

IMPACT OF CLIMATE CHANGE ON THE ACTUAL ENJOYMENT OF THE RIGHT TO WATER

ZOHRA GUIDOUM¹

¹PhD, Faculty of Law and Political Science, Yahia Fares University of Medea, Algeria.zohraguidoum81@gmail.com

Received: 06/03/2024

Accepted: 28/07/2024

Published: 11/08/2024

Abstract:

Climate change represents a formidable challenge to numerous human rights, prominently including the right to water and sanitation services. As the planet warms, the hydrological cycle undergoes profound transformations, manifesting in diminished surface and renewable groundwater reserves. This alteration affects river flows and groundwater recharge dynamics. Moreover, climate change accelerates sea level rise and amplifies the frequency and severity of droughts and floods.

These phenomena critically affect the sustainability and equitable distribution of water resources. It is imperative for nations to devise and implement robust strategies to meet their commitments to guarantee the genuine realization of the right to clean water and sanitation. This necessitates an integration of legislative measures with enacted policies, fostering sustainable management of water resources, improving water use efficiency to harmonize demand with supply, and advancing infrastructural developments.

Keywords: *Climate Change, Right to Water, Water Resource Sustainability, Water Security.*

INTRODUCTION:

The escalating climate crisis poses a grave threat to human rights across the globe. The rise in temperatures, driven by anthropogenic greenhouse gas emissions, directly undermines the fulfilment of the right to water and sanitation, as enshrined in various international legal frameworks.

These frameworks include the Convention on the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination against Women, and the Geneva Convention on the Protection of Civilians, which collectively implore state parties to ensure the provision of clean drinking water for their populations. Furthermore, the International Covenant on Economic, Social, and Cultural Rights explicitly addresses these rights.

The adverse effects of climate change are intimately linked to water access issues such as increased incidences of droughts and floods, which are becoming more frequent. Rising sea levels lead to the salinization of freshwater bodies, diminishing groundwater availability, thereby exacerbating water scarcity and unpredictability.

This scenario precipitates widespread destruction and displacement of populations, further aggravating the situation with floods that can severely damage water collection and distribution infrastructures and sanitation facilities, leading to water contamination. On the other hand, drought conditions in various regions result in significant population displacements and substantial fluid losses.

The impact of climate change extends beyond mere environmental degradation; it poses a direct threat to human lives and impinges on fundamental human rights, including the right to access safe and clean water and sanitation services. This right is especially critical for vulnerable populations.

The nexus between climate change and its implications on the right to water has been acknowledged in numerous international accords, including the 2030 Agenda for Sustainable Development, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction 2015-2030, and by the adoption of Resolution 26/27 and Resolution 64/292 in 2010 by the Human Rights Council and the General Assembly, respectively, focusing on the human right to water and sanitation.

Additionally, the right to water has been a focal point in Algerian legislative reforms, as seen in the constitutional amendment of 2020 and Water Law No. 05/12¹, which governs water access, distribution, and quality. The management of major environmental hazards, such as floods, is further addressed in Law No. 04/20² and other legal statutes concerning water rights and environmental protections.

Water is pivotal in disaster management and the attainment of political stability. The adverse impacts of climate change on water supply and the effective enjoyment of water rights can be effectively mitigated through the enactment of robust legislation and the implementation of appropriate policy frameworks.

This study delves into the profound connection between water as a human right, as articulated in international and national legal instruments, and the influence of climate change on this right, whether these impacts are direct or indirect across different nations. We postulate the core issue of this study as the interrelation between the right to water as an environmental element and its susceptibility to changes induced by environmental transformations.

To address this issue and thoroughly cover the subject matter, we employ a descriptive analytical methodology structured around two main themes. The first theme explores the significance of water rights within the context of international and national legal frameworks and their interaction with climate change as it affects the actual enjoyment of these rights. The second theme examines the diverse consequences of climate change on the human right to secure clean and safe water and sanitation services.

First Section: Legal Regulation of Climate Impact on the Actual Enjoyment of the Right to Water

Climate change presents a myriad of detrimental impacts, endangering human rights, notably the right to water and sanitation services, fundamental to both human existence and ecological balance. Initially, this section highlights the relevance of the topic through international agreements and national legislation, followed by an exploration of the national legislative groundwork underpinning the right to water.

First Subsection: Key International Instruments

International frameworks underscore the critical need to safeguard the quality and availability of freshwater resources. Notable among these are Agenda 21 (Chapter 17), the 2030 Agenda for Sustainable Development (Goal 6), the Paris Agreement on Climate Change of 2015, and the Sendai Framework for Disaster Risk Reduction 2015-2030.

These documents collectively address the repercussions of climate fluctuations on water resources and the resultant adverse effects on the human right to water access.

First Division: International Agreements Related to the Climate Impact on Water Resources

The international legal instruments articulate the ramifications of climate variations on general human rights and specifically on the right to access potable water.

Firstly: The 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development ambitiously aims to ensure everyone has access to adequate and equitable sanitation and hygiene by 2030³. Yet, it is often observed that water, despite its critical role, is underacknowledged within the framework of the 2030 Agenda, even though it is essential for achieving various sustainable development goals.

Water is indispensable for meeting fundamental human needs and is integral to human rights concerning the universal provision of water and sanitation services, as highlighted by Goals 5 and 6. Moreover, its importance in sustaining marine ecosystems is recognized by Goal 14. Nevertheless, Goal 13 encompasses both climate change mitigation and adaptation efforts, aiming for equitable solutions.⁴

The Sustainable Development Goals (SDGs) are intricately linked, and their collective achievement plays a crucial role in shaping life across societies and the entire planet. Specifically, achieving the eight targets outlined in Goal 6 not only improves water and sanitation services but also positively influences the entire 2030 Agenda.

Goal 6 extends its reach beyond basic water services to encompass the entire water cycle. Since ecosystems play a vital role in supplying water to societies, it is essential to preserve a significant portion of water within these ecosystems to maintain their functionality and quality. This

preservation enhances the resilience of freshwater resources against both human-induced and environmental changes⁵.

The alignment of the SDGs with the 2015 Paris Agreement is evident in the strategic approach adopted to mitigate climate impacts and ensure the sustainability of resources for both present and future generations.

Secondly: The Paris Agreement on Climate Change

Since the adoption of the Paris Agreement, substantial progress has been made in reducing greenhouse gas emissions and advancing adaptation initiatives. Over 160 countries, along with the European Union, have submitted their nationally determined contributions, highlighting their commitment to this cause.

The special rapporteur on human rights has underscored the importance of nations reviewing their climate actions through the lens of human rights. As signatories to human rights treaties, all parties involved in climate negotiations are obliged to align their climate actions with their human rights obligations.

Notably, the latest special report by the Intergovernmental Panel on Climate Change (IPCC) points out that while the Paris Agreement does not explicitly mention water, it remains a critical component in nearly all strategies for climate change mitigation and adaptation⁶. Water is central to the adaptation measures and is crucial in addressing water-related hazards, thereby emphasizing the human rights-based approach within the Agreement, including the right to water.

Thirdly: The Sendai Framework for Disaster Risk Reduction 2015 - 2030

The Sendai Framework is structured around seven global goals and four priorities, guided by 13 principles aimed at significantly reducing both material and human losses due to disasters.⁷

The Framework also focuses on enhancing understanding of water-related risks and their societal impacts, with strategies to mitigate these risks. Although water is not extensively mentioned in the Sendai Framework, it is integral to all seven of its goals and permeates each of the four priorities.

Disasters such as floods and hurricanes, which have become increasingly frequent and severe in recent years, particularly affecting coastal and island states, underscore the critical importance of water in disaster risk reduction. These disasters often lead to significant disruptions in access to drinking water and sanitation services due to infrastructure damage.

The Sendai Framework's mid-term conceptual note for implementation aligns with the goals of the 2030 Sustainable Development Agenda and the Paris Agreement, further solidifying the interconnectedness of global efforts in climate and disaster resilience.

Climate change significantly impacts the availability and quality of water, crucial for meeting basic human needs and ensuring access to sanitation services. To understand the nexus between the actual enjoyment of the right to water and climate change, it is essential to first establish a clear definition of this right within the framework of international agreements.

Second Division: The Relationship between Climate Change and the Right to Water

Climate change indeed affects the availability and quality of water necessary to meet basic human needs and access to sanitation services. Before addressing the link between the actual enjoyment of the right to water and climate change, and the growing focus on it as a secondary element, it is essential to define this right within the context of international agreements first.

Firstly: Definition of the Right to Water and Sanitation

The right to water is articulated as every individual's right to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use. This right is specifically limited to water for personal and domestic purposes and does not encompass other uses of water.⁸

The Committee on Economic, Social, and Cultural Rights, through General Comment No. 15 (paragraph 2), recognizes the right to water as every individual's right to a sufficient and safe quantity of water that is also affordable for personal and domestic uses. The General Assembly, in Resolution 64/292, has affirmed that the right to water and sanitation is integral to human rights, asserting that these rights are fundamental for the complete enjoyment of all human rights.⁹

This affirmation is supported by major international human rights instruments, including the Universal Declaration of Human Rights, and the International Covenants on Economic, Social and Cultural Rights, and on Civil and Political Rights.¹⁰

From a human rights perspective, sanitation is defined as a system for collecting human waste and related hygiene, including its transportation, treatment, disposal, or reuse¹¹, with a focus on providing this service equitably and without discrimination.

Secondly: The Relationship between Climate Change and the Right to Water

The global community has actively engaged in addressing the climate change crisis within the context of human rights, particularly focusing on the availability of safe drinking water and sanitation services.

This focus is evident in various international treaties such as the Convention on the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination Against Women, and the Convention on the Rights of Persons with Disabilities, ensuring the application of the right to water and sanitation for these vulnerable groups.

The intersection of climate change and human rights has increasingly gained attention at the Human Rights Council, as evidenced by Resolution 8/23, which expresses concern about the immediate and long-term threats posed by climate change globally. Additionally, the necessity of access to safe drinking water and assured sanitation was underscored in Resolution 15/9 (2010).

The Human Rights Council further mandated the High Commissioner for Human Rights to implement Resolution 7/23, leading to a comprehensive analytical study on the relationship between climate change and human rights. This study recognizes the extensive impacts on human and environmental well-being attributed to the effects of climate on water resources.

A landmark recognition in this area is the Malé Declaration on the Human Dimension of Global Climate Change, which explicitly acknowledges the clear and direct impacts of climate change on the full enjoyment of human rights.

The agreement reached at the Paris Conference of Parties in 2015 reflects the escalating concern about the linkage between climate change and human rights. The United Nations High Commissioner for Human Rights views effective climate action not only as a moral imperative but also as essential for states to meet their obligations under human rights law.¹²

This perspective underscores the importance of integrating human rights standards and principles into national and regional policy frameworks to mitigate the detrimental effects of climate change on human rights¹³, which are exacerbated by challenges such as social and environmental pressures, rapid urbanization, pollution, and the depletion of water resources.

Second Subsection: National Legislative Foundation for the Right to Water

Access to drinking water and sanitation networks represents a fundamental human right enshrined in both international and national legislation. The Algerian constitutional framework, particularly through the amendment of 2020, has prominently featured this right. Article 63 of the revised Constitution underscores the state's obligation to ensure citizen access to drinking water and its conservation for future generations.

This inclusion signifies a formal recognition of the right to safe and secure drinking water for all, without discrimination, and takes into consideration the needs of future generations. It demonstrates Algeria's commitment to adhering to its international human rights obligations.¹⁴

The Algerian legal landscape is further defined by several laws pertaining to water, starting with Law 83/17¹⁵, which encompasses the Water Law, and extending to Law No. 05/12,¹⁶ which delineates principles and regulations for the exploitation, management, and sustainable development of water resources.

These laws are designed to secure the right to water and sanitation for meeting the population's basic needs and maintaining social equilibrium in the provision of public water and sanitation services. Among the principles outlined, the law affirms the right of every natural or legal entity to exploit water resources.

Specific to the quality of water intended for consumption and sanitation, Articles 32, 33, and 34 of Law 85/05¹⁷, along with Executive Decree No. 14-96¹⁸, set standards for water quality for human consumption. Local authorities are mandated under Municipal Law No. 11-10 (Article 3) and Article 112 to ensure solutions are available for providing potable water and its distribution to citizens.

Further, in the quest for pure water, Law No. 03/10 on environmental protection within the framework of sustainable development (Articles 13 and 16) emphasizes the protection of the natural environment. This includes measures for coastal protection, water pollution prevention, combating

desertification, and other environment-related legal statutes. Law 04/20 outlines preventive measures for major hazards and disaster management within sustainable development paradigms, including provisions for flood management.

The competition for water resources between industrial and agricultural sectors necessitates state intervention to manage water use and consumption effectively. This management focuses on three primary strategies: regulation of distribution, enhancement of storage capacity, and promotion of water desalination. However, these management solutions require significant governmental investment.

Without such financial commitment, the quality and availability of water resources continue to deteriorate due to the absence of a contemporary legal framework equipped with adequate and modern management tools within the current institutional and economic context.¹⁹ While these measures are in place, leveraging the groundwater resources in the Algerian desert remains an underutilized option that could potentially mitigate some of the existing water resource challenges. On the other hand, population growth and urban expansion lead to a significant increase in water demand, raising concerns about the linkage of drinking water and sanitation to health systems. This necessitated the creation of a national water plan that defines priorities and national objectives in the mobilization, management, financing, and allocation of water resources²⁰.

The issue of water provision requires renewing the distribution network to cover the deficit that has recently affected most Algerian cities, with local authorities responsible for finding solutions and alternatives to overcome water scarcity and ensure access, embodying the legislative provisions that guarantee water access, management, and sustainability.

Second Section: The Impact of Climate on the Right to Water

The right to water is intimately connected to climate change, which influences global water resources in multifaceted ways. This interaction results in heightened water scarcity and associated risks such as droughts, floods, and sea-level rise that facilitate saltwater intrusion into freshwater sources, diminishing the availability of potable water. These changes also indirectly compromise the infrastructure for water and sanitation, underscoring the complex relationship between climate dynamics and water access.

First Subsection: Direct Impact on Water Resources

Climate change induces a variety of detrimental effects that directly impact water resources, leading to contamination with organic and chemical pollutants and increasing the prevalence of waterborne diseases. Shifts in precipitation patterns, as well as the melting of snow and ice, alter hydrological systems and affect the quantitative availability of water sources.

First Division: Impact on Water Quality

The repercussions of climate change on water quality manifest through various channels, including intensified droughts and more frequent floods, while sea-level rise contributes to the intrusion of saltwater into groundwater systems.

Firstly: Drought

The expected increase in the frequency of droughts due to climate change will likely exacerbate water shortages, demanding the implementation of long-term adaptation strategies to mitigate future risks.

Drought conditions pose significant challenges for the operation of complex water supply networks, especially in semi-arid regions, emphasizing the need for robust management of these risks. Effective adaptation involves a variety of measures including guidance, education, and investments in the maintenance, enhancement, and conservation of water facilities.²¹

It also entails establishing protocols for water rights exchanges and bolstering the resilience of the water resource network. Prolonged and frequent droughts impact water supply networks that rely on limited and seasonal storage capacities, as urban systems depend on constrained and variable surface water flows for their storage.²²

This situation endangers sanitation facilities by increasing concentrations of chemicals and pathogens²³, thereby affecting not only economic and social well-being but also the sustainability of essential environments, ecosystems, and biodiversity.²⁴

The impact of climate change on both the quantity and quality of water extends to water resource management, visible through recurring drought cycles²⁵. This situation shifts the focus from reactive crisis management to proactive risk management, promoting the development of drought

management plans that include monitoring and planning, prioritization of water uses, and assurance of water supplies. Long-term strategies also involve enhancing early warning systems for droughts and improving prediction capabilities despite resource scarcity.

Secondly: Floods

Floods severely damage sanitation networks and elevate the levels of suspended solids, reducing the efficiency of sewage systems and potentially leading to extensive water source contamination.²⁶ This degradation compromises drinking water quality. In areas with inadequate water drainage networks, these systems are prone to blockages.²⁷ Floods can also lead to the loss of water sources, the destruction of reservoirs, or the inundation of springs, rainwater collection systems, and wells²⁸. These events complicate access to water, cause pollution, and pose significant health risks. Additionally, challenges in water treatment arise from infrastructure damage, affecting the distribution and provision of clean, potable water.

Thirdly: Saltwater Intrusion

Saltwater intrusion into freshwater sources renders the water unsuitable for drinking or other uses. This phenomenon is exacerbated by rising sea levels associated with climate change, increasing the risk of saline intrusion and leading to the salinization of groundwater.

This issue poses a significant threat to global populations, particularly in coastal areas and small, low-lying island nations already experiencing water stress²⁹. High population densities in urban settings further strain water supplies and exacerbate difficulties in accessing clean and safe water, especially in regions already facing water scarcity, impacting groundwater reserves.

Fourthly: Impact on Groundwater

The Intergovernmental Panel on Climate Change highlights that the 21st century will experience a decline in renewable groundwater resources across most semi-arid subtropical regions, leading to intensified competition for water in arid areas and across different sectors.³⁰

In Algeria, consistent reductions in rainfall since the early 1970s have triggered prolonged droughts, significantly depleting groundwater reserves, especially in the northern regions. These drought conditions have led to the overexploitation of groundwater resources.³¹

Despite Algeria's substantial underground water reserves, they have not been adequately prioritized within integrated and sustainable water management strategies. Therefore, sustainable investment and the application of advanced technologies are essential for maintaining groundwater quality and ensuring its long-term sustainability at the hydrological level.

Second Division: Water Scarcity

According to United Nations statistics, nearly half of the global population is currently grappling with severe water scarcity, affecting approximately two billion people who lack access to safe water supplies. This situation is anticipated to worsen with ongoing population growth and the impacts of climate change, which severely diminish water supplies traditionally stored in glaciers and snow caps, thus reducing water availability.³² Accelerated glacier melting is particularly detrimental, exacerbating water scarcity in arid regions.

Climate change amplifies issues of water scarcity and uneven spatial access, especially in regions lacking adequate services to access water. Expanding the scope of adaptable management approaches to include equitable access as a primary consideration is crucial.³³

The human rights framework supports the development of integrated water resource management by establishing developmental priorities and providing a transparent mechanism for resolving conflicts of rights and interests. This approach aims to promote economic and social well-being in a fair and equitable manner while ensuring the sustainability of vital ecosystems.³⁴

Moreover, water scarcity heightens competition among various sectors, including domestic, agricultural, and industrial water use. In addressing this challenge, human rights instruments advocate for prioritizing the essential needs of all individuals and securing sufficient water for human dignity, life, and health, which should be regulated based on local assessments that consider geographic, climatic, cultural, and other relevant factors to prevent conflicts arising from water scarcity.

Second Subsection: Indirect Effects of Climate Change on the Right to Water

The impacts of climate change on water resources, whether direct or indirect, significantly influence water infrastructure and sanitation services, further aggravating the crisis of equitable access to water and sanitation.

First Division: Impact on Water Infrastructure

The reduction in water availability due to climate change presents substantial challenges in maintaining facilities that supply water to households.³⁵ It is crucial to understand the interdependencies between water availability, access, and infrastructure.

The strategies employed to enhance water availability are closely linked to the existence of robust infrastructure; without such infrastructure, water availability would be severely compromised or entirely inadequate.

Consequently, significant investment in infrastructure projects is vital for facilitating water access by bridging spatial and temporal disparities, primarily through functions such as regulation and transportation, ensuring that water resources are managed effectively and equitably across all regions.³⁶

The indirect effects of climate change on water supplies and sanitary facilities are multifaceted and significant. They include potential disruptions from power outages that impact the operation of water treatment systems, leading to the degradation of piped water quality.

Additionally, pollution from these systems or disruptions in transportation networks can halt water supply operations or prevent the delivery of essential chemicals for water treatment.³⁷ Climate change exacerbates the vulnerability of infrastructure, with increased incidents attributed to failures in maintaining, protecting, and efficiently distributing water networks.

Sanitation facilities are particularly susceptible to climate change impacts due to extreme weather events, which can render these facilities inaccessible or completely non-functional. Frequent floods and droughts inflict substantial damage; for instance, flooding of pits and tanks used in sanitation can lead to environmental contamination and significant public health risks.³⁸

Conversely, drought conditions reduce the water availability necessary for sanitation processes, potentially leading to blockages in toilet pipes and disruptions in wastewater treatment facilities, which depend on adequate water flows for operation.³⁹

To enhance the resilience and adaptability of water and sanitation infrastructure, it is crucial to implement innovative approaches and technologies. These measures must specifically address the needs of vulnerable groups, ensuring that adaptations are inclusive and comprehensive.

Second Division: Water Security

Climate change induces geographic and political instability, heightening the risk of localized conflicts or even wars over scarce water resources. Changes in rainfall patterns, resulting in floods or droughts, exacerbate water scarcity and quality issues.⁴⁰

The challenge of adapting to these changes includes the need for equitable redistribution of water rights in areas experiencing acute scarcity. Potential reductions in water availability can ignite conflicts, as water management systems struggle to meet legally recognized needs amidst intense competition over dwindling resources.⁴¹

This competition is likely to escalate, particularly between ecosystems, urban areas, and various sectors such as agriculture, industry, and energy production, directly impacting the security of water supply and distribution and, consequently, food security.⁴²

Gradual adaptation to water scarcity involves strategic reallocation to prevent social disruptions and enhance social and economic well-being. Organizations such as the International Water Resources Association and the World Water Council are actively promoting global and regional water security strategies.

These strategies encompass adaptive approaches and integrated water resource management to address the systematic issues of water security, which have global dimensions. Ensuring water security involves not only meeting water quantity needs but also addressing the challenges posed by droughts, floods, and water pollution through scientifically precise and participatory approaches in future planning.⁴³

Despite varying regional water security needs around the world, it is feasible to establish regional strategies within a global framework, considering the right to water as foundational to achieving a decent livelihood.

CONCLUSION:

The influence of climate change on water resources is unmistakably profound, as evidenced by the escalating demand across communities for basic and sectoral water uses, including agriculture and

commerce. This demand has intensified competition among various sectors, concurrently affecting the infrastructure integral to sanitation services.

These phenomena have undermined the right to water, necessitating a proactive response from both international and national entities to formulate and implement legislation and strategies aimed at mitigating and adapting to these challenges. The findings of this study highlight several critical points:

There exists a notable disparity between the legislative frameworks, both at national and international levels, and the policies implemented regarding the management of water resources.

The ongoing and future impacts of climate change are likely to impose substantial costs and present complex challenges that are difficult to quantify.

Effectively reducing the impact of climate change on the right to water requires flexible management strategies that incorporate a balanced mix of supply and demand measures.

In Algeria, the reliance on short-term solutions is pronounced, especially given the persistent drought conditions and the scarcity of rainfall in many regions.

Based on the findings of this study, a series of targeted recommendations can be proposed:

Activate international and national laws and legislations through policies and plans with specific and realistic goals, to reduce the risks resulting from the impact of climate on the enjoyment of the right to water and sanitation services.

There should be an effective response at both local and international levels to increase the capacity to adapt to climate change to ensure drinking water and sanitation facilities.

Opt for options to reduce emissions through reliance on technology and effective and proper management of water resources.

Enhance the management of services in the absence of safe water and sanitation facilities.

Protect groundwater from pollution such as from the exploration of fossil energy sources.

Increase the capacity to adapt to climate change by integrating water and sanitation in the adopted policies.

Increase investments in infrastructure while considering reinforcing risk management approaches leading to water scarcity or absence.

Footnotes:

¹Law No. 05/12 dated August 4, 2005, concerning water, Official Gazette No. 60.

²Law 04/20 dated December 25, 2004 on the Prevention of Major Risks and Disaster Management within the Framework of Sustainable Development, Official Gazette No. 84.

³Law No. 05/12 dated August 4, 2005 on Water, Official Gazette No. 60.

⁴The World Bank, Water, last updated March 1, 2021, available at: <https://www.albankaldawli.org/ar/topic/water/overview>, accessed on July 30, 2022, at 23:14.

⁵UNESCO, Water and Climate Change, UNESCO 2020, p. 9.

⁶United Nations, UN Water Resources Committee, 2021 Progress Update - Sustainable Development Goal 6 - Water Availability and Sanitation Services for All, July 2021, p. 4.

⁷UNESCO, *ibid*, p. 10.

⁸United Nations Office for Disaster Risk Reduction, Mid-Term Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015 - 2030, May 2022.

⁹United Nations, Office of the High Commissioner for Human Rights, special procedures of the Human Rights Council, Mandate of the Independent Expert on the issue of human rights obligations related to access to safe drinking water and sanitation, Climate Change and the Human Rights to

Water and Sanitation, Position Paper, p. 2,
https://www2.ohchr.org/english/issues/water/iexpert/docs/climatechange_hrtws.pdf.

¹⁰United Nations, Office of the High Commissioner for Human Rights, Frequently Asked Questions on Human Rights and Climate Change, Fact Sheet No. 38, New York and Geneva, 2022.

¹¹Resolution 7/22 dated March 28, 2008 and 12/8 dated October 2009 related to the human right to access to safe drinking water and sanitation.

¹²United Nations, Office of the High Commissioner for Human Rights, *ibid*, p. 2.

¹³United Nations, General Assembly, Human Rights Council, Report of the Special Rapporteur on the issue of human rights obligations related to the enjoyment of a safe, clean, healthy, and sustainable environment, 31st Session, 2016, paragraphs 7, 17, 20.

¹⁴United Nations, General Assembly, Human Rights Council, Human Rights and Climate Change, 26th Session, 2014.

¹⁵El ArabiBoukabene, The Relationship of the Right to Health with the Right to Water and the Right to Environment in International Charters and Algerian Legislation - 118 - Journal of Public Law and Comparative Algerian Law, Volume 7, Issue 10 / June 2021, pp. 105-118, p. 114.

¹⁶Law 83/17 dated July 16, 1983, including the Water Law, Official Gazette No. 30 of 1983, repealed.

¹⁷Law No. 05/12 grants, through Articles 76 and 78, the privilege of using treated wastewater for irrigation, amended by Law 08/03 dated January 27, 2008 and Decree 09/02 dated July 22, 2009.

¹⁸Law No. 85/05 dated February 16, 1983 on Health Protection and Promotion, Official Gazette No. 8.

¹⁹Executive Decree No. 14-96 dated March 4, 2014 amending and supplementing Executive Decree No. 11-125, dated the 17th of Rabi' al-Thani 1432 corresponding to March 22, 2011, relating to the quality of water intended for human consumption.

²⁰Water Management in Algeria, link: <https://water.franck.com/algeria>, published on July 30, 2019, accessed on November 19, 2023.

²¹Articles 59, 60 of Law No. 05/12 on Water, *ibid*.

²²Pierre Mukheibir, "Water access, water scarcity, and climate change," Environmental management 45 (2010): 1027-1039, <https://www.researchgate.net.pdf>.

²³Pierre Mukheibir, *ibid*.

²⁴Oates, N., Ross, I., Calow, R., Carter, R., &Doczi, J., Adaptation to climate change in water, sanitation and hygiene. Assessing risks and appraising options in Africa, London 2014, p. 4.

²⁵Guy Howard, et al., "Climate change and water and sanitation: likely impacts and emerging trends for action," Annual review of environment and resources 41 (2016): 253-276, p. 260.

²⁶Nigel W. Arnell, "Climate change and water resources in Britain," Climatic Change 39.1 (1998): 83-110, p. 83, <https://d1wqtxts1xzle7.cloudfront.net/.pdf>.

²⁷UNESCO, *ibid*, p. 7.

²⁸United Nations, Office of the High Commissioner for Human Rights, *ibid*, p. 3.

²⁹Oates, N., Ross, I., Calow, R., Carter, R., & Doczi, J., *ibid*, p. 4.

³⁰Guy Howard, Jamie Bartram, *Vision 2030 The resilience of water supply and sanitation in the face of climate change* Technical report, Public Health and Environment Water, Sanitation, Hygiene and Health, World Health Organization 2010, WHO/HSE/WSH/10.01, p. 7.

³¹Intergovernmental Panel on Climate Change, 2014: *Climate Change 2014: Synthesis Report*, Geneva, Switzerland, 2015, p. 69.

³²Hasina Dekhane, Sumaya Haji, *Impact of Climate Changes on Water Resources: Challenges and Water Availability Burden*, Malik bin Nabi Journal for Research and Studies, Volume (5) Issue (1) 2023, p. 48.

³³UNESCO, *ibid*, p. 3.

³⁴Nigel W. Arnell, *ibid*, p. 84.

³⁵United Nations, Office of the High Commissioner for Human Rights, *ibid*, p. 2.

³⁶Guy Howard, G., Calow, R., Macdonald, A., & Bartram, J., "Climate change and water and sanitation: likely impacts and emerging trends for action," *Annual review of environment and resources* 41 (2016): 253-276, p. 261.

³⁷Luis Garrote, "Managing water resources to adapt to climate change: facing uncertainty and scarcity in a changing context," *Water Resources Management* 31.10 (2017): 2951-2963, pp. 2955-2956.

³⁸Howard, Guy, et al., *ibid*, p. 260.

³⁹Anjali Manandhar Sherpa, et al., "Vulnerability and adaptability of sanitation systems to climate change," *Journal of Water and Climate Change* 5.4 (2014): 487-495, p. 489.

⁴⁰Sherpa, Anjali Manandhar, et al., *ibid*, p. 489.

⁴¹Peter Schwartz, and Doug Randall, *An abrupt climate change scenario and its implications for United States national security*, Vol. 22, Washington DC: US Department of Defense, 2003, p. 2, <https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/planet3/PDFs/an-abrupt-climate-change-scena.pdf>.

⁴²United Nations, Office of the High Commissioner for Human Rights, *ibid*, p. 2.

⁴³Catherine Allan, Jun Xia, and Claudia Pahl-Wostl, "Climate change and water security: challenges for adaptive water management," *Current Opinion in Environmental Sustainability* 5.6 (2013): 625-632, p. 629, <https://www.sciencedirect.com/science/article/>.