cooperation. Experiences around the world illustrate that to achieve regional peace and stability; countries initially create cooperation over specific issues.[20] For instance, energy led cooperation was mostly seen as the political and economic goals as well as the integration strategies of the early European Coal and Steel Community (ECSC), when it was established in 1951.[21] Pioneers of the ECSC (France and Germany) believed that achieving integration in one area of common policy among sovereign states would eventually lead to economic union and peace and security throughout Europe (Dunn, 2012). France was the most instrumental country in the creation of the ECSC.The plan to pool coal and steel resources and submit decisions in these sectors to a supranational High Authority was presented by the French Foreign Minister Robert Schuman to the public on 9 May 1950.The ultimate objective of the plan was to alleviate French concerns that post-war Germany would employ its regained industrial strength as a threat to French autonomy, both in economic and security terms (Rittberger and Glockner, 2012). As of expectation, the European Coal and Steal Community was the first step for the current European Union and political stability of Europe.

[18]Fana G/Senebet (Dr.), senior lecturer at Institute of Peace and Security Studies (IPSS), AAU, Addis Ababa, April 21, 2021
[19]Gosaye Mengiste, senior MoWIE energy advisor to the minister, Addis Ababa, April 9, 2021
[20]Fana G/senebet (Dr.), senior lecturer at IPSS, AAU, Addis Ababa, April 21, 2021
[21]Fana G/senebet (Dr.), senior lecturer at IPSS, AAU, Addis Ababa, April 21, 2021

Energy markets, which in turn enhanced regional security and overall integration, across the United States, Canada, and Mexico are also extensively integrated (United States Government Accountability Office [GAO], 2018). In 2015 alone, energy exports from Canada to the United States totaled USD 53 billion (GAO, 2018). Canada and Mexico- the largest and fourth largest foreign suppliers of crude oil to the United States, respectively, supply almost half of the total US petroleum imports (GAO, 2018). Similarly, regional energy interconnection and transition play a key role in the South American regional economic integration and political stability. The region is an energy-rich region and has abundant hydrocarbon resources, with some countries such as Brazil and Venezuela in surplus and others such as Argentina, Chile and Colombia in deficit (Carrizo and Velut, 2018). These experiences tell us that energy cooperation plays pivotal role in promoting peaceful and cooperative regional relations through accelerating economic integration and expanding infrastructural facilities. Thus, existing energy based cooperation achievements of Ethiopia with the HoA and opportunities for further energy led integration schemes with the HoA will play positive role in enhancing peace and security of the region.

3.3. Challenges Related to Energy based Cooperation of Ethiopia with the HoA

Despite the positive achievements and opportunities discussed above, Ethiopia's energy led integration with the HoA has encountered many challenges. Although the region has witnessed some positive progress of energy cooperation in the past few years, there is no significant economic and political interdependence achieved among states of the Horn by the ongoing Ethiopia's energy led integration process.[22] Rather with growing energy demand, the countries of the region face a number of same old challenges; political instability, lack of mutual trust, regional hydro and geopolitical competitions between different actors. This subsection thus critically assesses key challenges that threaten the current Ethiopia's energy cooperation efforts and prospects of further energy led integration with the HoA.

3.3.1. Political instability of the region

Throughout history, the HoA region is among politically unstable and insecure areas in the world. Civil war based on ethnic and clan divisions is a common phenomenon elsewhere in the region. Border dispute and subsequent war was also common among countries in the Horn. Ethiopia-Eritrea, Ethiopia-Somalia, and Sudan-South Sudan conflicts are examples for this manifestation. Some countries in the region still do not have strong statehood structure and are politically unstable. Undoubtedly, this has significantly affected the Horn's regional economic integration in general and Ethiopia's energy cooperation efforts in particular. During interview session, one long-time MoWIE energy official clearly noted:

> The long existed political instability and mutual distrust among states in the Horn is one key challenge posed on Ethiopia's energy led integration efforts with the Horn already started in 2000's. What if Somalia was politically stable in the last 20 years? What if Ethiopia and Eritrea have been good neighbors in the last 20 years than enemies? Countries would have been interconnected with Ethiopia's electric power grid as the case of Ethiopia-Djibouti and Ethiopia-Sudan power system interconnection….. The current Ethiopia's energy led integration status would have been more than what it is today.[23]

Still today there is no significant change in the HoA security in various aspects. Most importantly, political instability and civil war remain to be the region's peculiar characteristic features. Recently, there is domestic political instability and uncertainty in Ethiopia and Sudan.[24] Moreover, there is also border dispute between Ethiopia and Sudan, which no doubt will negatively affect the existing regional energy cooperation and prospects of energy led integration.[25] This specific challenge also supports the

[22]Gosaye Mengiste, senior MoWIE energy advisor to the minister, Addis Ababa, April 9, 2021
[23]Yiheyes Eshetu, senior MoWIE energy official, Addis Ababa, April 8, 2021
[24]Fana G/senebet (Dr.), senior IPSS lecturer, AAU, Addis Ababa, April 21, 2021
[25] Asfaw Setta, senior MoFA expert on trans-boundary resources affairs, Addis Ababa, May 31, 2021

arguments of realism/neo-realism that regional integration among states is difficult to promote given states are always pursuant to maximize their own national interests at the expense of others.

3.3.2.Lack of mutual trust

Trust and cooperation cannot be dissociated from such energy led cooperation schemes. Unfortunately, there is no mutual trust between countries in the Horn in the existing regional energy cooperation. As an informant put it, if there is lack of mutual trust among states, there will be no willingness to go to the regional energy cooperation in good faith, and that will hamper the regional energy integration ambitions.[26] As a result, countries in the region are not collaborating genuinely in power generation and transmission investment with Ethiopia.[27] Rather, they have adopted inward looking policies aimed at planning and developing their own power systems in an isolated manner with a view to satisfying their national energy demand growth (EAPP, 2015). Moreover, this will result in preference for bilateral over regional agreements in the energy deal (Medinilla *et al*., 2019). This specific challenge (i.e. lack of mutual trust between countries) also supports the arguments of realism that regional integration among states is difficult to explicate because there is no trust and political will among countries in the region.

3.3.3.Hydro politics of the Eastern Nile basin and competition in EAPP

For centuries, Egypt, Sudan and Ethiopia have fought over the Blue Nile basin through shifting alliances and against the backdrop of global politics and local resource realities (Verhoeven, 2011). Thus hydro politics was a long existing phenomenon in the Nile River resource, but it has heightened following the decision of Ethiopia to construct a mega hydro dam over its Blue Nile River (Abay River). Since then, there have been disputes and concerns by downstream riparian states such as Sudan and Egypt. According to Maupin (2013), Ethiopia's approach in constructing the GERD raises challenges mainly for downstream riparian states' hydro hegemony[28] in the Nile Basin.

Egypt is always believed has an interest to block Ethiopia's hydro power generation strategies regarding the Nile (Medinilla *et al*., 2019), and also other water resources in Ethiopia.[29] It is because Egypt wants to challenge Ethiopia's influence over the HoA and EAPP in terms of power generation and export. Egypt's fear is clear, according to a key informant, that if Ethiopia emerged strong regional power, its long standing hydro hegemony over the Nile River resource and its political influence in the North Eastern Africa region would be challenged.[30] Egypt has always been an interested in protecting its downstream position on the Nile from any upstream hydropower development or ensuring that the development of hydropower resources in the Nile Basin is limited (Medinilla *et al*., 2019). For example, it resigned from the EAPP in 2016 due to its opposition to the construction of GERD.[31]

The dispute over the GERD and hydro politics of the eastern Nile basin will have its own negative impact on the existing Ethiopia's energy led integration efforts with the HoA. One of the senior lecturers in hydro politics from AAU noted this:

> The recent dispute over GERD and the Nile river resources tells us that unilateralism prevails than cooperation…if unilateralism prevails, cooperation among states will decrease and conflict will arise. Conflict is destructive to all parties in, and even to the environment and the river water resources….thus no doubt it will impede Ethiopia's energy integration efforts with the Horn and Northeastern Africa.[32]

[26]Gosaye Mengiste, senior MoWIE energy advisor to the minister, Addis Ababa, April 9, 2021
[27]Demeke Achiso (Dr.), senior lecturer on hydro politics at Political Science and International Relations (PSIR) department, AAU, Addis Ababa, June 3, 2021
[28] The concept of hydro-hegemony has been developed to define situations in which one country establishes dominance in these strategic resources (Zeitoun and Warner, 2006). Hydro hegemony also suggests that conflict and co-operation coexist in trans-border water resource management.
[29]Gosaye Mengiste, senior MoWIE energy advisor to the minister, Addis Ababa, April 9, 2021
[30]Asfaw Setta, senior MoFA expert on trans-boundary resources affairs, Addis Ababa, May 31, 2021
[31]*Ibid*
[32]Demeke Achiso (Dr.), senior lecturer on hydro politics at Political Science and International Relations (PSIR) department, AAU, Addis Ababa, June 3, 2021

GERD is not only a national project rather it is also a regional project since that is expected to benefit neighboring countries in power generation and transmission.[33] However, there have been recent unsuccessful negotiations over the filling GERD and operation among Eastern Nile Basin countries: Ethiopia, Sudan, and Egypt. The diplomatic dispute remained unresolved and posed threats for the regional energy integration in the HoA and EAPP.[34] Since recent time, Sudan has similar stance with Egypt with respect to the dam, which is expected to benefit the regional energy integration in maximizing generation capacity of the Eastern and Horn of Africa region.[35] For instance, in 2018 Ethiopia and Sudan negotiated a bilateral agreement for the installation of the second power interconnection line that would enable Ethiopia to export 1000MW of electric power to Sudan.[36] The proposed interconnection line extends from the Grand Ethiopian Renaissance Dam (GERD) to Khartoum, Sudan. Among other things the disagreement over GERD negatively affects the planned Ethiopia- Sudan power systems interconnection.[37] The disagreement over the filling and operation of the dam may delay the effective date for operation of the dam, and Sudan may also withdraw from the power purchase agreements.[38] This specific challenge also substantiate the assumption of realism school of thought, that genuine regional integration among states is difficult to promote because states are distrustful of each other and aspire only to maximize their national interests at the expense of others.

As briefly discussed above, energy based cooperation of Ethiopia with the HoA is not without challenges. The biggest obstacles to this goal are political instability in the region, lack of trust between countries, hydro politics in Eastern Nile basin, and geopolitical competition in the region. These challenges all amount to the realistic assumptions of regional integration. For realists, cooperation among states over a specific functional area and broader regionalism is a difficult phenomenon to explicate. Similar to realist assumptions, the above all are among the key factors that challenged energy based cooperation of Ethiopia with the HoA.

Furthermore, the HoA has become the major site of competition for regional and global superpowers because of the region's geopolitical importance and proximity to the Red Sea. For instance, Djibouti alone hosts a number of military bases of global super powers. Thus competition, rather than cooperation among these powers has become a common phenomenon to maximize their spheres of influence and interests in the HoA and the Red Sea.[39] In this case, regional and global actors are negatively impacting (constraining) the Horn's regional economic integration in general, and Ethiopia's energy led integration efforts, in particular.

4. Conclusions and Recommendations

This study concludes that the momentum of Ethiopia's energy based cooperation with the HoA region is increasing from time to time and there is also a prospect for further regional energy led integration. As briefly discussed above, the most recent years have witnessed energy based cooperation efforts of Ethiopia by integrating power systems via power pools with the HoA region. Ethiopia, found in the heart of the Horn with much hydro power generation capacity, plays a key role in the regional energy interconnection. Other than electric power interconnection, there are undergoing infrastructural interconnection projects like natural gas pipeline, road, railway, and port linkages that could be considered as opportunities for further energy cooperation schemes.

These actual progresses and opportunities of Ethiopia's energy based cooperation with the HoA are bold indicators for further energy and economic integration in the region. This argument goes in line with theories of liberalism, functionalism/neo-functionalism that were discussed in chapter two.

[33]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[34]Asfaw Setta, senior MoFA expert on trans-boundary resources affairs, Addis Ababa, May 31, 2021
[35]*Ibid*
[36]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[37]*Ibid*
[38]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021
[39]Fana G/senebet (Dr.), senior lecturer at IPSS, AAU, Addis Ababa, April 21, 2021

Countries in the Horn through Ethiopia have practically managed to engage in functional energy cooperation and have achieved some sort of regional cooperation. The countries even look at energy cooperation as an initial stage and have an aim of cooperation in other broader economic, social, and political issues.[40] For example, Ethiopia and its neighbors (i.e. Djibouti, Eritrea, Somaliland, and Kenya) can further be interconnected through energy infrastructures such as power grid, natural gas pipeline, road and port; Sudan and South Sudan through oil pipeline and refinery; and Kenya and South Sudan through oil pipeline and port.[41] Eastern African Power Pool (EAPP) is also expected to transform the existing bilateral nature of power trade between countries in the Horn into more market-oriented and regional energy integration. The Horn of Africa Initiative (HoAI) has also prioritized functional areas of cooperation among countries in the Horn on similar areas of transport and energy in order to enhance economic development and regional economic integration.

Neo functionalists place major emphasis on the positive role of non-state actors and external actors in a given regional cooperation of functional issues. As of their assumptions, regional and international actors and donors such as AfDB, Power Africa (USIAD) EU, and WB are positively impacting (enabling) Ethiopia's energy led cooperation efforts with the HoA by supporting the development of energy infrastructure projects in various forms (i.e. technically and financially).[42] It is likely that the investments in energy integration by these development partners will continue since there are many on-going and planned energy interconnection projects in the region.

Ethiopia's energy-led integration efforts are, with no exaggeration, with great potentials in addressing the unresolved political, economic and social crises of the HoA region. It can be, however, better achieved through inclusive and genuine participation when states of the region, political elites, donors, and the international community work together for the common agenda.

The study recommends that:

Decision makers, elites and politicians should truly understand the benefits of energy interconnections in the HoA region.

Since existing achievement are promising governments of the Horn of Africa countries should strengthen the existing energy based cooperation schemes.

Governments of the HoA countries should increase their political commitments and trust in order overcome challenges of energy led integration and enhance regional economic integration.

Energy led integration in the region has a potential to avoid conflict between states and enhance economic development.

Energy led integration in the HoA can be better achieved through all-inclusive, on-going process with different phases, and genuine participation when states of the region, political elites, policy makers, and development partners work together for the common agenda.

5. References

Addis Fortune. 2018. Ethiopia, Sudan negotiate pact for 1,000MW electric export: Addis Ababa. March, 2018 (18): 932.

AfDB (African Development Bank). 2011. Ethiopia-Kenya power system interconnection project: Environmental and social impact assessment (ESIA) summary. (https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/Ethiopia). (Accessed on April 4, 2021).

African Development Fund. 2011. Completion report of project: Ethiopia-Djibouti power interconnection. (https://www.afdb.org/sites/default/files/documents/projects-and-operations/ethiopia-dijbouti-power_interconnection_project-pcr-06-10-2011.pdf). (Accessed on April 10, 2021).

[40]Asfaw Setta, senior MoFA expert on trans-boundary resources affairs, Addis Ababa, May 31, 2021

[41]Teame G/tsadik, a former Ethiopian Electric Power Corporation (EEPCo) energy official, Addis Ababa, May 4, 2021

[42]Andarege Gizaw, senior EEP energy official, Addis Ababa, April 22, 2021.

Teame G/tsadik, a former Ethiopian Electric Power Corporation (EEPCO) energy official, Addis Ababa, May 4, 2021

African Energy Portal. 2019. Why Kenya-Ethiopia power highway is a game changer? 19 June 2019.

Ashine, Y. 2012. New regionalism as response to environmental conflicts among pastoralists of the Horn of Africa: The case of IGAD/CEWARN. In: Berhe, M. G. and Butera, J. B. (Eds.).*Climate change and pastoralism: Traditional coping mechanisms and conflict in the Horn of Africa*. Addis Ababa, joint publication of the Institute for Peace and Security Studies and University for Peace. PP. 375-398.

AU (African Union). 2013. Status of integration in Africa (SIA V). Addis Ababa. (https://au.int/sites/default/files/documents/32854-doc-status-of-integration-in-afriva-v.pdf). (Accessed on April 12, 2021).

Bayeh, E. 2014. The role of Ethiopia's hydro dam constructions in boosting the Horn of Africa regional relations. *International Journal of Research (IJR)*, 1 (11): 279-287.

Carrizo, S. andVelut, S. 2018. Energy transitions and regional integration in South America, in Cargnin. In: Ruckert, A. and Lemos, B. (*Eds.*). *Territorial planning and La Plata basin.*Porto Alegre, RS, Brazil: CC BY Publisher. PP. 245-316.

Creswell, J. 2007. *Qualitative inquiry and research design: Choosing among five approaches*. 2nd edition. Thousand Oaks, CA: Sage publication.

Cropley, A. J. 2019. *Qualitative research methods: A practice-oriented introduction for students of psychology and education*. Riga, Latvia: Zinātne.

David, R. M. and Martin, J. M. 2012. Regional energy integration in Latin America: Lessons from Chile's experience with natural gas. *Third World Quarterly*, 33(1): 55-70.

Donney, J. 2005. *Theories of international relations, 3rd* edition. New York, N.Y: Palgrave Macmillan.

Dunn, M.T.2012. *Neo-functionalism and the European Union. (*https://www.e-ir.info/2012/11/28/neo-functionalism-and-the-european-union/). (Accessed on February 5, 2021).

EAPP (Eastern African Power Pool). 2016. Strategic plan 2016-2026. (http://eappool.org/eapp-strategic-plan-2016-2026/). (Accessed on May 23, 2021).

ECA (Economic Commission for Africa). 2010. Assessing regional integration in Africa IV: Enhancing intra-African trade. Addis Ababa, Ethiopia.

EEPCO and KETRACO. 2012. Ethiopia-Kenya power systems interconnection project: Final resettlement action plan (RAP) report. Ethiopian Electric Power Corporation (EEPCO) and Kenya Electricity Transmission Company (KETRACO). (https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/Ethiopia%20RAP%20Final%20Report.pdf). (Accessed on June 17, 2021).

EEPCO and NEC. 2009. Ethiopia-Sudan Power systems interconnection: Power purchase agreement between the Ethiopian Electric Power Corporation (EEPCO) and the National Electricity Corporation of the Sudan (NEC). (http://ikp.nilebasin.org/en/content/ethiopia-sudan-power-system-interconnection). (Accessed on May 4, 2021).

GAO (The United States Government Accountability Office). 2018. North American energy integration: Information about cooperation with Canada and Mexico and among U.S. Agencies. GAO-18-575.

Gebrehiwot, M. 2016. Economic integration as a peace building strategy in the Horn of Africa with particular focus on Ethiopia and its four neighbors. *Journal of African-Centered Solutions in Peace and Security*, 1 (1): 63-89.

Goundar, S. 2012. *Research methodology and research method*. Victoria University of Wellington.

Healy, S. 2011. *Hostage to conflict: Prospects for building regional economic cooperation in the Horn of Africa*. London: Chatham House.

HoAI (Horn of Africa Initiative). 2019. Prioritized energy projects: Prepared for the meeting of senior officials in Addis Ababa. Addis Ababa, Ethiopia.

_____. 2020. Power system interconnection projects in the Horn of Africa Initiative program: Ethiopia to neighboring countries.

Ethiopian Herald. 2020. Ethiopia can be the electrical hub and the 'battery' of the Horn of Africa.

IRENA (International Renewable Energy Agency). 2018. Off-grid renewable energy solutions: Global and regional status and trends. International Renewable Energy Agency (IRENA), Abu Dhabi.

LAPSSET Corridor Development Authority. 2016. Brief on Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) Corridor Project. (https://s3-eu-west-1.amazonaws.com/s3.sourceafrica.net/documents/118442/LAPSSET-Project-Report-July-2016-1.pdf). (Accessed on April 18, 2021).

Lata, L. 2004. *Horn of Africa as common homeland: The state and self- determination in the era of heightened globalization*. Waterloo, Ontario, Canada: Wilfrid Laurier University Press.

Maupin, A. 2013. *Building a regional electricity market: Southern Africa power pool (SAPP) challenges.* Johannesburg, South Africa: University of the Witwatersrand.

McDonald, A. S. 2005. *Regional integration in Africa: the case of ECOWAS*. CH-8057 Zurich: University of Zurich, Faculty of Arts.

Medinilla, A., Byiers, B., and Karaki, K. 2019. African power pools: Political economy dynamics of regional organizations in Africa. *ECDPM Discussion paper No. 244.*

Obydenkova, A. 2006. New regionalism and regional integration: The role of national institutions. *Cambridge Review of International Affairs,* 19 (4): 589-610.

Rittberger, B. and Glockner, I. 2012. *The European coal and steel community (ECSC) and the European defence communities (EDC) treaties*. University of Mannheim.

Rourke, J.T. 2007. *International politics on the world stage.*New York City: Mcgraw Hill Companies. (https://www.powells.com/book/international-politics-on-the-world-stage-12th-edition 9780073403885). (Accessed on May 5, 2021).

Samson, A.A. and Halidu, A. 2014. Regional integration and socio-political and economic development in East Africa: Focus on the Intergovernmental Authority on Development (IGAD). *Merit Research Journal of Art, Social Science and Humanities*, 2(8): 101-114.

Tadesse, M. 2004. *Turning conflict to cooperation: Towards energy led integration in the Horn Africa*. Addis Ababa: Friedrich Ebert Stiftung, Addis Ababa.

The Economist. 2019. Djibouti and Ethiopia sign agreement to build gas pipeline, *The Economist,* 25 February, 2019.

United States Energy Information Administration. 2019. Independent statistics and analysis. (https://www.eia.gov/international/overview/world). (Accessed on April 23, 2021).

Verhoeven, H. 2011. *Black gold for blue gold? Sudan's oil, Ethiopia's water and regional integration*. London: Chatham House. (https://www.researchgate.net/publication/265445773_briefing_paper_Black_Gold_for_Blue_Gold_Sudan's_Oil_Ethiopia's_Water_and_Regional_Integration). (Accessed on April 18, 2021).

WB (World Bank). 2020. The African Continental Free Trade Area. (https://www.worldbank.org/en/topic/trade/publication/the-african-continental-free-trade-area). (Accessed on April 13, 2021).

Wyatt, T., Pearce, J. A. and Thorn, D. 2015. *Planning development of Ethiopia's hydropower resources.* Midtown Manhattan, New York City: Springer International Publishing.

Xinhua. 2019. Chinese firm to construct Ethiopia-Djibouti natural gas pipeline, Xinhua, 17 Feb. 2019.