



The Physical Geography of Sudan: A State's Power and Threats

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ABSTRACT

This research works to review Sudan's physical geography in the view of natural resources, power, and threats to the Sudanese State. The utilization of natural resources brought power to the Sudanese State; however, produced patterns of disparate development that initiated social unrest, armed conflicts, and environmental degradation. These formed internal threats to the Sudanese State powered by the center-periphery concept. Meanwhile, foreign integrated strategies to weaken Sudan to benefit from its richness of natural resources, have brought about external threats. Sudan's strategic location qualifies it to cross the African Corridor and the Silk Road into deep Africa, where 20% of international trade is expected to cross. Sudan leased millions of acres to Saudi Arabia, Bahrain, China, and Turkey, while China has become linked to internal instability and ongoing external difficulties and risks in Sudan since 1989 AD. America's theory of creative chaos has been operating in Darfur since 2003. The Nile River became a source of political tensions between Sudan and its neighbors, particularly the Water Nile Share Agreement issue. Sudan needs to put national plans to suppress internal threats related to natural resource utilization, which will automatically hinder external threats and strengthen its power as a State.

Keywords: state power, natural resources, internal threats, external threats

Introduction

Sudan has a distinct and spatially diverse physical geography due to its geological history and wide geographical extension. This provides a wide range of natural resources, making it one of the richest countries in the world by natural resources, providing the power of the Sudanese State and a basis for utilization for spatial and human development. However, these natural resources brought about serious threats to the Sudanese State due to colonial and post-colonial utilization policies, and foreign powers who were eager enough to control and obtain them at the lowest prices. These internal and external threats are serious enough to determine the future of Sudan, and therefore worth investigating. This research aims to review Sudan's physical geography in view of natural resources, power, and threats to the Sudanese State, based on data from relevant published scientific research.

1. Natural elements of power of the Sudanese State

Sudan extends between the two latitudes ($8^{\circ} 45' - 23^{\circ} 8' N$) to the north and the longitudes ($21^{\circ} 49' - 34^{\circ} 23'$) to the east, after the secession of South Sudan in 2011 AD (Figure 1). Thus, it covers an area estimated at approximately 1,800,000 square kilometers, and by so, comes second in Africa and third in the Arab world. Before the secession of the south in 2011, Sudan was considered the largest African country in terms of area (2.411 million km²). Its land borders are 6,780 kilometers long, bordered by Egypt, Libya, Chad, Central Africa, South Sudan, Ethiopia, and Eritrea. It has 750 kilometers of sea borders on the western Red Sea coast (Figure 1). This great latitudinal extension, huge area, and long maritime borders gave great importance to its geographical location and geopolitical status. Sudan's strategic location qualifies it to cross the African Corridor and the Silk Road into deep Africa, where 20% of international trade is expected to cross (Abu Saleh, 2020).



Figure 1: Sudan's geographic location

Source: <https://www.britannica.com/place/Sudan>

The surface of Sudan is predominantly flat where 45% of its area ranges in altitude between 300-500 meters, 50% of which is less than 1,200 meters in height (Barbour, 1961), and 2% of which is less than 300 meters. The Jebel Marra area, which reaches an altitude of about 3,089 meters, is considered the highest area, and the Red Sea Mountains occupy 2.7% of the area of Sudan.

There are three groups of basic rocks in Sudan, distributed in varying proportions over the country's total area. They include bedrock (48%), sedimentary rocks (47%), and modern deposits (3%) (GRAS, 2006), in addition to the Umm Rawaba series of deposits that cover a wide area of central and northern Sudan, consisting of clay, unconsolidated continental sand, and sandy clay.

These geological formations contain metallic and non-metallic minerals such as iron ore, kyanite, nickel, talc, tungsten, zinc, gold, chromium, manganese, salt, and mica deposits. In addition, cement has been produced from limestone rocks since 1949 AD, and oil has been extracted since 1980 AD in southeastern Abu Jabra, at a flow rate of 11 thousand barrels/day (Shekarchi, 1979). Some estimates indicate that Sudan possessed, before the South's secession in 2011, the equivalent of 80x10⁸-100x10⁸ bbl of hydrocarbon resources (Sidahmed, 2013). The rock formations also provide groundwater with high productivity, high storage rates, and desirable properties for drinking and irrigation. An example of this is the northern part of the Khartoum Aquifer in central Sudan (Farah et al. 1997).

Rocks are a source of different types of soil in Sudan. There is sandy soil in the desert and semi-desert regions in northern and western Sudan. It is characterized by fragile and low-fertile soil that is used to grow many cash crops and important pastures for livestock and camels. Clay soils, which are classified as vertisols in three of the international soil classification systems (Blockhuis, 1993), are found in central and eastern Sudan and extend from the west of Kassala through the Geziera region and then South Kordofan. They are the main agricultural areas for the production of corn, cotton, and mechanized agriculture, and a major source of agricultural products, and forest, especially gum Arabic.

The soil between the White and Blue Nile includes two groups of soils. There is the first group of riverine soil including the silt of the White Nile, silt, and the silt clay of the Blue Nile. There is the second group of the various soils that consist of sand and silt with a mixture of fine materials and the silty soil that is found in the lower latitudes of the White Nile, along the Blue Nile and the Nile River up to the High Dam Lake, the Gash Delta and the Khor Baraka Delta. (Library of Congress, 2007) There is a group of dark clays located above the current flood level of the rivers between the White and Blue Nile (Mubarak, 1982).

The extension of Sudan into thirteen transverse circles resulted in the desert and semi-desert areas located north of 16° north latitude accounting for 30% and 20% of its area, respectively, while the savanna region, which extends from 10° to 16° north latitude, constituted about 38%. It also resulted in the diversity of its climatic regions, which differ in some of their characteristics, from savanna in the south to dry desert in the north, with a maritime climate on the Red Sea coast. Solar radiation, whose daily average ranges from 3.05 – 7.62 kW h m⁻²/day, provides a natural resource for solar energy production. The wind speed, whose annual average ranges between 1.53 - 5.07 m-1, and its highest average speed between 1.35 and 49.5 W m-2, (Omer, 1997) also provides an opportunity to introduce some technical applications in remote rural areas.

Rainfall provides an important main natural resource, contributing about 400 billion cubic meters annually to the total water in Sudan. It is characterized by a decrease in its annual quantities from 700 mm in the southern borders to less than 20 mm in the north. The difference in the amount of rainfall may reach about 50% in the northern half of Sudan and 30% in the central part of it. It is characterized by a short period of rainfall, fluctuations, and an

irregular beginning of the rainy season (Hulme, 1990). Traditional agriculture depends on rainwater in many places in western and central Sudan, as well as extensive agriculture in the clay plain in Gedaref. In addition, rainwater provides a source of drinking water in many parts of Sudan, works to renew natural pastures and forests, and recharges underground reservoirs.

The natural vegetation in Sudan is distributed according to rainfall amounts and soil type. This produced seven natural vegetation zones. Vegetation cover, although rare, is limited to the desert region in the northern part of the country in the water courses, and it consists of scattered grasses or thorny shrubs in the semi-desert region. There are species of acacia in the dry northern regions of the poor savannah region, and a mixture of deciduous species in the southern, more humid part of it. In the high-rainfall savanna region, most of the vegetation consists of deciduous species. In the mountainous region, it consists mostly of broad-leaved species, in addition to two species of coniferous trees (Federal Forest Ministry 2014).

This vegetation is rich in natural groups of more than 100 species of trees that differ greatly between them, and at the level of the same species, due to the difference in rain amounts and soil type. Their geographical distribution has enabled the distinction of sub-gynecological zones for tree seeds (El-Warag et al, 2002).

Forests cover 18% of the area of Sudan, or about 455 thousand km², and are equal to 61% of the forest area in the Arab world, before the secession of the state of South Sudan in 2011 AD. Forests contribute to providing more than 82% of the energy consumed in Sudan, producing 3.6 million cubic meters of wood, in addition to producing 5 million tons of fodder, 300,000 tons of fruits, 20,000 tons of natural materials, and 35,000 tons of dyes and printing materials, contributing by about 12% of the gross national product. The forest sector provides about 4% of job opportunities for the population, which is equivalent to 275 thousand people. Forests are natural and permanent pastures for livestock in the country, as they provide about 70% of food for animals, and contribute about 80% of the global production of gum Arabic, of which 10% comes from the acacia tree. The genetic resources of local plants, which include many species of wild plants, also provide a source of food during times of famine in some areas. Natural plants also provide abundant sources of biomass energy (Omer, 2005).

The Nile system extends over the vast Sudanese plain from south to north, and its central clay plain is divided by a general slope from the southeast to the northwest. It consists of the White Nile, the Blue Nile, and its tributaries, the Atbara River, the main Nile, and many seasonal valleys (Figure 2).

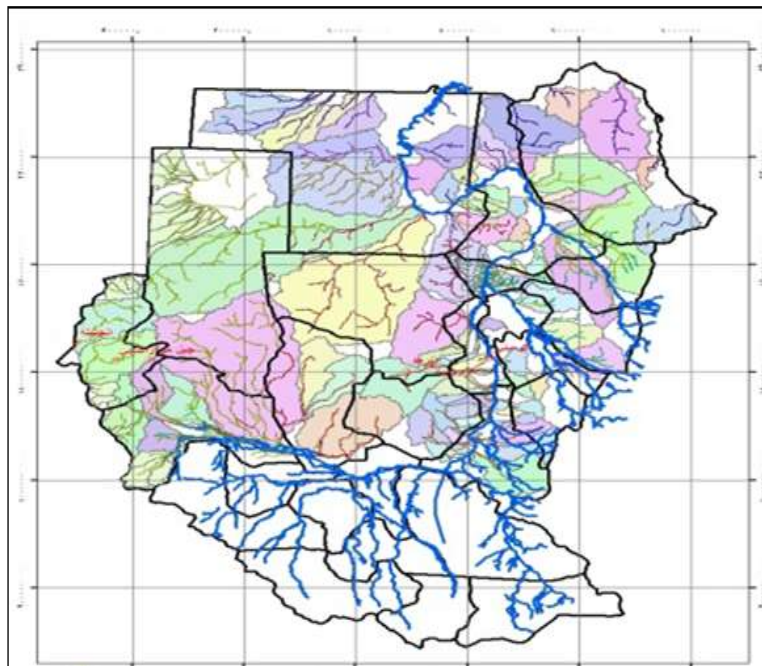


Figure 2: The Nile and valley system in Sudan

Source: Dams Implementation Unit - Sudan, 2019

The Nile system contributes about 93 billion cubic meters of water annually, of which 20 billion cubic meters is allocated to Sudan. The Blue Nile contributed about 44.36 billion cubic meters annually to this water budget during the period from 1965-2005, while the Rahad River contributed about 1.25 billion cubic meters, and the Dinder River contributed about 3 billion cubic meters. The White Nile contributed about 26 billion cubic meters during the period 1943-1992 (Barsi, 2018). And the Atbara River contributed about 12 billion cubic meters during the same period. Seasonal valleys contribute about 6 billion cubic meters of water annually, and non-renewable groundwater contributes about 4 billion cubic meters.

From all these sources, in addition to rainwater, the amount of water available to Sudan annually amounts to about 30 billion m³, less than 50% of which is currently exploited, and the annual per capita share of it reaches less than 1000 m³ (<1000 m³) (Barsi, 2018). Despite this, Water is considered limited

for Sudan, despite the abundance and availability of land for irrigation, due to its geographical location upriver in relation to Egypt and downstream in relation to Ethiopia and the tropical lakes (Hamad et al. 2005).

Sudan has established a number of dams on the network of rivers and valleys to control irrigation water for agricultural projects, electricity production, and fishing. The storage capacity of the Sennar reservoir is 7.4 billion cubic meters, and 60% of agriculture in Sudan depends on it to irrigate the Geziera scheme and the extension of the Managel. It has an outlet for two canals to irrigate two million acres proposed in the Kenana and Al-Rahad plains. It also produces 1,800 megawatts of electricity and about 1,000 tons of fish annually.

The Merowe Reservoir, which has a storage capacity of 12.5 km³, contributes about 20% of the Nile water flow and produces 125 megawatts of electricity and 2,000 tons of fish annually. As for the Roseires reservoir, its storage capacity reaches 7.4 billion cubic meters, and the Khashm al-Qirba Dam has a storage capacity of 7.4 billion cubic meters. As for the Setit Dam, it consists of the Romila Dam on the upper Atbara River and the Bardana Dam on the Setit River. The volume of its lake reaches 2.7 billion m³, and it produces about 135 megawatts of electricity. There are a number of proposed dams, such as Al-Sharik at the fifth waterfall, Kajbar at the third waterfall, and Dal at the second waterfall.

Sudan's flat surface, rock formations, and wide latitudinal extension provide enormous potential for agricultural investment and pastoral activity. Between the extremes of drought in the north, with the exception of the Nile Valley, and humidity and wetness in its southern outskirts, there are vast stretches of uninhabited land. This is due to the nature of the river system and climatic conditions. The arable land in Sudan is estimated at about 200 million acres (84 million hectares), of which 40 million acres, equivalent to only 20%, are cultivated. Agricultural activity in Sudan is based on these resources to accommodate about 75% of the total population (Dawelbeit et al. 2010).

Agriculture is divided into three main types: mechanized rainfed agriculture, which covers an area of 7 million hectares (Silva et al. 1988), traditional rainfed agriculture, which covers an area of 29 million acres, and modern irrigated agriculture. The irrigated area approaches 11 million acres, representing 60% of the cultivated land and employing 65% of the population engaged in agricultural production (Siddig et al. 2012). It is more concentrated in the clay plain in the Geziera region and the narrow strip on the Nile, where the population density reaches 87 people per km compared to an average general density of 4 people per square kilometer (Dawelbeit et al. 2010).

Modern irrigated agriculture is practiced in the Geziera scheme and Managel Extension which are irrigated from the Sennar Dam, besides some other major schemes irrigated by canals and pumps along and close to the Blue Nile and the White Nile. Irrigated agriculture consumes about 16.8 million cubic meters of water, representing about 93% of Sudan's share of the Nile water.

The irrigated area of the Blue Nile is equal to 2.848 million acres, consuming 9.265 million cubic meters of water, and the irrigated area of the main Nile is equal to 2.8 million acres, consuming 1.22 million cubic meters. Out of this area, there are 0.98 million acres irrigated by pumps, and about 2.1 million acres are irrigated from the Sennar Dam. The remaining acres are irrigated by flood irrigation in the northern states, Tokar and Al-Gash deltas. The total area that may be affected by the construction of the Renaissance Dam is estimated at about one million acres, with no possibility of expansion in the future.

Agriculture represents the most important sector in Sudan's economy, as it contributes 40% of the national income, and depends on food and cash products that support about 80% of the population. 64.4% of the labor force works in the agricultural sector, 79.2% of women and 53.3% of men, and its workers are distributed in similar quantities in all regions of Sudan except Khartoum State. Also, about 97% of Sudanese exports are based on low-value primary commodities and manufactured food products (Robinson, 2005). The embryonic characteristics of some agricultural products, especially wild species have demonstrated distinct morpho-agronomic traits and a high ability to resist diseases, insects, fungi, and viral diseases (Tahir et al., 2004). The agricultural sector, especially the traditional one, faces many problems related to state policies and fluctuating amounts of rain (Mahgoub, 2014).

Livestock benefit from natural pastures, most of which are found in Kordofan and Darfur, occupying an area of 110 million hectares. Livestock is estimated at approximately 134 million heads, including 3 million camels, 40 million cows, 49 million sheep, and 42 million goats. There is more than 90% of the livestock in Sudan are raised in the traditional pastoral system that relies on natural pastures that provide 86% of the feed for the herds, plant concentrates provide 4%, while irrigated fodder, crop residues, and agricultural by-products provide 10%. Sudan produces about 18.6 million tons of livestock annually (Babiker, 2015).

These unique physical geographical elements of Sudan have provided a wide range of natural resources on which internal development has been based and has become the focus of attention of global and regional powers. It provided the power of the Sudanese State where for Michael Foucault; power is widely distributed across cultural paths and situations (Harris, 1991). However, they formed serious threats either internally or externally to the Sudanese State, which will be outlined here.

2. Natural elements of power of the Sudanese State: a source of internal threats

Sudan's natural resources have made it vulnerable to internal threats that greatly influenced its stability. Due to their sharp geographic variations, these natural resources determined development efforts to emphasize where. Development efforts during the British colonial period from 1898 to 1956, and subsequent national governments resulted in a pattern of polar development centered on central Sudan where there are abundant Nile waters and fertile soils. They have high potential in agricultural and livestock production in addition to water sustainability compared to the regions of western and eastern Sudan and the far north of Sudan.

The Gezira scheme played a paradoxical role in the capitalist transformation of Sudan, as it worked to strengthen non-capitalist production relations and develop marginal capitalism (Tony et al., 1991). The areas previously developed by colonialism continued to attract agricultural production, industries, and urban growth, which led to its continuation as the heartland region of Sudan. The mud flat lands of central Sudan were imposed as a core region as it created a state of organized dependence on its margins through the construction of institutions in the marginal regions governed by the authorities of the core region (Friedmann, 1966).

There were some axes of development efforts to the east and a few to the west and South Sudan where traditional rain-fed agriculture was widely practiced and depended solely on rainfall where the traditional rain-fed sector for self-sufficiency did not receive as much as allocated to the modern agricultural sector. They formed margins that produced manpower for the core regions in central Sudan. These margins are exposed to strong negative forces aimed at countering the trickle-down effects of economic growth so that the balance of this group of forces increases the process of regional imbalance. Likewise, centrifugal forces and the failure of businesses to realize investment opportunities at the margins lead to negative effects of industrial development to expand the regional imbalance in Sudan.

The traditional agriculture sector suffered problems of poverty and food insecurity. The deterioration of traditional agriculture and income distribution is considered one of the most important causes of the food deficit in Kordofan and Darfur (World Bank, 1990). Despite the efforts made to reduce poverty in Sudan, it is still widespread (Abdelmawla, 2014), showing a pattern characterized by unidimensional and low multidimensional occurrences for both children and adults. This pattern indicates that Khartoum is the least poor, while North Darfur and Warab states are the poorest. While the level of poverty increased, its severity decreased in the period 1978-1980 compared to the period 1967-68 and it was predicted to increase (Farah et al., 1995).

Tribal unrest and ethnic and armed rebels developed in the neglected areas, fueled by the deeply rooted center-periphery concept. Over time, a systematic, gradual change in the nature of the conflict occurred from the traditional form of tribal and ethnic nature to one over resources. The role of resources increased with the worsening of the economic crisis, as it emerged as an influential force in the civil war in Sudan (Suliman, 1977). There are hidden dimensions to the issue of South Sudan, among which is intense conflict over diminishing resources among ethnic groups in different parts of Sudan (Kok, 1996).

The conflict in Darfur is considered an ecological conflict in origin, based on competition over natural resources. It is associated with environmental scarcity of renewable resources, particularly water resources, as elsewhere in the developing world (Suliman et al., 2005). Generally, the conflict on water resources in Sudan took the forms of conflict around the transboundary waters of the Nile, around the connections between internal resource scarcity and civil conflict, and around the impacts of internal conflict on water abundance and development (Selby, 2014). There is only limited evidence to support the first two connections, but there is strong evidence confirming that the effects of water abundance, social economic development processes, and internal colonization related to state-directed water have violent repercussions (Selby, 2014).

In the issue of natural resources, the revolutionary government in Sudan in 1989, considered a vision of authoritarian modernization, where water and agriculture have become essential pillars of state-building projects (Verhoeven, 2015). The Sudanese economy benefited from the oil sector, but this was accompanied by a depletion of resources in a way that differs from what happened in previous periods of Sudan's history, within the framework of the opportunities that oil revenues provide to the ruling elite in Sudan (Large, 2007).

3. Natural elements of power of the Sudanese State: a source of external threats

Sudan has been facing elaborated and integrated strategies to weaken it in preparation for the passage of foreign agendas and interests to benefit its richness of natural resources. These included inciting strife, unilateral sanctions, the debt trap, the political agenda of international institutions, and creating repeated crises (Abu Saleh, 2020).

The Nordic countries have increasingly engaged in the process of horizontal domination and sovereignty as they seek access to natural resources as the global economy grows and becomes more integrated (Carmody, 2009). They have projected their combined power onto the countries of the Global South to assert vertical control in the ongoing sharing and withdrawal of resources. This domination and control gave rise to a cruciform world structure, where the resulting uneven development was associated with poverty, competition for resources, and conflict (Carmody, 2009). This is part of the new generation of colonial governments built through contemporary investment agreements that were opposed to the New Bandung Framework agreements based on a stable North-South order (Mann, 2003). One of the results of this was widespread aggression and seizure of lands around the world by international institutions, the worst of which was on the continent of Africa. Between 2010 and 2011, an estimated 227 million hectares in the Third World were sold, licensed, or leased to foreign institutions. In 2009 alone, 50 million hectares were transferred from farmers to these institutions. Some of this land was purchased, while the vast majority was leased over a long period of time, ranging from 25 to 99 years, which usually had to be renewed (Broughton, 2012).

Sudan, within these trends, agreed to lease millions of acres to Saudi Arabia, Bahrain, Turkey, and China. The UAE is the largest destination for exports in Sudan, followed by China. This is a facet of the seizure of land and agricultural investments in Africa through Asian countries. Asian investments represent an attempt to meet the rising food demands of the new elite in emerging economies and class cooperation between them and the African elite, rather than a crisis of accumulation (Mann, 2003). It bears the characteristics of core-centric models, such as accumulation through scarcity and dispossession. This failed to stop the collapse of accumulation strategies in the countries of the North by virtue of their connection to the new forces, policies, and movements in the countries of the South.

Sudan found increasing global attention when it became an exporter of oil, and more attention focused on oil as a source of wealth and power and as a subject of potential conflict (Obi, 2007). In reality, oil alone will not lead to violence and corruption, because conflict only occurs as a result of the "politicization" of the oil factor in ways that make control over it and its distribution confined to the hands of a few who work to make it exclusive to others (Obi, 2007). The dialogue on the relationship of oil to development in Africa is framed around the theme of the "resource curse," as some believe that oil wealth fuels corruption in the state and creates social crises, and violent civil conflict.

Sudan has emerged as a cornerstone of developing economies, linking the oil-rich Arab countries with the rest of sub-Saharan Africa where its coastline on the Red Sea is an important sea route. It has received significant grants and loans from Arab countries to increase its agricultural productivity so that it becomes a food basket for the Arab world and to achieve regional food security so that it can avoid any economic boycott imposed on it by the Western world in the future. Until recently, Sudan was not an expected element linking the desires and interests of Arabs and sub-Saharan Africa. These countries see preparing Sudan as a showcase for agri-business in the Middle East. Whatever the promise of such development trends, they represent the most important economic and political changes in Sudan since the entry of British colonialism (Collins, 1976).

The American policy strived to grant independence to the Darfur region (Al-Muslim website, 1426 AH) as it is rich in uranium, gold, and petroleum (Abdel Baqi, 2018). International oil companies are waiting for Darfur to secede from Sudan so that they can achieve the greatest possible gains. Therefore, the theory of creative chaos has been operating in Darfur since 2003, alongside an international game whose chapters have not yet been completed around the oil triangle located in the common area between western Sudan - Darfur in particular - Chad and Libya, which is essentially a French-American-Chinese conflict.

In contrast to Clinton's policy aimed at isolating Sudan, George Bush conducted a dialogue with Khartoum, followed by a constructive policy between the two parties. This is due to the influence of the American Church, and economic interests, especially the pressure group or the oil lobby (Huliaras, 2006). This is in addition to the Israelis' ambitions in the Darfur region, whose area is equivalent to 20% of the area of Sudan, and is linked by international roads to Egypt and Libya, contains about 69 million tons of high-purity uranium ore, which is the third or fourth-largest uranium stockpile in the world (Al-Sahli, 2018).

China's rise is an urgent problem, not only for its neighbors or for the United States, but it is a strong geographical challenge for others. Its influence on land and over the seas is expanding, supported by its distinguished location on the map. China has shifted the balance of power in the Eastern Hemisphere by securing its economic needs (Kaplan, 2010). What China is doing in Africa today is similar to what the British did 150 years ago. One of the factors that worked to strengthen the Chinese presence in Africa is the authoritarian countries. It can be considered a colonial power that exploits natural resources (Junho, 2007).

China has played an influential role in Sudan and has become linked to internal instability and the ongoing external difficulties and risks that have characterized the policies of the central Sudanese state since 1989 AD (Large, 2009). The principle of non-interference has been an essential element in Beijing's relations with various governments in Khartoum since 1959. Since 1990 AD, the Chinese role in Sudan has become more rooted and important (Large, 2009), and Chinese behavior has been characterized by moderation (Carmody et al. 2010). China, in its relentless pursuit of energy sources, has established relations with "pariah states" that the United States seeks to marginalize such as Sudan, which has led to creating tensions with the new Chinese policy (Canning, 2007).

The Chinese company has been granted agricultural lands within the framework of joint cooperation between Sudan and China in the field of agriculture, with the aim of moving from the stage of successful agricultural experiments to the stage of cash or commercial production, especially in the field of wheat and maize cultivation (Sudan Tribune, 2015). Chinese national petroleum companies have become new players in the global petroleum industry in the past two decades. Since it lacks sufficient experience in competing with other international companies in managing huge oil fields, with little experience in political risks and security, it has gained from its experience in Sudan a competitive role in global strategy and in developing its capabilities (Patey, 2017).

This relationship was clearly demonstrated in Beijing's relationship with the ruling National Congress Party in Sudan by including China in domestic policy and foreign relations in the war in Darfur. Beijing responded to this through its political role. China also developed new relations with the state of South Sudan following the 2005 peace agreement, which was prompted by political requirements related to investment protection (Large, 2009).

The distribution of freshwater resources is characterized by unevenness and irregularity, This is critical since water and its supplies are likely to become targets for military action and tools of war with the increase in population, improvement in living standards, increased demand for freshwater, and global climate change (Gleick, 1993). Several questions are raised about the relationship of conflict over water to other types of conflict, such as ethnic conflicts, and the existence of important differences between conflicts over resources and conflicts arising from the deterioration and pollution of freshwater sources, and that conflict over scarce water sources is the source of global conflict as it contributes to the intensification of conflicts that emerge from other sources (Haftendorn, 2000). The problem of international conflicts over water is not due to war, but rather due to unsustainable development resulting from the absence of joint cooperation, which is followed by poverty, migration, and internal national conflicts (Mason, 2004).

The Nile River Basin is considered the most unique among the international river basins and represents the most challenges due to its remoteness and its display of a level of unbalanced development across its basin. In addition to that, there is a complete absence of meaningful cooperation and a comprehensive agreement between its countries. This negative phenomenon, which is limited to the Nile, has become an obstacle that has led to the lack of the desired cooperation, development with joint projects, and investment in the basin. The final result is that the river does not contribute to the well-

being of about 300 million people living along it, as they are considered the poorest in the world, in addition to the fact that five of the ten least developed countries in the world are located here (Oloo, 2007).

In colonial times, the Nile's waters were regulated by agreements drawn up and supported by British rule, which suited the Egyptians, and to a small extent the Sudanese, by giving them the presidency in controlling the great river. This situation began to change in the 1960s with the end of colonial rule in the region, and these challenges have begun to emerge again in the present years with the awakening of the East African community. Kenya, Uganda, and Tanzania (members of the EA Call have a common interest in facilitating the economic development of the Lake Victoria Basin, and expanding this could give them an incentive to bring long-awaited issues to the regulators governing the use of the Nile's waters. Despite the passage of a century of water regulation projects in the Nile Basin, Egypt faces a real water supply crisis due to the combination of drought and overuse by the people of the basin countries (Smith et al. 1990).

The Nile River has been a source of life and conflict in the Nile Basin for centuries (Berry, 1995). The deterioration of its waters has shed light on the issues of water scarcity and tensions between the countries of its basin that depend on sharing their share of its total waters (Wiebe, 2001). It is possible that Egypt will search for new sources of water or reposition existing supplies and reduce demand at the same time. It is unlikely that these actions will be completed without internal and external conflict (Smith et al. 1990).

The 1959 agreement governed the distribution of Nile water between Egypt and Sudan and left the remaining countries without determining their shares. Sudan has been caught between the 1959 agreement with Egypt and economically beneficial cooperation with Ethiopia, the source of most of the Nile's water, which seeks to increase its share of the water to secure food and facilitate economic development. The people of the Upper River are looking to escape from the restrictions on water development placed on them by the current regime, but they all fear Egyptian retaliation. The rapid population growth in the region often controls the continuous search for food security and thus water to meet the growing demand of the population.

National policies in the Nile Basin consistently ignore the fact that the people of the Nile Basin are bound together by their sharing of environmental resources. Water resources for irrigation and hydroelectric power are limited, and erosion upriver affects the percolation of dams downriver, where drought and floods know no political boundaries.

For most of the twentieth century, the Nile River was viewed as a source of political tensions and low-intensity conflicts between three of the basin countries: Ethiopia, Sudan, and Egypt. Moreover, the emergence of China as a major player in the Nile Basin's power politics has facilitated several unilateral initiatives for large development projects (Swain, 2011). Countries of the Middle East, in their endless battle to match population growth with food and energy production, have developed ways to develop water resources, including international rivers and groundwater, without considering neighbors' needs, which has caused bitter and recurring conflicts. At the same time, the peace process with Israel collapsed and the Soviet Union collapsed, suggesting that the Middle East was entering a new era (Soffer et al. 1999).

4. Conclusions and recommendations

This research reviewed Sudan's physical geography in the view of natural resources, power, and threats to the Sudanese State. Natural determinism governed the spatial distribution of these natural resources. However, they resulted in disparate patterns of development which initiated political instability, migration, and tribal, and armed revolts. They formed a source of threat to the power of the Sudanese State. Simultaneously, external threats were initiated by the ambitions of foreign powers, as well as regional conflict, on these natural resources.

Sudan needs to put national plans to suppress internal conflict over natural resources which will automatically hinder external interventions. At the regional scale, it is important for the Sudan to work to alleviate conflict over the Nile waters. Agricultural development in Nile Basin countries can be supported by a more reliable distribution of water resources (El-Fadel et al. 2003), based on a deep understanding of the benefits of transboundary water (Zeitoun, 2006), in the presence of the Initiative by the Nile Basin countries (Wiebe, 2001). These internal and external efforts will inevitably solidify Sudan's power as a cohesive State.

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