RUSSIA'S COLLABORATIONS ON NUCLEAR ENERGY WITH AFRICAN COUNTRIES

OROSZORSZÁG ÉS AZ AFRIKAI ORSZÁGOK NUKLEÁRIS ENERGIÁVAL KAPCSOLATOS EGYÜTTMŰKÖDÉSE

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Abstract

The study examines the peaceful use of nuclear energy and the related approaches, debates and differing positions from the point of view of the European Union states, the USA and Russia. It addresses the energy situation on the African continent, as the energy needs of African countries are constantly increasing, which they are currently unable to adequately meet. One of the available sources (fossil fuels, nuclear energy, renewable electric power etc.) is nuclear energy, which is mainly provided by Russia, China and, to a lesser extent, the EU and the US. Of these, I examine the role and opportunities of Russia and how it cooperates with African states in the field of nuclear energy.

Keywords

Russia, Africa, Rosatom, nuclear energy, South Africa

Absztrakt

A tanulmány az atomenergia békés célú felhasználását, illetve az azzal kapcsolatos megközelítéseket, vitákat, eltérő álláspontokat vizsgálja meg az európai uniós államok, az USA valamint Oroszország szempontjából. Foglalkozik az afrikai kontinens energiahelyzetével, mivel az afrikai országok energiaszükséglete folyamatosan növekszik, amit jelenleg nem képesek megfelelő módon kielégíteni. A felhasználható források (fosszilis energiahordozók, atomenergia, megújuló energiaforrások stb.) közül az egyik lehetőség az atomenergia, amelyet elsősorban Oroszország, Kína és kisebb mértékben az EU és az USA biztosít. Ezek közül Oroszország szerepét és lehetőségeit vizsgálom, illetve hogy az hogyan működik együtt az afrikai államokkal az atomenergia területén.

Kulcsszavak

Oroszország, Afrika, Rosatom, atomenergia, Dél-afrikai Köztársaság

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INTRODUCTION

"Russia has signed over a dozen intergovernmental agreements on the continent in recent years and Rosatom – the state-owned nuclear company – is cooperating with more than 20 African countries, according to its first deputy director general for corporate development and international business Kirill Komarov"[1].

Nuclear energy production is a part of the global energy mix that is important for many reasons, including lowering the effects of climate change, countering the effects of resource depletion, managing (controlling) the fluctuation of renewable electric power (such as wind, solar etc.).

THE REASONS AND RESULTS OF NEGATIVE WESTERN POLICIES AGAINST NUCLEAR POWER: LOWER LEVEL OF COMPETITIVENESS IN AFRICA

Contrary to conceptual resistance to nuclear power [2] that often results in bans of the construction of new nuclear power plants and their early closure, much of the rest of the world, including Russia, China and India support nuclear power plant development and utilisation. Western concerns against nuclear power plants offer competitive advantages "for free" for leading nuclear power plant developers – such as Russia.

It appears that the Western conceptual approach to nuclear power is beginning to change in favour of it. A recent statement of the European Parliament supports nuclear power as part of the energy mix, where renewables play an increasingly dominant role. It is an important policy change, since credible chances of Western nuclear energy investments in Africa might not materialise in a policy environment hostile to nuclear energy generation, maintaining its bad reputation to public opinion. The extent of policy change related to nuclear energy is unclear, but the tendency is positive [3]. Even in the best case scenario if there is a significant policy change all over the Western world, it will take many years if not decades to compensate for the consequences of policies hostile to nuclear energy production, gaining momentum since Three Mile Island (1979), Chernobyl (1986) and Fukushima (2011) nuclear accidents.

It is not easy to overcome hostility against the peaceful utilisation of nuclear power in the West, since the Western approach has not been credible since the Three Mile Island accident in 1979. If the West was honest, thorough comparison between pollution done by nuclear power plant accidents and military type nuclear experiments should have seriously been taken into account. Such representative studies exist, but they are definitely not wildly "advertised" (known) for masses of public opinion. The reasons are simple: damage done by military experiments involving nuclear power as a destructive force in upper atmospheric tests, atmospheric tests, tests on the ground, below the ground, and undersea experiments definitely have far worse nuclear destruction, and more importantly pollution record, than accidents involving the civilian use of nuclear power. In Hiroshima and Nagasaki, nuclear power was used "to win WWII against Japan", killing masses of Japanese civilians in city environment.

"The National Resources Defense Council estimated the total yield of all nuclear tests conducted between 1945 and 1980 at 510 megatons (Mt). Atmospheric tests alone

accounted for 428 Mt, equivalent to over 29,000 Hiroshima size bombs … The 2000 Report of the United Nations Scientific Committee on the Effects of Atomic Radiation to the General Assembly states that: "The main man-made contribution to the exposure of the world's population [to radiation] has come from the testing of nuclear weapons in the atmosphere, from 1945 to 1980. Each nuclear test resulted in unrestrained release into the environment of substantial quantities of radioactive materials, which were widely dispersed in the atmosphere and deposited everywhere on the Earth's surface."[4]

The West also fails to adequately compare damage done by the peaceful utilisation of nuclear power and obviously damaging other forms of harvesting energy, such as burning fossil energy sources, for instance coal, gas and oil. It is obvious that many times more people suffered from the consequences of utilising fossil energy than of nuclear power. On one hand, there have been countless accidents all over the world related to the utilisation circle of fossil energy, while on the other hand – even more importantly – there are even more health (sickness) related casualties of pollution. One might suggest that fossil energy utilisation is far broader than the peaceful use of nuclear energy and it results in more damage when harvesting fossil instead of nuclear energy. Well, a solution might be to adequately compare the damage done by KWh produced throughout the history of energy utilisation for the same periods.

We also need to emphasise that nuclear energy does indeed deserve to be called clean in terms of CO_2 pollution, mainly associated with climate change. Building nuclear reactors does have an ecological footprint including CO_2 pollution, but once construction is complete, nuclear energy generation is clearly environmentally friendly. Even today, Western policies fail to recognise this in an adequate way. The dangers of progressing climate change for humanity certainly outweigh the dangers related to the utilisation of nuclear power. Even today, climate change causes more and more extreme weather events and destruction. The effects of climate change most directly influence the quality of human life by endangering conventional agricultural production. Thus, it endangers the food supplies of a high number of people, who already spend most of their income to pay for their food.

Such considerations lead to the conclusion that Western "awakening" concerning nuclear power has a difficult heritage as a drag on development. Most policymakers might still not realise that they are following false considerations when judging the peaceful utilisation of nuclear energy, creating an impression that – if there is a nuclear "awakening" in the West – it is mostly based on the admission that competitiveness of the West regarding nuclear energy fails all around the world, including Africa. However, Western competitiveness is only a segment of nuclear energy policies, which is important, but not "all" concerning proper policy making.

Should such conclusions be right, the West might not successfully compete with Russia in Africa when utilising nuclear energy. The West already shows signs of being a "spoiler", advertising ideas against African nuclear power plant constructions by Russia, generating negative propaganda against the utilisation of nuclear power as a whole.

THE RUSSIAN APPROACH TO NUCLEAR ENERGY

Since Rosatom is a state-owned corporation, its primary goals are in line with the geopolitical aims of the Russian state. For such reasons, Rosatom can also accept higher risks than Western private energy companies, whose own capital is at stake. Rosatom is not

only precisely aware of Russian state priorities, plans etc., but it can also rely on various forms of assistance from the state. Even though privately-owned Western nuclear energy producing companies are theoretically free to do business around the world, in reality they usually respect the policies decided by their governments.

There are several reasons why Russia is committed to the utilisation of nuclear energy: it is a profitable business itself and it also allows saving conventional energy resources that could be profitably sold to other countries or kept as strategic reserves. Furthermore, expanding their nuclear power industry allows Russia to benefit from geopolitical gains.

A Russian state-owned company, Rosatom is the "No. 1 leader in world in terms of the number of NPP Nuclear Power Plant power units in the portfolio of foreign projects (33 power units)." It is also the "No. 1 in the world in terms of Uranium enrichment (36 percent of the global market)." Rosatom is No. 2 in the world in terms of Uranium reserves (523,900 tonnes in Russia and 216,200 tonnes abroad) and 14% of global production (8,019 tonnes)." [5].

Peaceful utilisation of nuclear power by Russia flourishes despite the fact that Russia has enormous conventional gas- and oilfields and a huge amount of coal reserves that puts Russia in a position whereby the utilisation of nuclear energy is in fact optional for the country.

Nuclear power has an 18,9% share in power generation in Russia. „The Russian Federation has 37 nuclear power reactors in operation and 6 under construction. The latest Russian Federal Target Programme envisages a 25–30% nuclear share in electricity supply by 2030, rising to 45–50% in 2050 and 70–80% by the end of the century (!). In April 2018, Russia completed building a floating nuclear power plant, the Akademik Lomonosov, which is expected to go into service in 2019."[6].

As of 2019, almost 600 million people in Africa have no access to electricity.[7] Significant population growth and droughts devastating hydroelectric power generation for years only make African governments ever more desperate to find resources for electric power generation, where Russian and Chinese offers including financing nuclear power plant constructions appear to be promising.

There is a third, major party in this competition which is the US. Washington is deeply concerned about the growing influence of Russia and China in Africa and makes attempts to counter it.[8]

The Russian cooperation with African [1] countries in the field of nuclear energy clearly shows that Russia thinks strategically, also in a long term, mobilising significant loans and engineering resources. When doing so, Russia gains influence in several countries in parallel, acting as a significant world power in the field of Energetics.[9] Russia fully supports the utilisation of this environment friendly-technology that has a low CO_2 footprint: „Nuclear power generation is a source of clean energy that provides considerable environmental benefits. During one year of operation, one 1 GW nuclear power plant (NPP) prevents emissions of 9 million tonnes of carbon dioxide, which is equivalent to annual emissions from 2 million vehicles."[5]

According to Rosatom's Global Presence Map [10], the Russian nuclear energy industry is present in the following African countries: Algeria, Angola, Botswana, Burkina Faso, Chad, DRC, Egypt, Ethiopia, Gabon, Ghana, Guinea, Kenya, Libya, Madagascar, Mali, Mauritania, Morocco, Mozambique, Namibia, Niger, Nigeria, Somalia, South Africa,

South Sudan, Sudan, Tanzania, Tunisia, Western Sahara, Zambia, Zimbabwe. Cooperation varies from nuclear medicine to uranium mining; the ownership and construction of nuclear power reactors, training experts, etc. The following African countries have signed nuclear contracts with Russia: Algeria, Egypt, Ethiopia, Ghana, Libya, Morocco, Nigeria, Rwanda, Western Sahara, Zambia. As a comparison, China is lagging behind as they have only signed similar contracts with Kenya, Sudan and Uganda.

South Africa is the only African country that already generates electricity, satisfying 5% of its needs. [11] Even though there is desperate need in Africa for electricity that would technically allow South Africa to export electricity, the most developed and industrialised country on the Black Continent cannot even satisfy its own needs.

There is one country in Africa, where nuclear power plant construction is firmly scheduled: Egypt. Russia and Egypt announced their nuclear power cooperation in 2014, signing an agreement between Moscow and Cairo on 15 November 2015.[12] Russia will build 4 reactors totalling 4,800 megawatts (MW) starting construction from 2020, offering job opportunities for 50.000 people. The Dabaa nuclear power plant will be "the safest in the world", capable of withstanding all natural disasters according to its designers.[13] "Projections estimate that by 2026 the nuclear plant will account for 50% of Egypt's power generation capacity which will meet the country's rising demand for electricity. The three additional reactors will be contracted by 2028."[14] With such development, Egypt is a "crown jewel" of Russian nuclear energy development in the region.

The leaders of Rosatom unambiguously believe, that the Black Continent is important and that they are determined to further expand the company's business there. For this reason it is certain, that the Russians will sign new agreements further expanding their involvement in the nuclear energy business.

SOME REMARKS ON WESTERN CRITICISM AGAINST RUSSIAN NUCLEAR ENERGY PROJECTS IN AFRICA

There is countless criticism Russia has received from the West concerning nuclear energy policies in Africa. Such criticism is in line with my analysis in the first chapter. Should there really be a Western "awakening" concerning the peaceful utilisation of nuclear energy, much of the criticism would cede assuming that Western energy policies remain in line with the criticising competitors.

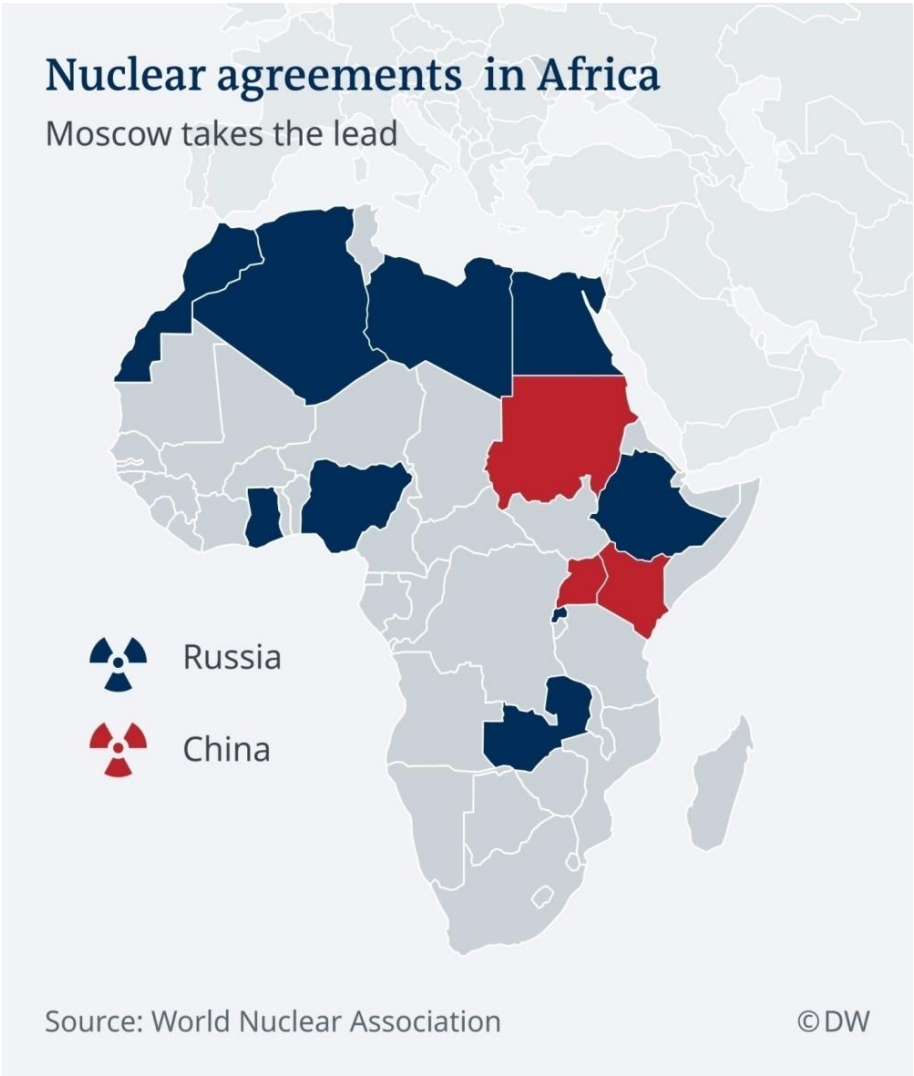
Western criticism ranges from suggesting that Russian loans to build nuclear power plants in Africa are not transparent, subject to manipulation, lead to the subordination of African countries to suggestions that Russian nuclear energy is unsafe in one or another way. A major argument on the Western side is to suggest that Russian nuclear energy projects in Africa are never purely business-based and are a tool of furthering Russian power interest in other fields, such as military cooperation etc., gaining all sorts of Russian influence in the Black Continent. There are suggestions that Russia wants to control and exploit the rich resources of Africa. Other Western sources suggest that Russia does not respect contracts; including construction time schedules. Russia might also support "undemocratic" regimes in Africa, which are not "politically correct".

It is beyond the scope of this article to thoroughly analyse most criticisms of the West against Russian nuclear power business in Africa. However, a few statements might clarify the nature of Russian involvement of developing nuclear power in Africa:

- The Western approach of nuclear energy creates a mostly hostile framework in the Western world, which leads to frustration when assessing Russian gains in Africa in the field of nuclear energy business, making the West less competitive than it could be.
- Western criticism of Russian nuclear energy projects is far from being impartial and objective, since Russia is viewed as a competitor of Western dominance in Africa.
- The West is not different from Russia when it comes to combining energy policies with other political, military, business goals. It is nothing new and not an attribute of one or another party but of both.
- Russia is not different in principle from the West or China when it wants to control African resources for multiple purposes (political, economic, military etc.).
- Russian nuclear technologies are among the best all over the world, making Moscow a powerful player in Africa.
- Russian nuclear accident records show no significant difference compared to reactors that are designed and operated by the West. Should it not be the case, new nuclear power plant accidents would have diminished confidence in Russian nuclear technologies all over the world during the past decades.
- Russian influence and presence in Africa is nothing new, except that there was a gap between the demise of the Soviet Union and regaining all sorts of Russian influence in Africa.
- Supporting or not supporting "oppressive" regimes in Africa is based on interests and pragmatism. There is a long record on both Russian and Western side when support was provided to countries with a "doubtful" or "undoubtedly bad" socio-political record, especially in Africa. If it wasn't the case, parties should have refrained from cooperation with most African countries.

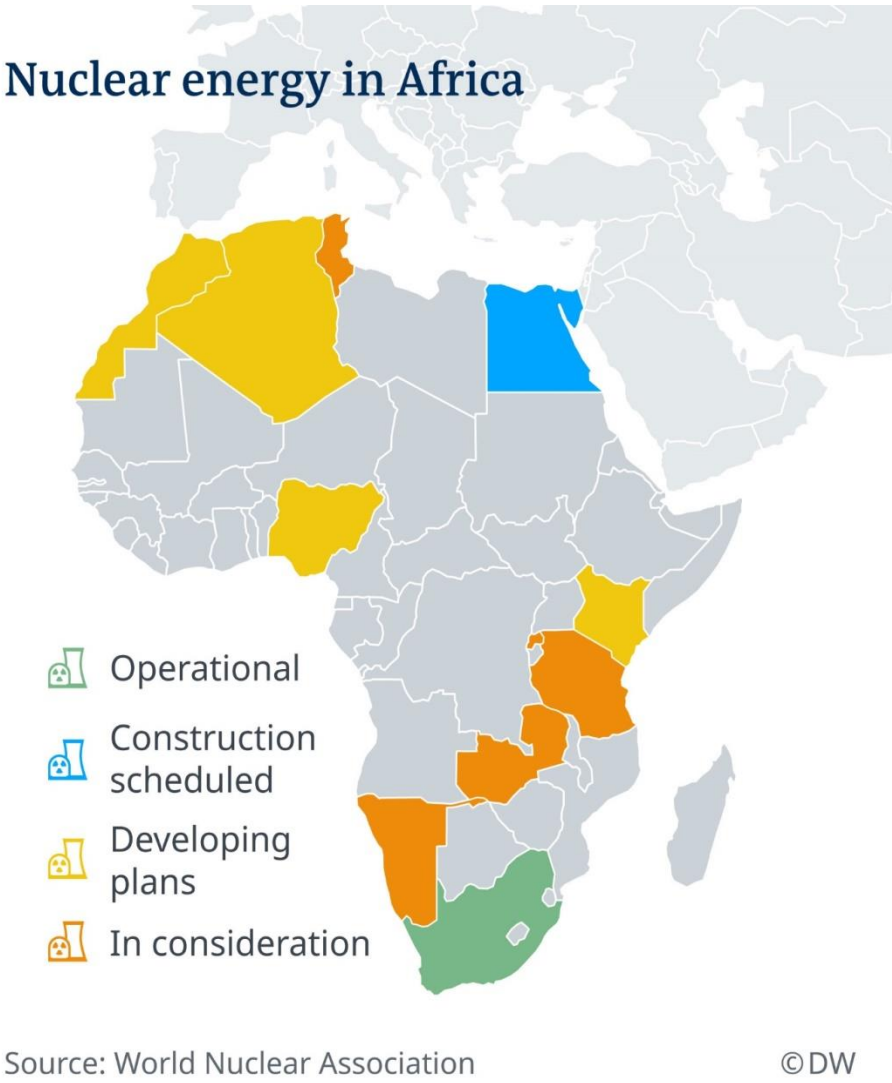
ANNEXES

Annex 1



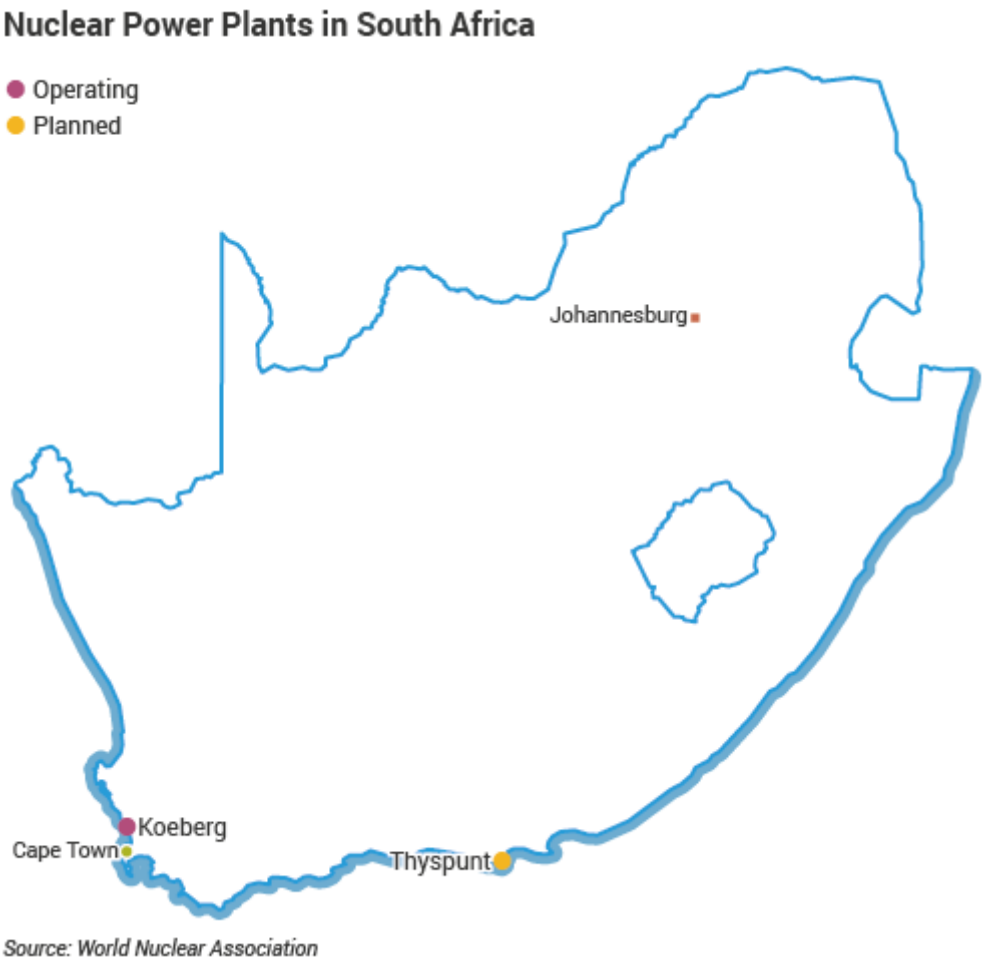
1. figure Edited by the author based on [4]

Annex 2



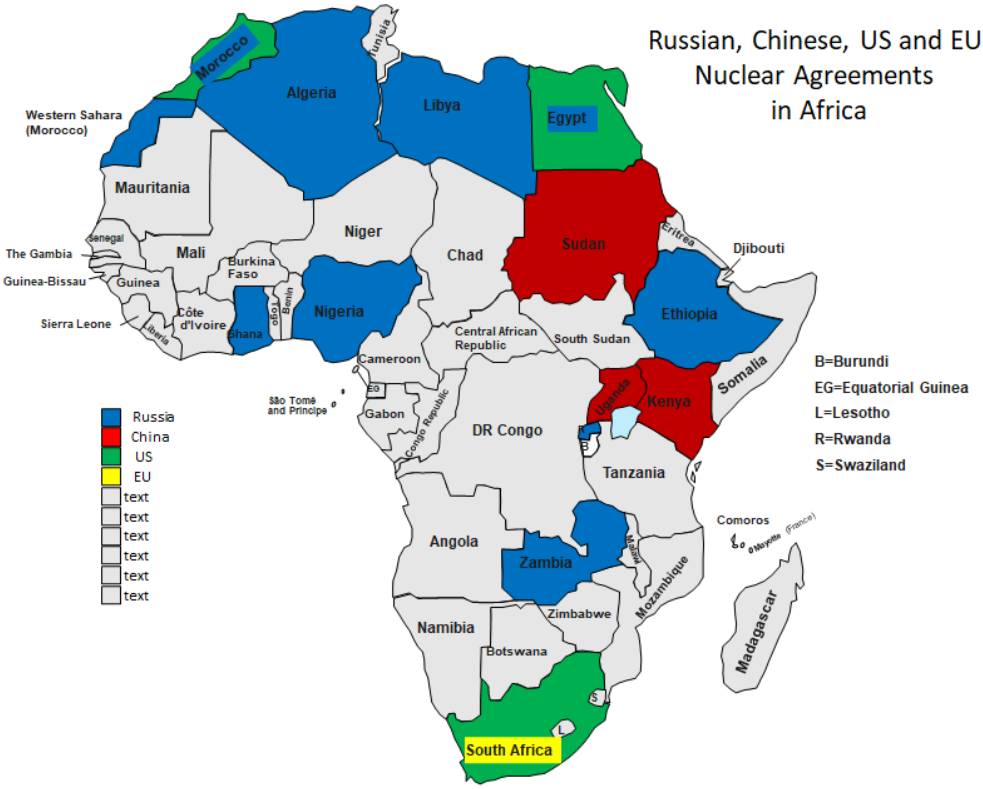
2. figure Edited by the author based on [4]

Annex 3



3. figure Edited by the author based on [11]

Annex 4



4. figure Russian, Chinese, US and EU nuclear agreements in Africa based on the author research

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