

INTERNATIONAL



MUN'19

# United Nations Environment Programme



*Agenda: Strengthening National Capacities to  
Manage Water Scarcity, With Emphasis on the  
Water Crisis in Africa*





# A WORD FROM THE EXECUTIVE BOARD

Greetings Delegates,

The Executive Board of the United Nations Environment Programme would like to welcome you all to Model United Nations 2019.

It would be a spectacular learning experience for the delegates, both experienced, and the ones who will experience it for the first time. We would want the delegates to embrace this opportunity and participate enthusiastically. From each of you, we expect impeccable diplomacy, high levels of debate, and of course, zeal to find solutions to the given problems posed before you. Knowledge of international politics and the state of global affairs is required to make constructive progress regarding complex multi-lateral problems.

Remember, it's the delegates who set the level of debate and maintain the flow of it. The agenda as a whole is one of the most fascinating topics as it deals with various aspects of logic, reasoning and most importantly International law. Regular UNA USA Rules of Procedures will be followed in this committee. We suggest all delegates to focus on the topics (divided further in the background guide) as a single topic and research accordingly, however, a division in regard to the approach shall also be welcomed.

The Background Guide is intended to give you an insight as to what we, as the Executive Board, expect from you in terms of what to debate upon, and we hope you do not base your entire research on this document. Feel free to revert back to the executive board for any queries or for any form of assistance you shall need.



# A WORD FROM THE EXECUTIVE BOARD

As delegates, you will be expected to be thorough with your research and base your analysis and conclusions on the same during the debate.

Please remember, a committee is only as strong as its delegates, and the Executive Board is here merely to guide the debate, not to take part in it.

Looking forward to two days of exemplary diplomacy and meaningful debate!

Regards  
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# COMMITTEE BACKGROUND

The United Nations Environment Programme (UNEP) is a programme that coordinates the organization's environmental activities and assists developing countries in implementing environmentally sound policies and practices. It was founded by Maurice Strong, its first director, as a result of the United Nations Conference on the Human Environment (Stockholm Conference) in June 1972 and has overall responsibility for environmental problems among United Nations agencies; however, international talks on specialized issues, such as addressing climate change or combating desertification, are overseen by other UN organizations, like the Bonn-based Secretariat of the United Nations Framework Convention on Climate Change, and the United Nations Convention to Combat Desertification.

UNEP's activities cover a wide range of issues regarding the atmosphere, marine and terrestrial ecosystems, environmental governance, and green economy. It has played a significant role in developing international environmental conventions, promoting environmental science and information, and illustrating the way those can be implemented in conjunction with policy, working on development and implementation of policy with national governments, regional institutions in conjunction with environmental non-governmental organizations (NGOs).

UNEP has also been active in funding and implementing environment related development projects. UNEP frequently uses the alternative name UN Environment. UN Environment has aided in the formulation of guidelines and treaties on issues such as the international trade in potentially harmful chemicals, trans-boundary air pollution, and contamination of international waterways. Relevant documents, including scientific papers, are available via the UNEP Document Repository.

# ABSTRACT

Southern Africa faces acute water scarcity challenges due to drought recurrence, degradation of surface water resources, and the increasing demand for water from agriculture, which has to meet the growing food demands of an increasing population. These stressors require innovative solutions that ensure the sustainability of water resources, without which, the consequences could be dire for a region exposed to a host of vulnerabilities, including climate change. This review outlines the role of water markets in water management in times of water scarcity, highlighting the drivers of water markets in southern Africa, such as water scarcity, transboundary nature of water resources, and their uneven distribution. The review further discusses the role of water markets in climate change adaptation. Related institutional and legal frameworks, as well as water allocation mechanisms are explored, aiming at improving water market governance. The impact of adaptation to new water regimes in the face of scarcity is assessed by considering characteristics of current markets as related to future opportunities. In a diverse region such as southern Africa, with unevenly distributed water resources, advancing the concept of water markets could play an important role in mitigating water scarcity challenges and promoting regional integration through coordinated transboundary water transfers. The emergence of water markets in the region is influenced by the continued depletion of water resources, which is resulting in the adoption of innovative water marketing strategies, such as inter-farm sharing or farm joint venture systems and inter-basin and intra-basin water transfers. As the concept is new in the region, it still has to face challenges that include general market inefficiencies, high transaction costs, market information asymmetries, imperfect competition, and weak or absent robust institutional frameworks that can facilitate market development.



# INTRODUCTION TO THE CRISIS

The challenges of water scarcity and continued depletion and degradation require a paradigm shift in current water governance strategies and a move towards the adoption of innovative approaches that reduce risks and help communities to live within biophysical limits. Methods used to manage the risks associated with water scarcity and reallocation are demand-side management and supply augmentation. Demand-side management promotes awareness measures (provision of information on reducing domestic and agriculture water consumption), regulatory and/or planning processes (governance structure within a catchment and its water-sharing mechanisms), and economic incentives (water marketing initiatives that improve water-use efficiency and water management). Improvements in infrastructure (dam and weir construction) or substitution (desalinated water) have been promoted by research and decision-makers, as they play an important role in addressing demand gaps. However, the effectiveness of infrastructure and substitution measures hinges on the integration of demand and supply response mechanisms through market-based governance frameworks. Formal water markets emerged as a result of water scarcity or uneven distribution, thus they are intended to reduce the gap between the ever-growing demand and the limited water supply in water scarce areas.

While the challenges brought about by water scarcity are threatening sustainable development, water markets are envisaged to play a role in mitigating those challenges. The presence of water markets is noticeable when there is a transfer of water from a lower to a higher-value user on a temporal or permanent basis. The absence of water markets is normally due to the under-pricing of water, as it is regarded as a social good rather than an economic good. For example, in the 1980s, South Africa used to price water at 30% of the operation and maintenance costs. However, water markets are fast growing, stimulating water pricing from an opportunity cost perspective through the interaction between demand and supply forces. This has the benefit of ensuring the best use of water. However, the development of water markets entails three basic factors: (i) existence of water scarcity, (ii) structure of ownership of water and property rights of water are well defined or established, and (iii) regulatory aspects of rights are conducive for functioning of water markets. In well-established water markets, users—particularly farmers—can change to lower intensity irrigation systems and sell surplus water in line with the theory of opportunity cost of water. In southern Africa, demand management strategies such as water marketing are necessary to alleviate scarcity through the transfer of the resource to its highest-valued use while the market attaches an opportunity cost to that water, which in turn provides incentives for conservation. Thus, water has an opportunity cost whereby both buyers and sellers adopt water conservation technologies, although buyers may be more frugal, as the opportunity cost they face may be slightly higher due to transactional cost.

# WATER MARKETS

The introduction of markets and property rights in the water sector facilitates the transfer of the water rights to take place until the net benefits from a reallocation are exhausted for all water users (until marginal values, net of transactions, and conveyance costs are equal among water users). In a water market environment, water is sold until the marginal benefit is equated to the marginal cost of keeping the water unsold, and similarly, the buyers continue to purchase water until the marginal benefit of water purchases is equal to the marginal cost of water purchases. This discourages unnecessary extraction of water resources, results in huge water savings, and enhances climate change adaptation.

As already alluded to, water markets are influenced by both supply and demand and are mainly practiced in areas experiencing water scarcity. Thus, water market refers to the voluntary trading of water in some measurable form, a temporary or long-term water exchange, or the right to use water from one user to another by any means of exchange or lease. Their main objective is to get maximum economic benefits from the available water resources, and that water is availed to where it is needed the most. Thus, water markets benefit water management by increasing water allocative efficiency, availing water to users with the highest possible returns. In general, users appreciate the value of the resource, and there is more production with fewer water resources. The production of more output with less water is considered an improvement in water productivity. A study done in Australia by Grafton et al. in 2011 indicates the importance of water markets in improving water productivity. In general, water markets do not involve investing in new infrastructure.

Three types of water markets include:a) temporary transfers for immediate use, b) medium-term leasing of water rights that gives the user security to water resources for a period, c) permanent water rights at a fixed quantity. The marketing could either be informal (arrangements between users) or formal (institutionalized and managed by authorities). In formal water markets, there are regulations and processes to protect the interests of all stakeholders. In essence, the benefits of water markets are (a) an effective way of reallocating water from lower to higher-value uses and (b) cost effective alternatives to mitigate water insecurity challenges. Thus, the transfer of water resources on a supply-demand basis is the best financial, political, and environmental means of managing scarce water resources. Thus, water markets are a catalyst for water use efficiency for sustainable societies and are considered as demand-management approaches, as they deal with water insecurity challenges. They are not about setting biophysical limits to water-use, but they play an important role in mitigating water scarcity constraints and help in keeping water-use within limits at the lowest possible cost.

# BENEFITS OF WATER MARKETS

- Minimising the cost of restoring the health of the water system
- Reconciling the widening gap between supply and demand, which is expected to increase as global water extractions are projected to increase by 55% by 2050
- They sustain livelihoods during scarcity and reduce the widening gap in water accessibility between agriculture and other competing sectors
- They reduce the volume of unaccounted water
- They remove inefficiencies from the water supply system
- Farmers produce more with less water, valuing water and hence its opportunity cost.

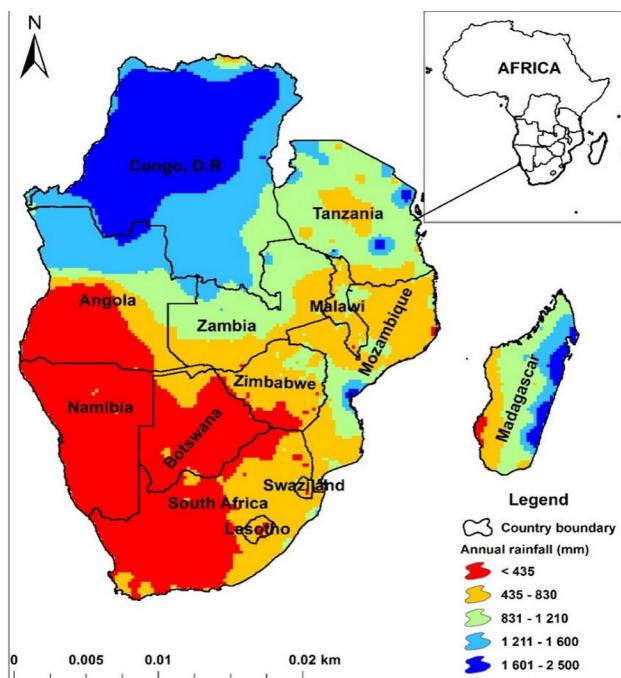
Water markets could be very relevant for southern Africa, as 75% of the region is arid and characterised by high climate variability and unpredictable rainfall patterns, worsened by the recurrence of intense droughts. A regional mean annual runoff (MAR) volume of 650 km<sup>3</sup> is considerably low for a region that relies on rain fed agriculture and hydropower. Both surface and groundwater resources are unevenly distributed throughout the region. These factors contribute to water scarcity challenges in southern Africa. Water scarcity refers to the lack of sufficient available freshwater water resources to sustainably meet the demands of water usage within a region. The concept of water scarcity embraces other concepts such as water stress, water shortage or deficit, and water crisis, and it is usually caused by growing freshwater use and depletion of usable freshwater resources. Faced with the need to meet the growing demand for water resources, the Southern Africa Development Community (SADC) has put in place several legal and institutional frameworks aiming to manage water resources in a sustainable way. These frameworks include: (i) SADC Protocol on Shared Water courses, and (ii) the SADC Regional Water Policy.

While water markets have improved water use efficiency and reduced the impacts of water scarcity in countries with operational legal and institutional frameworks, such as Chile, Australia, and the United States of America, in southern Africa, they are still in their infancy. In southern Africa, water marketing is driven by the need to reallocate existing resources efficiently due to increasing demand in the midst of scarcity. Their success in southern Africa hinges on the availability of specific governance structures. This review discusses the baseline status of water markets in southern Africa, outlining opportunities and constraints. The aim is to provide evidence on the pros and cons of water markets.

# STUDY AREA OF THE REVIEW

The study covered southern Africa, which comprises 16 countries: Angola, Botswana, Comoros, Democratic Republic of Congo, Swaziland, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe (Figure 1). These countries form the Southern Africa Development Community (SADC), which aims to achieve economic and political integration as governed by the SADC Treaty, the overarching legal document framework for the region. The region also aims to attain economic growth, peace, and security, and to alleviate poverty and improve the livelihoods of the people. The region aspires to achieve regional integration through water trade from areas with high water resource endowments to those with low water resources endowments. To date, the region has ratified a number of policies and institutions that are driving the political will towards integration. These policies include the SADC Water Policy and the Protocol on Shared Watercourses.

Seventy-five percent of the region is arid and characterised by highly variable and uneven rainfall regimes. Annual rainfall oscillates between 100 mm in the driest areas and 2500 mm in the wettest regions. Climate varies drastically from desert through temperate, savannah, and equatorial. Negative changes in moisture regimes as impacted by climate change, threaten the production of about 95% of agricultural land in southern Africa, as it is rain-fed. Projections indicate that southern Africa will be subjected to increased physical and/or economic water scarcity by as early as 2025. Agriculture is the largest sector, as it sustains the livelihoods of about 60% of the population and also consumes more than 70% of the available freshwater resources. The importance of agriculture has promoted the region to target increasing the irrigated area by 100% by 2025 from the baseline value of the year 2000. The estimated cost of increasing the irrigated area is \$37 billion, while infrastructure operation and maintenance would require a further \$31 billion.



# STUDY AREA OF THE REVIEW

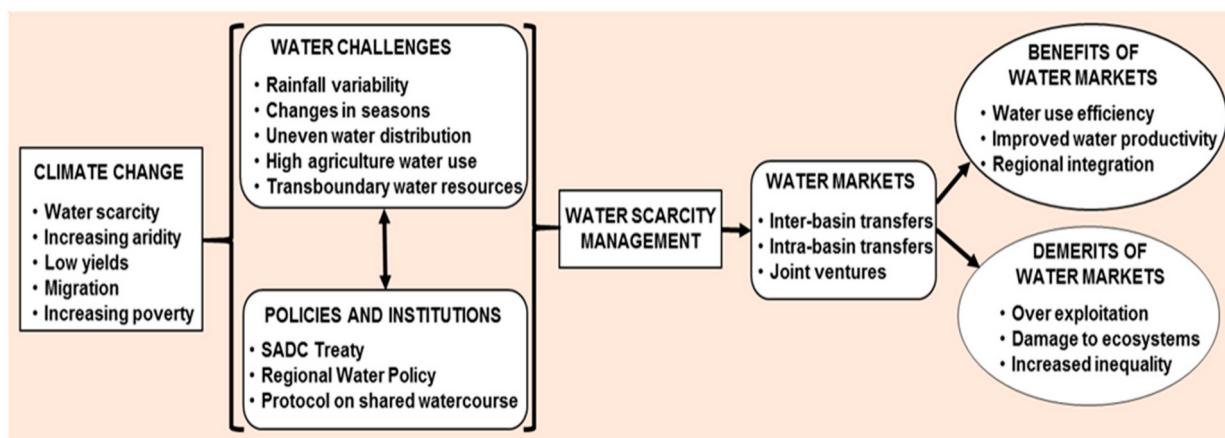
However, irrigation expansion would mean allocating more water resources to agriculture, a scenario that favours water markets out of necessity. Water scarcity is creating uneven demand-supply pressures, and promoting water markets in the process. Marketing in water is evidently concentrated in the southern parts of the region because of acute water scarcity. In contrast, northern countries (DR Congo and Zambia) are endowed with abundant water resources.

# METHODOLOGY OF THE REVIEW

Although the concept of water marketing is still in its infancy in southern Africa, there is evidence of rapid growth, as shown by the increasing water transfers and joint ventures. We sourced 38 water market publications that focused on the region, 15 of which were from South Africa, six from Zimbabwe, three from Tanzania, and the rest were shared among the other 13 Member States of the SADC region. The publications were sourced through Web of Science and Google Scholar using keywords such as “water markets”, “water trading”, “southern Africa”, “water scarcity”, “inter-basin water transfer”, and “joint ventures.”

The publications focused mainly on water security, investment in water infrastructure, water rights and allocation, irrigation schemes joint venture, risks in water markets, and water balance. We also consulted grey literature from Watercourse Commissions and the SADC Water Sector. Previous studies compared water markets in southern Africa with those in countries where the concept is already advanced, such as Australia, the United States, and Chile, as well as showcasing case studies of water markets at the farm level. This review focuses on the role water marketing can play in water management, highlighting their characteristics and trends in the region. The review also focuses on governance structures of water markets as well as their risks.

The paper provides evidence of success stories from regions where the concept has been practiced and recommends available options for southern Africa. The study also highlights the drivers of water markets, such as climate change, underlining the risks associated with water insecurity. Existing water markets are also outlined, as shown in (Figure 2). The aim is to develop resilient waters for southern Africa in an environment of scarcity and uneven distribution and to promote regional integration.



# METHODOLOGY OF THE REVIEW

The aforementioned figure is a graphical representation of the methodological framework used to develop this review. The methodology is motivated by the need to provide evidence on a water management framework that would address the unevenly distributed and scarce water resources in southern Africa. The region is divided into two zones according to water availability—the north with abundant water resources and the south, which is water scarce. It is also built on the region's aspiration to achieve regional integration through its common culture, shared water resources (fifteen river basins are transboundary) and similar challenges such as depleting resources, drought recurrence, urbanisation, and spiralling population growth.

# TOPICS TO PONDER UPON

- 1) Need for Water Management in Southern Africa
- 2) Types of Water Markets and Management Methods Practiced in the SADC Region
- 3) Legal Frameworks Related to Water Market and Management in the SADC
- 4) Benefits of Water Management
- 5) Risks Associated with Water Management (or the Lack Thereof) in Southern Africa

# LINKS FOR FURTHER RESEARCH

<https://www.unwater.org/publications/world-water-development-report-2019/>

<https://www.unwater.org/publications/world-water-development-report-2018/>

<https://www.un.org/en/sections/issues-depth/water/>  
<https://reliefweb.int/sites/reliefweb.int/files/resources/261424e.pdf>

<https://www.un.org/africarenewal/magazine/april-2018-july-2018/cape-town-water-taps-running-dry>

<https://www.unwater.org/5th-africasan-conference/>