

# Potential for the Development of Russia's Cooperation with African Countries in Water Resources Management

*Shabanov, L. V.*

PhD Student, Department of International Economic Relations, Patrice Lumumba Russian University of Peoples' Friendship (RUDN), Moscow, Russia.

E-mail: 1142230349@rudn.ru

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## Abstract

This article examines the challenges and objectives in water resources management faced by African countries due to socio-demographic changes on the continent. It also analyzes Russia's efforts and intentions to support African countries in the field of water management. The author discusses cooperation in water desalination technologies, geological exploration, technology and knowledge exchange, and potential collaboration in resolving international water-related conflicts. Russia demonstrates a willingness to partner with African countries on equal terms, highlighting the potential for further cooperation.

**Keywords:** Africa, African countries, Russia, Water resources, Water supply, Desalination, Nuclear power plants, Geological exploration.

## Introduction

Africa is one of the most dynamically developing regions in the world, reflected in both rapid economic growth and a significant increase in population accompanied by urbanization. According to UN estimates, Africa's population will double by 2050, with a 95% probability that the population of sub-Saharan Africa will increase by 78% [7]. These trends pose significant challenges to African governments and the global community in ensuring water and food security. In this context, effective water management strategies and the development of infrastructure for water purification and delivery are critically important.

As Babintseva (2023) notes, access to clean drinking water is a foundation for economic and social development, whereas water scarcity negatively impacts agricultural productivity, ecosystems, biodiversity, human health, and quality of life [2, pp. 437-439]. Some researchers estimate that 70-80% of diseases may be caused by poor water quality [9]. Addressing freshwater issues can significantly improve public health and social conditions both in individual countries and across the region.

Several authors also emphasize the importance of technological development and water management for increasing agricultural efficiency. For instance, in Egypt, due to reduced Nile flows and subsequent reservoir filling in 2021, the government implemented pilot programs introducing modern irrigation systems such as drip and sprinkler irrigation instead of traditional surface irrigation. These innovations substantially reduce water consumption, helping Egypt maintain leading grain yields [6]. Additionally, Egypt's national project

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“New Valley” aims to provide freshwater to more arid western regions from the Nile. By constructing water canals and new facilities, the project plans to increase habitable land area by 25% [19].

These and other issues were discussed by the global community during the 2023 UN Water Conference in New York. Former Hungarian President János Áder, a member of various climate and water management organizations, emphasized that 80% of climate change impacts are manifested through water, including droughts and sudden floods. He stressed the need to improve access to financing for addressing these challenges, and especially for African countries [18, p. 15].

One central topic was funding. It was highlighted that developing countries, including those in Africa, require better access to financial resources to address water challenges. To sustain populations and ecosystems, existing financial practices and instruments must be reconsidered [18, p. 2]. Babintseva (2023) reports that external funding to African countries significantly declined between 2017 and 2020.

Another key objective is reducing dependence on increasingly high water consumption for food and energy production. Sustainable water and climate management requires separating economic activity from water use. Climate-smart food sources play an important role, and priority is given to adapting global agriculture to improve supply chains and support small communities, especially in African countries [18, p. 4].

The conference also called for appointing a UN Special Envoy on Water to initiate decisive actions to address global water challenges. This appointment is expected to improve coordination between agencies and organizations involved in water management and keep water issues on the priority political agenda. It was noted that impartiality is essential, particularly for transboundary conflicts, and it was suggested that the envoy be an African representative [18, p. 6].

### **Russia’s Support in African Water Management**

Russia can assist African countries in addressing these challenges. Unlike relations with Western countries, Russia-Africa partnerships are based on mutual respect and equality. Dmitry Kirillov, Head of the Federal Agency for Water Resources, emphasized that while Western countries’ technologies are often patented and inaccessible to developing nations, Russia is willing to share expertise and technology for water supply, quality, and agricultural solutions [10].

### **Russian Projects in Water Resources Management in Africa**

Russia actively signs cooperation agreements with African countries in environmental protection and water management. In 2018, Russia signed a memorandum of understanding with South Africa on water resources cooperation. In 2022, under BRICS, Russia initiated the “Clean Rivers of BRICS” program, promoting cooperation and experience exchange on freshwater preservation. Memorandums were also signed with Algeria (2023), and potential collaborations with DR Congo and Tunisia are underway. While many agreements are still in the memorandum stage, some projects are already being implemented.

### **Water Desalination**

Many international water management projects are implemented under Rosatom. The corporation has experience building desalination plants, implemented in Kazakhstan and Turkey alongside nuclear power plants (NPPs) [15].

The desalination complex at Turkey’s Akkuyu NPP drew interest from a Moroccan delegation in 2015 to study best practices. Akkuyu serves as a reference project for Rosatom’s development in desalination [12]. Moroccan specialists from the National Center for Drinking Water and Electrification appreciated the project [14].

In 2023, during the second Russia-Africa Summit, a memorandum was signed between JSC “Rosatom Infrastructure Solutions” and Morocco’s Water and Energy Solutions. The memorandum outlines plans for constructing infrastructure for water desalination, treatment, and purification. The summit also discussed

Egypt's El-Dabaa NPP, which will enable Egypt to join the club of nuclear countries. NPPA Chairman Amged EL-Wakil expressed hope for new water treatment facilities [8].

Desalination projects require significant energy. Integration with NPPs allows efficient energy use [16]. According to Ksenia Sukhotina (2017), integrated complexes reduce costs by avoiding electricity transport expenses (up to 15%) and optimize construction (up to 9% CAPEX savings). Integrated plants can produce and store water during low demand and low electricity cost periods, reducing desalinated water costs by at least 10% [4]. Small modular reactors (up to 300 MW) can also be used for seawater desalination [3], providing high potential in African coastal countries.

Rosatom's structures play a key role in Russia-Africa cooperation in integrated NPP-based desalination projects. Other Russian institutions also develop cooperation potential in water management.

### Geological Exploration and Water Resource Assessment

JSC "Rosgeologia" offers African countries assistance in groundwater exploration and analysis. At the St. Petersburg International Economic Forum, Rosgeologia and Sierra Leone signed a memorandum for cooperation in assessing freshwater reserves. Minister Julius Mattai highlighted the contribution of Russian experts in geological exploration and water resource assessment [20].

In 2023, Russian Minister of Natural Resources Alexander Kozlov emphasized tasks such as geological surveys, geological mapping, resource studies, monitoring, and geophysical methods for groundwater [1]. Zimbabwe has also shown interest in collaboration.

At the forum session "Water is Pricier than Gold," Russian and African officials outlined main cooperation directions. Rosnedra collaborates with Ethiopia, Ghana, and Mozambique in groundwater development, with potential for domestic use and export. Russia is ready to share expertise and technologies to establish local hydrogeological expertise [17]. Angola also expressed interest in Russian monitoring capabilities [5]. Thus, Russia supports large projects and local capacity-building in water resource management.

### Transboundary Water Resource Management

Another key area is the management of shared river basins. Kireeva and Diomande (2021) cite the Senegal River, which flows through Guinea, Mali, and Senegal, as an example where joint use leads to inter- and intra-country conflicts [9]. Russia's experience in negotiating equal agreements on transboundary rivers can serve as a model. Russia could mediate between Ethiopia, Egypt, and Sudan on the Nile basin in the Renaissance Dam project [13]. Regional organizations have not reached compromises, but Russia maintains high relations with most involved countries (South Sudan, Burundi, Eritrea, Ethiopia, Kenya, Rwanda, Tanzania, Uganda, Congo, Egypt, Sudan), positioning it to facilitate agreements, improve living conditions, and enhance its international image [11].

### Conclusion

Russia-Africa cooperation in water management demonstrates mutual respect and equality, unlike interactions with Western countries. Russia actively shares technology and expertise, especially in NPP-integrated desalination projects. It also supports geological exploration and training of local specialists, promoting sustainable water resource use. Russia can mediate transboundary water disputes, strengthening its role in global ecological and social problem-solving.

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