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The human rights to safe drinking water and sanitation

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Special Rapporteur on the human rights to safe drinking water and sanitation, Pedro Arrojo Agudo, in accordance with Human Rights Council resolution 51/19.

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Report of the Special Rapporteur on the human rights to safe drinking water and sanitation, Pedro Arrojo Agudo

The water/food nexus: a human rights perspective

Summary

Addressing the connection between food and water from a human rights perspective requires the consideration of environmental and public health aspects. While global water and food crises are often attributed to scarcity, the Special Rapporteur on the human rights to safe drinking water and sanitation, Pedro Arrojo Agudo, argues that tackling these crises is mainly a governance issue, and that developing new governance strategies based on human rights is crucial, including ensuring the sustainability of ecosystems and the democratic management of essential resources. He proposes an agroecological transition that integrates a human rights perspective into food systems and water management, connecting human rights to water and food and addressing the sustainability and governance challenges of the global food and water crises, particularly in the context of climate change.

I. Introduction

1. Both water and food are crucial to human life. Moreover, the food and water management systems are deeply interconnected and depend on environmental sustainability and, particularly, on the sustainability of aquatic ecosystems. Despite this, the water/food nexus remains underserved, particularly from a human rights perspective.

2. Water and food are connected because water is an essential part of our diet. Water is also a fundamental requirement for producing various types of food, whether in natural environments such as fishing or forestry, through agricultural practices, both dry and irrigated, or in livestock farming, whether extensive or intensive.

3. Both drinking water and food depend on the water cycle, and on freshwater ecosystems. The agricultural and livestock sector, which is the largest consumer of water[1] and the one that generates the greatest polluting discharges, has a significant impact on water resources. That is why this sector is so important to ensuring the sustainability of aquatic ecosystems and water potability for billions of people. The water and food connection also depends on soil fertility, which is as important for land productivity as it is for moisture retention. The significant water demand for producing plant foods relies heavily on the soil's ability to retain moisture.

4. The global water crisis affects approximately 2 billion people without guaranteed access to safe drinking water (see A/HRC/54/32 and A/78/253). Concurrently, the Food and Agriculture Organization of the United Nations (FAO) reported that about 737 million people experienced hunger in 2022.[2]

5. The dominant approach to food systems, which emphasizes production and leaves distribution and access to the free market, undermines the sustainability of aquatic ecosystems, jeopardizes the human right to water, damages the social fabric in rural areas and marginalizes those living in extreme poverty who cannot afford healthy food.

6. While global water and food crises are often attributed to scarcity, the Special Rapporteur on the human rights to safe drinking water and sanitation, Pedro Arrojo Agudo, argues that these crises stem primarily from governance problems that require the development of human rights approaches to ensure the sustainability of ecosystems and the democratic and participatory management of these essential resources for a dignified life.

7. Examining the connection between food and water from a human rights standpoint involves considering the environmental and public health aspects and the power imbalances between actors involved in both food systems and water management.

8. The Special Rapporteur argues the need for an agroecological transition that promotes the food sovereignty of peoples and communities, connecting human rights to food and water in the current context of climate change.

[1] Food and Agriculture Organization of the United Nations (FAO), AQUASTAT. Available at www.fao.org/aquastat/en/overview/methodology/water-use.

[2] FAO, International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), World Food Programme (WFP) and World Health Organization (WHO), *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum* (Rome, FAO, 2023).

II. Legal framework: the human rights to drinking water, sanitation and food

9. Both the right to food and the right to water are considered preconditions for realizing the right to an adequate standard of living. Food is explicitly mentioned in article 11 of the International Covenant on Economic, Social and Cultural Rights, while water, following general comment No. 15 (2002) of the Committee on Economic, Social and Cultural Rights, is considered implicit as a condition necessary for realizing the right to an adequate standard of living. Water was recognized as a human right by the General Assembly in its resolution 64/292 in 2010.

10. Elaborating on the right to food, the Committee on Economic, Social and Cultural Rights, in its general comment No. 12 (1999) stated that the right to adequate food was realized when every man, woman and child, alone or in community with others, had physical and economic access at all times to adequate food or means for its procurement.[3] The Special Rapporteur on the right to food has established that, as a component of the right to food, access to safe drinking water and basic irrigation water must be protected under the obligations to respect, protect and fulfil the right to food (A/56/210, para. 71). Recognizing that the right to water and the right to food are deeply interdependent and mutually reinforcing implies that one right does not overshadow the other.

11. The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses under the principles of non-discrimination, participation and accountability, as stated by the Committee in general comment No. 15 (2002) and recognized in several international instruments.[4] The Committee also stated in the general comment that the adequacy of water should not be interpreted narrowly. It added that water should be treated as a social and cultural good, not primarily as an economic good. Understanding the elements of the right to water is crucial to ensuring its guarantee. These elements include:

(a) **Availability**. Each person's water supply must be sufficient and continuous for personal and domestic uses. These uses include drinking, personal sanitation, washing clothes, food preparation, and personal and household hygiene;

(b) **Accessibility**. Water and water facilities and services have to be accessible to everyone without discrimination;

(c) **Quality and safety**. The water required for each personal or domestic use must be safe and, therefore, free from microorganisms, chemical substances and radiological hazards that threaten a person's health;

(d) **Acceptability**. All water and sanitation facilities must be culturally acceptable and appropriate and sensitive to gender, life cycle and privacy requirements;

[3] See Committee on Economic, Social and Cultural Rights, general comment No. 12 (1999) on the right to adequate food.

[4] This includes General Assembly resolution 64/292, which explicitly recognizes the human right to water and sanitation, article 11 of the International Covenant on Economic, Social and Cultural Rights and general comment No. 12 (1999) of the Committee on Economic, Social and Cultural Rights; it also includes the International Covenant on Civil and Political Rights, which protects the right to life (arts. 2 and 6). The Committee on Economic, Social and Cultural Rights, in its general comment No. 15 (2002), also understands the right to water as implicit in the right to the highest attainable standard of health.

(e) **Affordability**. Water services must be affordable to all. No individual or group should be denied access to safe drinking water because they cannot afford to pay.

12. Similarly, the key elements related to the right to food are:

(a) **Availability**. Food should be obtainable from natural resources, either through food production by cultivating land or animal husbandry, or through other ways such as fishing, hunting or gathering. Food should be available in markets and shops;

(b) **Accessibility**. Food must be affordable. Individuals should be able to have an adequate diet without compromising on other basic needs, such as school fees, medicines or rent. Food should be accessible to the physically vulnerable, including children, sick people, people with disabilities and the elderly. Food must also be available to people in remote areas, to victims of armed conflicts or natural disasters and to prisoners;

(c) **Adequacy**. Food must satisfy dietary needs, taking into consideration a person's age, living conditions, health, occupation, sex, and so on. Food should be safe for human consumption and free from adverse substances;

(d) **Sustainability**. Food should be accessible for both present and future generations.

13. The right to food allows for a broader interpretation of the right to water, so that the right to water can be understood to extend beyond water for personal and domestic use to include access to water for self-sustaining food.[5] In this regard, following the proposals already put forward by FAO and others,[6] the Special Rapporteur emphasizes the importance of expanding the current scope of the right to water to include sufficient and safe water to meet individual and household food and nutrition needs. This should prioritize meeting the rights of those who are marginalized and discriminated against.[7]

14. In addition, expanding and linking both rights to the well-being of aquatic ecosystems is deemed necessary. It is thus pertinent to incorporate sustainability as a key element of the right to water.

III. The water needed to ensure the human rights to safe drinking water, sanitation and food

15. The World Health Organization (WHO) has established that the minimum amount of water required to uphold the human right to drinking water is 50 litres per person per day.[8] It is important to note that this amount only represents 3 per cent of the total fresh water withdrawn from aquatic ecosystems for various uses.[9] The reasons why 2 billion people, most of them extremely impoverished, do not have access to safe drinking water are not so much due to scarcity as to pollution or the stockpiling of available water for economic activities, such as large-scale agriculture, by powerful actors.

[5] FAO, Natural Resources Management and Environment Department, 2009.
[6] E. Morgera and others, "The right to water for food and agriculture", Legislative Study No. 113 (FAO, Rome, 2020).
[7] Ibid.
[8] WHO, "The human right to water and sanitation". Available at www.un.org/waterforlifedecade/pdf/human_right_to_water_and_sanitation_media_brief.pdf.
[9] FAO, AQUASTAT.

16. However, a significant amount of water is required to produce food: approximately 70 per cent of total water usage.[10] Considering that 50 per cent of irrigation water is lost through evapotranspiration, actual consumption makes up about 90 per cent of the total water used.[11] Nearly one third of this water is utilized directly or indirectly to raise livestock.[12]

A. Useful benchmarks of water usage in food production

17. Measuring the amount of water used for food production and its impact on aquatic ecosystems is essential. For this purpose, benchmarks such as the water footprint have been created with corresponding indicators. Such benchmarks may not fully consider social and environmental impacts, but they are valuable for building a comprehensive picture of the amount of water used in food production.

18. The water footprint highlights the irrationality of promoting certain productive and commercial strategies in the food system that lead to the export of huge water flows through products that require a great deal of water to be produced from dry regions. This puts the population's available drinking water at risk.

19. The water footprint concept[13] distinguishes between three types:

(a) Green water footprint: rain or snow water stored in fertile soil and used by plants;

(b) Blue water footprint: water that comes from natural or artificial sources through human-operated infrastructure or facilities;

(c) Grey water footprint: the flow needed to dilute polluting discharges.

20. The green water footprint represents the rainwater that crops use without reliance on water from rivers and aquifers. The blue water footprint reflects the amount of water withdrawn from natural or artificial sources, mainly for irrigation purposes. The grey water footprint refers to the amount of water needed to dilute contamination, although that can be misleading with regard to toxic pollution.

21. Roughly 80 per cent of the world's cultivated land is rainfed and produces 60 per cent of the world's plant food with a low blue water footprint; irrigation produces 40 per cent with a high blue and grey water footprint.[14] Fifty-six percent of the world's grey water footprint comes from the production of corn and rice, which are the basis of the world's diets.[15]

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[10] Ibid.

[11] See "Irrigation water management: irrigation water needs", chap. 3. Available at www.fao.org/4/s2022e/s2022e07.htm.

[12] Y. Ran and others, "Assessing water resource use in livestock production: a review of methods", *Livestock Science*, vol. 187 (May 2016).

[13] A. Y. Hoekstra and others, "Water footprint manual: state of the art 2009", Water Footprint Network, 2009. See also www.waterfootprint.org/water-footprint-2/what-is-a-water-footprint/.

[14] Organisation for Economic Cooperation and Development (OECD), *Water Risk Hotspots for Agriculture*, OECD Studies on Water (OECD Publishing, Paris, 2018).

[15] M. M. Mekonnen and A. Y. Hoekstra, "The green, blue and grey water footprint of crops and derived crop products", Value of Water Research Report Series No. 47 (United Nations Educational, Scientific and Cultural Organization-Institute for Water Education (UNESCO-IHE), Delft, Kingdom of the Netherlands, 2010).

B. The water used to produce food

22. The current amount of water used for food production and the diffuse pollution from livestock farming generates serious impacts on human rights, including the rights to safe drinking water, to health and to a healthy and sustainable environment. They also put the viability of the food production model itself at risk, especially given the current climate change outlook. However, it is important to note that these problems can be tackled on several fronts, as food systems depend on multiple factors.

23. The first issue to consider is how different types of food are produced. Food production by nature, such as fishing, hunting or forestry, does not require extracting water from aquatic ecosystems, thus resulting in no blue water footprint. Rainfed crops and extensive livestock farming are also well suited to local climatic and territorial conditions. However, irrigated agriculture and intensive livestock farming require extracting water from rivers and aquifers and contribute to diffuse pollution from irrigation returns and livestock slurry. Consequently, depending on the proportion of food produced through irrigation and intensive livestock farming, the water footprint, environmental impacts and effects on human rights to drinking water can vary significantly.

24. A second consideration is the impact of diet, as the water required to produce different foods varies significantly. For instance, producing 1 kg of meat can require up to 20,000 litres of water, while producing 1 kg of wheat may require 10 times less water.[16] Diets are influenced by food cultures, but with the increasing urban migrant population, diets are shaped not only by people's original cultures but also by their new environments, including local markets and shops, food advertising, the existence or non-existence of water and sanitation services and municipal policies. Scientific studies[17] estimate that shifting from meat-based to healthier diets would reduce water consumption by 36 per cent in industrialized countries and 15 per cent in developing countries.

25. Cities and metropolitan areas have a pivotal role to play in addressing these factors.[18] The Special Rapporteur highlights the commitment made by 280 cities worldwide, encompassing 490 million people, in signing the Milan Urban Food Policy Pact to develop sustainable food systems. These systems will be inclusive, resilient, safe and diverse, and provide healthy and affordable food to all people within a human rights-based framework. In addition, the commitment aims at minimizing waste, conserving biodiversity and adapting to and mitigating the impacts of climate change.[19]

26. The third major issue to consider is the significant level of food waste. Around one third of the total amount of food produced in the world is wasted.[20] The annual

[16] UNESCO, *The United Nations World Water Development Report 3: Water in a Changing World* (Paris, 2009), pp. 106–115.

[17] A. Y. Hoekstra, "The water footprint of animal products", in *The Meat Crisis: Developing More Sustainable Production and Consumption*, J. D'Silva and J. Webster, eds. (London, Earthscan, 2010), pp. 22–33.

[18] C. Steel, *Hungry City: How Food Shapes Our Lives* (London: Chatto & Windus, 2008); and FAO, "City region food systems programme: reinforcing rural-urban linkages for climate resilient food systems", 2019, available at www.fao.org/publications/card/en/c/CA6337EN/.

[19] FAO, "The role of cities in the transformation of food systems: sharing lessons from Milan Pact cities", 2018. Available at www.milanurbanfoodpolicypact.org/wp-content/uploads/2022/01/The-Role-Of-Cities-In-The-Transformation-Of-Food-Systems-Sharing-Lessons-From-Milan-Pact-Cities.pdf.

[20] FAO, *Food wastage footprint: impacts on natural resources summary report*, 2013. Available at www.fao.org/4/i3347e/i3347e.pdf.

water footprint of food waste is estimated at 250 km^3,[21] which amounts to about 85 litres of water per person per day. Therefore, the water used to produce food that is thrown away would be more than enough to guarantee the human right to drinking water worldwide.

27. The food environment encompasses the intricate interplay of physical, economic, political and sociocultural factors that shape access, affordability, safety and food preference.[22] Rather than being primarily shaped by nutritional or culinary considerations, the current food systems are heavily influenced by economic and political forces that affect the choices available. As a result, individuals are not simply exercising their right to food as rights holders; instead, they are making choices as consumers from the limited array of food options accessible in formal and informal markets.

C. Health, water and nutrition

28. The link between human health and nature's health is represented by the "One Health" concept adopted by FAO, WHO, the United Nations Environment Programme (UNEP) and the World Organization for Animal Health, which emphasizes the interconnectedness of human health, animal and plant health, and the health of aquatic and other ecosystems. It is important to recognize that human health is intertwined with the health of soils, plants and animals, and water serves as the connecting element for all of them.[23]

29. The current global food production system often neglects people's health and nutritional needs and discourages the equitable distribution of nutritious food, leading to malnutrition. Malnutrition encompasses overnutrition and undernutrition. Malnutrition affects a large part of the population, including over 828 million people who suffer from hunger[24] and undernutrition and over 2.5 billion people who are overweight.[25]

30. This system fails to ensure adequate nutrition for many, exacerbated by the widespread lack of safe water. According to the United Nations Children's Fund (UNICEF),[26] diarrhoea and other intestinal infections from contaminated water hinder nutrient absorption, especially in children, and no matter how much food a malnourished child eats, he or she will not get better if the water they are drinking is not safe. Approximately 149 million children under 5 were stunted in 2022 and 45 million experienced wasting.[27]

31. Likewise in the current system, significant water resources and agricultural inputs are used to produce ultra-processed foods, which are high in calories but low in nutritional value. These foods, together with the massive consumption of sugary

[21] Ibid.

[22] FAO, *Influencing food environments for healthy diets* (Rome, 2016). Available at https://openknowledge.fao.org/server/api/core/bitstreams/14a2828e-2b07-444a-a0b2-af111b0efd30/content.

[23] "The Food and Agricultural Organization of the UN (FAO), the World Health Organization (WHO), the World Organisation for Animal Health (WOAH) and the United Nations Environment Programme (UNEP) – the Quadripartite – announce proposed members of its One Health High Level Expert Panel (OHHLEP)". Available at www.woah.org/en/article/fao-who-woah-unep-the-quadripartite-announces-proposed-members-of-its-one-health-high-level-expert-panel-ohhlep/.

[24] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2023*.

[25] WHO, "Obesity and overweight fact sheet". Available at www.who.int/news-room/fact-sheets/detail/obesity-and-overweight#:~:text=Worldwide%20adult%20obesity%20has%20more,16%25%20were%20living%20with%20obesity.

[26] See www.unicef.org/stories/4-things-you-need-know-about-water-and-famine.

[27] See www.knowledge-action-portal.com/en/content/malnutrition#:~:text=Globally%20in%202022%2C%20149%20million,age%20are%20linked%20to%20undernutrition.

drinks, contribute to a large water footprint and rising obesity rates, with serious health consequences.

32. In Mexico, where overweight affects more than 75 per cent of adults and 35 per cent of the child population,[28] a scientific study concluded that the average diet in the country was 55 per cent higher in water consumption than the recommended healthy diets.[29] The transition to healthy diets, beyond improving public health, would allow a savings of around 42 per cent[30] in a country that uses 76 per cent of its water in food production[31] and has serious problems related to water stress and pollution that leave 9 million people without guaranteed access to safe drinking water.[32]

33. In this regard, the Special Rapporteur commends the efforts made at the global level by the Committee on World Food Security and its Voluntary Guidelines on Food Systems and Nutrition, which contain recommendations to governments and partners to address hunger and malnutrition.

IV. Impacts of dominant food systems on the human right to drinking water

34. After the Second World War, the so-called Green Revolution[33] promoted a mercantilist approach. It involved the use of high-yield crop varieties,[34] also known as "miracle seeds", the increased use of pesticides and fertilizers, the expansion of irrigation,[35] the development of large-scale livestock farms and the mechanization of agricultural work.

35. The significant increase in productivity helped address the hunger crisis resulting from the war.[36] However, it has caused a breakdown of social structures in rural areas and significant environmental damage, threatening water access for millions of people. Furthermore, this model has led to the concentration of power among a small number of corporations. For example, four agrochemical companies control 60 per cent of the global seed market and 75 per cent of the global pesticides market.[37] This has resulted in significant power imbalances, with a disregard for the rights of Indigenous Peoples, peasants and fisherfolk.[38]

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[28] Instituto Nacional de Estadística y Geografía, "Principales resultados, Encuesta nacional de salud y nutrición", 2018. Available at https://ensanut.insp.mx/encuestas/ensanut2018/doctos/informes/ensanut_2018_presentacion_resultados.pdf (in Spanish).

[29] M. Lares-Michel and others, "Eat well to fight obesity … and save water: the water footprint of different diets and caloric intake and its relationship with adiposity", *Frontiers in Nutrition*, vol. 8, No. 694775 (July 2021).

[30] Ibid.

[31] Comisión Nacional del Agua, *Estadísticas del Agua en México 2018*. Available at https://sinav30.conagua.gob.mx:8080/PDF/EAM_2018.pdf (in Spanish).

[32] United Nations Development Programme (UNDP), "Agua y comunidad: soluciones locales para garantizar la seguridad hídrica en el sur de México", 23 March 2023. Available at www.undp.org/es/mexico/historias/agua-y-comunidad-soluciones-locales-para-garantizar-la-seguridad-hidrica-en-el-sur-de-mexico (in Spanish).

[33] D. A. John and R. B. Giridhara, "Lessons from the aftermaths of green revolution on food system and health", *Frontiers in Sustainable Food Systems*, vol. 5 (2021).

[34] P. L. Pingali, "Green revolution: impacts, limits, and the path ahead", *Proceedings of the National Academy of Sciences*, vol. 109, No. 31 (2012).

[35] D. A. John and R. B. Giridhara, "Lessons from the aftermaths of green revolution on food system and health".

[36] P. L. Pingali, "Green revolution: impacts, limits, and the path ahead".

[37] International Panel of Experts on Sustainable Food Systems, "Too big to feed: exploring the impacts of mega-mergers, consolidation and concentration of power in the agri-food sector", 16 October 2017.

[38] J. Harwood, "Peasant friendly plant breeding and the early years of the green revolution in Mexico", *Agricultural History*, vol. 83, No. 3 (Summer 2009).

A. The impact of toxic pollution on drinking water and food

36. The contamination of rivers and aquifers by heavy metals, metalloids and other toxins by mining or industrial discharges, but more and more by pesticides, not only severely affects the drinkability of water but contaminates food chains, as they are toxins that progressively accumulate in living tissues. Such is the case of Guadeloupe, France, where the persistent presence of chlordecone presents an ongoing risk of contamination to the population.[39]

37. In Jordan, surface water and groundwater are so exposed to chemical discharges that water sources such as the Zarqa River and the Jordan River are no longer fit for drinking and agriculture, threatening the country's water and food security.[40]

38. In Peru, the contamination of the Tumbes River by heavy metals has not only affected the regional population's health but also its economy, as the export of bananas to the United States of America was cut off when heavy metals were detected in the fruit (A/HRC/54/32/Add.2, para. 77).

B. Diffuse pollution from agriculture and livestock

39. Owing to the extensive use of industrial pesticides and fertilizers, and to slurry from intensive livestock farming, the agricultural sector has become the leading cause of water pollution. According to FAO data, of an annual total of 2,250 km^3 of effluents discharged, 1,260 km^3 comes from agricultural activities. These returns are more challenging to control as a result of their diffuse nature.[41]

40. Most of the nitrogen and more than a third of the phosphorus that generate eutrophication processes in water bodies come from industrial fertilizers,[42] causing hypoxia and fish kills, and toxic algal blooms that make the water unsafe to drink.[43]

41. Traditional extensive or family livestock farming integrates livestock feed, slurry and manure into the natural environment and surrounding agriculture, developing local circular economies with a minimal water footprint. However, large-scale intensive farms contaminate water bodies with slurry. In addition, the massive and systematic use of antibiotics and other medicines to combat the high vulnerability generated by the massiveness of animals leads to water pollution, contributing to the development of antimicrobial-resistant infections. In 2019, 5 million human deaths were attributed to bacterial antimicrobial resistance.[44]

[39] See https://spcommreports.ohchr.org/TMResultsBase/DownLoadPublicCommunicationFile?gId=28729 (in French).

[40] See www.ohchr.org/sites/default/files/documents/issues/water/cfis/ga79/cfi-ga79-sr-water-submission-Amman-Center-for-Human-Rights-Studies.pdf.

[41] FAO, *The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Synthesis report 2021* (Rome, 2021), chap. 1.5. Available at https://openknowledge.fao.org/server/api/core/bitstreams/bc8810ae-2a13-4cfe-b019-339158c7e608/content/src/html/chapter-1-5.html.

[42] P. Drechsel and others, eds., *Water quality in agriculture: Risks and risk mitigation* (Rome, FAO and International Water Management Institute, 2023), p. 110.

[43] See www.epa.gov/nutrientpollution/sources-and-solutions-agriculture#:~:text=This%20excess%20nitrogen%20and%20phosphorus,cause%20eutrophication%20of%20water%20bodies.

[44] See www.fao.org/antimicrobial-resistance/en/.

C. Impacts on aquatic ecosystems rivers, lakes and wetlands

42. Abusive abstractions negatively affect the sustainability of many rivers. The Huang He (Yellow River) in China, for example, carries only 5 per cent of its former flow, and it no longer reaches the sea for several months of the year.[45] This leads to the salinization of watercourses and aquifers in many deltas and estuaries, a problem that is exacerbated by rising sea levels as a result of climate change.

43. The excessive withdrawals for large irrigation schemes in lakes basins have led to large-scale disasters.[46] In the Aral Sea basin, the irrigation of almost 10 million hectares, using flows from the Syr Darya and the Amu Darya rivers, decreased the surface of the Aral Sea by one sixth. As a result, 40,000 tons of fish were lost.[47]

44. Over the past 40 years, intensive tourism and agriculture have dehydrated one of Europe's largest wetlands, Doñana National Park in Spain, which is protected under the Convention on Wetlands of International Importance especially as Waterfowl Habitat, leading to a strong reaction from the European Union, which had funded costly conservation programmes.[48]

D. Degradation of aquifers

45. Groundwater is a source of drinking water for at least 50 per cent of the world's population and supplies 43 per cent of the water used for irrigation.[49] Despite their vital importance, many aquifers are not being managed properly, with 20 per cent of them being overexploited.[50] The development of highly profitable agricultural activities in dry areas such as the coast of Peru (see A/HRC/54/32/ADD.2), Tunisia (see A/HRC/54/32/ADD.1) and other regions are causing unsustainable processes of overexploitation, pollution and salinization, endangering the supply of drinking water and the future of these agricultural developments.[51]

46. Even though groundwater is generally more protected than surface water, when pollutants infiltrate for an extended period the contamination can persist for a long time. Pesticides and fertilizers are the most common contaminants that threaten the drinking water supply of hundreds of millions of people.[52]

47. The overexploitation of aquifers increases vulnerability to future droughts and may lead to the compaction of the geological substratum, reducing its storage capacity. This can cause land subsidence, as seen in Jakarta.[53] In coastal areas, overexploitation can lead to salinization by sea intrusion, as in south-eastern Cyprus.[54]

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[45] See https://openknowledge.fao.org/server/api/core/bitstreams/337bf567-48ee-47a3-963f-dcc354fe3357/content, p. x (in Spanish).

[46] Ibid., p. 127.

[47] See https://openknowledge.fao.org/server/api/core/bitstreams/8531eff7-f8d7-46ce-a644-168ea15ab5a5/content, p. 8.

[48] See https://spcommreports.ohchr.org/TMResultsBase/DownLoadPublicCommunicationFile?gId=27147 (in Spanish).

[49] UNESCO, *The United Nations World Water Development Report 2015: Water for a Sustainable World* (Paris, 2015).

[50] Ibid.

[51] UNESCO, *The United Nations World Water Development Report 2022: Groundwater: Making the invisible visible* (Paris, 2022).

[52] See www.usgs.gov/special-topics/water-science-school/science/contamination-groundwater#:~:text=Pesticides%20and%20fertilizers%20applied%20to,water%20drawn%20from%20a%20well.

[53] E. Colven, "Subterranean infrastructures in a sinking city: the politics of visibility in Jakarta", *Critical Asian Studies*, vol. 52, No. 3 (July 2020).

[54] See https://portals.iucn.org/library/sites/library/files/documents/2016-039.pdf, p. 34.

E. Salinization, soil degradation, erosion and desertification

48. In 2020, it was reported that 25 per cent of land worldwide faced salinization issues,[55] leading to large annual losses of irrigated hectares, especially from sodium salinity.[56] Using higher irrigation rates can leach salts and improve yields; however, it also increases water usage and elevates salt levels, harming groundwater and downstream water usage. This ultimately reduces irrigation water efficiency and degrades its quality, affecting the right to food and the right to water.[57]

49. Soil health is a key determinant of water storage, runoff or infiltration. Vegetation cover is vital to protecting the soil from erosion and promoting its regeneration, which in turn is key to the hydrological cycle. Unfortunately, deforestation to expand the agricultural frontier, such as in the Amazon, for example, is leading to the severe degradation of fertile soils.[58]

50. Human-induced land degradation affects 28 per cent of rainfed cropland, 44 per cent of irrigated land and 13 per cent of grassland.[59] Soil erosion washes away between 20 billion tons and 37 billion tons of topsoil each year, reducing the soil's ability to store water[60] and, consequently, increasing water irrigation needs. It can be said that the loss of soil is irrecoverable, since regenerating 2 to 3 cm of soil can take up to a thousand years.[61]

51. Forest fires as a result of droughts and high temperatures caused by climate change, followed by heavy rainfall, accelerate erosion and desertification. As a result of desertification, 50 million people may be displaced within the next 10 years.[62]

F. Monocultures and land- and water-grabbing

52. In the past decades, large international corporations have been acquiring, with the active collaboration of governments, community or community-used lands on a large scale. As of 2018 they had acquired 40.98 million hectares.[63] This massive land acquisition is coupled with the appropriation of water rights. The cultivation of such crops worldwide has led to the consumption of around 450,000 million m^3 of water, to the detriment of the affected rural communities (A/77/167, para. 107). Because of this land- and water-grabbing, carried out in the name of increasing agricultural productivity, Indigenous Peoples and rural communities are being deprived of the vital resources on which their livelihoods depend.[64] Along the Madre Vieja River in

[55] A. Mohanavelu and others, "Irrigation induced salinity and sodicity hazards on soil and groundwater: an overview of its causes, impacts and mitigation strategies", *Agriculture 2021*, vol. 11 (2021).

[56] See www.fao.org/global-soil-partnership/areas-of-work/soil-salinity/en/.

[57] D. Bossio and others, "Managing water by managing land: addressing land degradation to improve water productivity and rural livelihoods", *Agricultural Water Management*, vol. 97, No. 4 (April 2010).

[58] P. G. Curtis and others, "Classifying drivers of global forest loss", *Science*, vol. 361, No. 6407 (September 2018).

[59] Ibid.

[60] D. R. Montgomery, "Soil erosion and agricultural sustainability", *Proceedings of the National Academy of Sciences*, vol. 104, No. 33 (2007).

[61] Eren Waitzman, "Soil erosion: a global challenge", House of Lords Library Briefing, 2020. Available at https://lordslibrary.parliament.uk/research-briefings/lln-2020-0020/#:~:text=At%20present%2C%20soil%20erosion%20is,to%203%20centimetres%20of%20soil.

[62] United Nations. "Desertification and its effects". Available at www.un.org/en/observances/desertification-day/background.

[63] See www.globalagriculture.org/report-topics/land-grabbing.html.

[64] J. Dell'Angello and others, "The global water grabbing syndrome", *Ecological Economics*, vol. 143 (January 2018).

Guatemala, land-grabbing and significant diversions have caused the destruction of fisheries, which are essential for the diet of riverside communities.[65]

53. To boost productivity, monocultures rely heavily on pesticides to fend off pests and diseases; these pesticides end up polluting drinking water. For instance, atrazine, a commonly used herbicide in corn production, has led to the significant contamination of groundwater in the United States.[66]

54. Although family and community farms are often disparaged, they produce around 80 per cent of the world's food;[67] however, their land and water rights are often not formally recognized.[68] This jeopardizes the rights to food and water for millions, especially Indigenous Peoples, peasants, Afrodescendants, women, Dalits and other discriminated-against populations.

G. Seeds and species loss and increased vulnerability to climate change

55. The diversity of traditional seeds and breeds is vital for the food sovereignty of small-scale farmers, peasants and Indigenous Peoples, and for all of humanity in the current landscape of climate change. Variety in food sources is crucial to food resilience.

56. The mercantilist approach, focusing on high production, has resulted in the reduction and homogenization of seeds and staple foods, mainly wheat, rice and maize,[69] leading to production concentration in certain countries. As a result, the food insecurity of millions has increased, making them more vulnerable to climate events, wars and other catastrophes.

V. Challenges to overcome leaving no one behind

57. The double crises of water and food must be tackled by focusing attention on areas of poverty under the current power asymmetries, and the systemic violence they produce, taking into consideration the prospects of climate change under way.

A. The water/food nexus in spaces of poverty and marginalization

58. As the Special Rapporteur has been insisting, most of the 2 billion people without guaranteed drinking water are impoverished people who live near polluted rivers or contaminated aquifers or whose waters are grabbed by powerful actors for their economic activities. This lack of access to water is closely linked to food insecurity and malnutrition among agricultural workers. Of the 740 million people living in extreme poverty, two thirds are agricultural workers and their families (see A/HRC/48/50).

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[65] See www.ohchr.org/sites/default/files/documents/issues/water/cfis/ga79/cfi-ga79-sr-water-submission-Ceiba.docx (in Spanish).

[66] FAO, *The State of the World's Land and Water Resources for Food and Agriculture: Managing Systems at Risk* (Rome, 2011), p. 118.

[67] See https://wad.jrc.ec.europa.eu/smallholderagriculture.

[68] See www.ohchr.org/sites/default/files/documents/issues/water/cfis/ga79/cfi-ga79-sr-water-submission-Institute-for-Agriculture-trade-policy.pdf.

[69] J. M. Awika, "Major cereal grains production and use around the world", in *Advances in Cereal Science: Implications to Food Processing and Health Promotion*, J. M. Awika and others, eds. (Oxford University Press, 2011).

59. Despite a decrease in discrimination based on work and descent, approximately 270 million people worldwide still experience discrimination today and are denied access to drinking water while also suffering from hunger and malnutrition.[70]

60. In urban peripheries, extreme poverty is linked to unhealthy food environments where hunger and malnutrition coexist. The lack of tap-based drinking water, together with advertising, leads to the mass consumption of sugary drinks that lead to serious health impacts and have a high water footprint. Obesity rates are notably high among children, teenagers, young adults and individuals from low-income backgrounds who reside in areas where only cheap, unhealthy food is accessible.

61. Rural communities are largely affected. During his visit to Tunisia (see A/HRC/54/32/ADD.1), the Special Rapporteur gathered testimonies from rural communities about how large agricultural export companies install deeper wells and more powerful pumps that disrupt the communities' water supplies for drinking, irrigation and livestock.

62. The water and food crises in impoverished communities have a pronounced gender component, with significant and specific impacts on women's lives.[71] Moderate or severe food insecurity among women and girls aged 15 and above increased from 27.5 per cent in 2019 to 31.9 per cent in 2021.[72] Often in these communities, women secure food and water for the family and care for the sources. The inclusion of women in food and water governance systems is thus crucial to addressing these crises.

B. Power asymmetries and systemic violence

63. The destruction of rural communities and the dispossession and displacement of Indigenous Peoples, farmers and fishing communities happen within a system of ongoing violence linked to mainstream food production and water management. This is justified to boost productivity and short-term gains driven by market demands, but it is unfair and overlooks the need for long-term sustainability (see A/HRC/52/40).

64. Land- and water-grabbing, and the construction of large dams for irrigation and hydropower, represent a form of systemic violence against impoverished rural communities and Indigenous Peoples. The report of the World Commission on Dams in 2000 revealed that between 40 million and 80 million people were forcibly displaced in the twentieth century due to the flooding of their valleys and villages. This displacement worsened their poverty, health, nutrition and access to drinking water and sanitation. The imprecise estimate of the number of displaced people only serves to highlight the invisibility of the victims (see A/HRC/54/32).

65. The recently inaugurated Sardar Sarovar Dam, on the Narmada River, a sacred river in India, led to the forced displacement of half a million people, mostly Adivasis (Indigenous Peoples of India), without even ensuring dignified resettlement processes.[73]

66. Uprooting hundreds of millions of people worldwide from their territories and disrupting their cultures and ways of life through land-grabbing, large dams, mining or activities in protected areas leads to extreme poverty as a result of the loss of their

[70] See https://globalforumcdwd.org/.

[71] United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women), *Spotlight on Goal 6, From Commodity to Common Good: A Feminist Agenda to Tackle the World's Water Crisis* (New York, 2023).

[72] Ibid.

[73] The Hitavada, "Forced evictions of Sardar Sarovar oustees gross violation of human rights: report", 11 September 2019. Available at www.thehitavada.com/Encyc/2019/9/11/Forced-evictions-of-Sardar-Sarovar-oustees-gross-violation-of-human-rights-Report.html.

sources of water, food and livelihoods, leaving them as impoverished consumers dependent on the prices of basic foods.

67. Although the mass production of food makes it cheaper and more affordable for billions of impoverished people, the dependence on production concentrated on large producers and international markets subject to the speculation of futures markets creates risks of volatility in prices, increasing vulnerability for millions. The speculative game of financial futures markets multiplies these power asymmetries by giving large institutional speculators the ability to manipulate the volatility of basic food prices, generating speculative bubbles.

68. The impact of the coronavirus disease (COVID-19) pandemic and the war in Ukraine on wheat and other cereal prices, or the impact of droughts on maize, wheat and soybean producers, highlights vulnerabilities in the food chain supply.

69. The scandalous manipulation of food crises has allowed a few to transform the misfortune of hundreds of millions into enormous benefits by taking advantage of the power asymmetries. With the latest food crises, the largest companies increased their wealth by 45 per cent in just two years.[74]

70. A study on the resilience of Indigenous Peoples during the pandemic and extreme climate events surveyed 15 Indigenous communities across six countries. Some 70 per cent of these communities did not experience food insecurity, thanks to their reliance on self-production, internal exchange and strong social ties, which ensured everyone had access to food.[75]

C. Impacts of climate change on the water/food nexus

71. Climate change is mainly caused by greenhouse gas emissions, particularly carbon dioxide, so it makes sense to focus on transitioning to alternative energy sources. However, climate change's most significant socioeconomic impacts come from water-related extreme events, such as cyclones, floods and droughts, which account for about 95 per cent of food production losses.[76] The Special Rapporteur stresses the need for a water transition to underpin climate change adaptation strategies and radical changes towards water-responsible food systems.[77]

72. The main impacts of climate change related to water are a reduction in runoff and average flows in rivers, increased risks of drought and flooding, a decrease in the natural regulation of flows generated by glaciers and a rise in sea level.

73. With the rise in temperatures, plant evapotranspiration increases, as do the necessary irrigation supplies, while drastic decreases in average river flows are expected. In Spain, for example, runoff reduction in the most sensitive catchments, such as the Guadalquivir River basin, is estimated to be 32 per cent throughout the

[74] Oxfam, "Profiting from pain: the urgency of taxing the rich amid a surge in billionaire wealth and a global cost-of-living crisis", media briefing, 23 May 2022. Available at https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/2022-05/Oxfam%20Media%20Brief%20-%20EN%20-%20Profiting%20From%20Pain%2C%20Davos%202022%20Part%202.pdf.

[75] See https://blogs.worldbank.org/voices/indigenous-peoples-resilience-supporting-solutions-within.

[76] N. K. Arora, "Impact of climate change on agriculture production and its sustainable solutions", *Environmental Sustainability*, vol. 2 (27 June 2019).

[77] Wageningen University and Research, "Making water pivotal in the design of food systems", 6 December 2023. Available at www.wur.nl/en/article/making-water-pivotal-in-the-design-of-food-systems.htm.

twenty-first century.[78] Considering the current overexploitation of existing flows, this should lead to a reduction of the current irrigated area by 25 to 30 per cent.[79]

74. The disappearance of glaciers in the river headwaters will reduce summer flows when they are most necessary. Around 75 per cent of the Himalayan glaciers are under threat of disappearing by the end of the twenty-first century.[80]

75. To strengthen agricultural resilience against droughts and pests, instead of promoting monoculture strategies, it is important to diversify production sources and recover and conserve drought-resistant varieties, seeds and livestock species, even if they are less productive in normal years. As the intensification of droughts generates the greatest risks for small-scale agricultural and livestock farms, drought insurance that includes public support and positive discrimination criteria for those types of farms in terms of irrigation restrictions is necessary.

76. Drought risk prevention requires basin hydrological planning based on the precautionary principle. This will entail rejecting the expansion of irrigation, and even require reducing the irrigated surface, to adapt demand to expected availability. In any case, considering that irrigation is key to reducing the impact of droughts on food production, it is essential to organize sustainable irrigation, given the current climate change outlook.

77. Traditional irrigation, with low efficiency on the plot, but with good alluvial drainage that allows the returns to be reused along the channel in subsequent catchments, can provide very high efficiencies at the level of the irrigation system as a whole,[81] and offers great multifunctionality that will contribute to maintaining biodiversity and recharging aquifers.[82]

78. Where drainage is poor, modernizing irrigation by switching, for example, to drip irrigation, can save a lot of water, as can ensuring public support for small irrigators. However, modernization must include recovering the savings to preserve ecosystems and generate reserves for future droughts. Transitioning to drought-resistant crops that offer reasonable yields with supportive irrigation can also greatly reduce the risks posed by droughts.

79. Removing the irrigation of brackish areas, avoiding the use of pesticides and using manure instead of industrial fertilizers will reduce diffuse pollution in rivers and aquifers and prevent it from growing during drought using fewer flows, thus preserving the drinkability of supplies.

80. The forecasting of more frequent and severe droughts will need to be integrated into hydrological planning. This will require moving from annual to multi-year management of reservoirs, reducing availability in normal years to reserve flows for drought years. Increased dam flood control capacity may reduce water for irrigation and hydropower.

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[78] CEDEX-Ministerio Agricultura, Alimentación y Medioambiente, “Evaluación del impacto del cambio climático en los recursos hídricos y sequías en España”, 2017, p. 210. Available at https://www.miteco.gob.es/content/dam/miteco/es/cambio-climatico/publicaciones/publicaciones/Memoria_encomienda_CEDEX_tcm30-178474.pdf (in Spanish).

[79] Ibid. (calculation made by the Special Rapporteur).

[80] A. K. Misra, “Climate change and challenges of water and food security”, *International Journal of Sustainable Built Environment*, vol. 3, No. 1 (June 2014).

[81] E. Aguilera and others, “Methane emissions from artificial waterbodies dominate the carbon footprint of irrigation: a study of transitions in the food-energy-water-climate nexus (Spain, 1900–2014)”, *Environmental Science and Technology*, vol. 53, No. 9 (April 2019).

[82] J. Vila-Traver, “Servicios ecosistémicos de los sistemas de riego tradicionales en Sierra Nevada (Granada)”, 2018. Available at www.researchgate.net/publication/361390570_SERVICIOS_ECOSISTEMICOS_DE_LOS_SISTEMAS_DE_RIEGO_TRADICIONALES_EN_SIERRA_NEVADA_GRANADA (in Spanish).

81. Above all, as the Special Rapporteur explained in his 2022 report on climate change and the human rights to water and sanitation,[83] and in his 2023 thematic report, strengthening environmental resilience against droughts involves recovering and preserving the good condition of wetlands, particularly aquifers, which can and should be strategic reserves to face extraordinary droughts (A/HRC/54/32, para. 57). Ending the overexploitation of groundwater and sacrificing some current agricultural production, regardless of its profitability, is necessary to prevent greater harm during future droughts.

82. To increase resilience to flooding risk, the focus should be on hydrological, territorial and urban planning and restoring wetlands and riparian ecosystems. The Special Rapporteur is concerned about wetlands drying up for agricultural or development purposes. A worrying example is the Mekong River basin, where large-scale hydropower projects and extensive agricultural expansion threaten the region's wetlands.[84] These changes jeopardize fisheries, which are an essential food resource for riparian communities, and can trigger flood risks in the vast basin, affecting tens of millions of people.

83. Setting back riverbank dikes or equipping them with floodgates that allow soft flooding of certain spaces, following a compensation agreement with the landowners, have proven to be cost-effective strategies in large basins such as the Mississippi in the United States.[85] Another example is the Room for the River project to manage flood risks in the Kingdom of the Netherlands.[86]

D. Financialization of food and water

84. In his report of 2021 on the risks and impacts of the commodification and financialization of water on the human rights to safe drinking water and sanitation (A/76/159), the Special Rapporteur addressed the privatization and commodification of water since the 1970s and their impacts on the sustainability of aquatic ecosystems, on the human rights of impoverished people and on small-scale farmers, who were encouraged to abandon and sell their water rights, especially during drought cycles.

85. He also addressed the risks and impacts of water commodification and financialization after California water rights entered the futures markets. Regarding the complexities involved in the financialization of water and the role futures markets can play, the Special Rapporteur relied on the behaviour of staple foods in these markets since the deregulation of financial markets at the end of the twentieth century.

86. With the approval of the Commodity Futures Modernization Act in 2000,[87] food futures contracts were exempt from official supervision in the United States, creating an opaque space in which to develop speculative operations. In the early 2000s, large institutional speculators began systematically purchasing commodity futures, relying on the "strength of the market", where expectations driven by powerful speculators overshadowed direct market price signals.

87. Consequently, speculative investment in commodity index funds, including staple foods, skyrocketed from $13 billion in 2003 to $317 billion in 2008,[88] creating

[83] See www.ohchr.org/en/documents/thematic-reports/special-thematic-report-climate-change-and-human-rights-water-and.

[84] Ian Baird and Zeb Hogan, "Hydropower dam development and fish biodiversity in the Mekong River basin: a review, *Water 2023*, vol. 15.

[85] Ibid.

[86] Ibid.

[87] See www.congress.gov/bill/106th-congress/house-bill/4541.

[88] F. Kaufman, "The food bubble: How Wall Street starved millions and got away with it", *Harper's Magazine*, July 2010 (from www2.ohchr.org/english/issues/food/docs/briefing_note_02_september_2010_en.pdf).

a speculative bubble. This bubble inflated futures prices, which were immediately reflected in real market prices for basic foods. From 2005 to 2008, the price of maize tripled, wheat rose by 127 per cent and rice surged by 170 per cent, pushing between 130 million and 150 million more people into extreme poverty (A/76/159, paras. 55 and 56).

88. Experience in food futures markets has shown that speculative dynamics, far from stabilizing prices, have triggered volatility and produced speculative bubbles that have little to do with well-founded expectations of the availability or scarcity of the products in question. Institutional speculators end up making enormous profits from price volatility.

89. On this basis, the Special Rapporteur explained his concern about the entry of water rights in the state of California into these futures markets. He predicted that, although the complexity of values involved in water management would hinder the success of this operation on Wall Street, the door was left open to try to do speculative business with water, arguing the risks and uncertainties generated by climate change (A/76/159, paras. 57–60).

VI. Governance of the water/food nexus at the international level

90. The need to integrate public policies on water and food at the national level extends to the international level. This need is evident in the management of transboundary basins, the development of Sustainable Development Goals 2 and 6 and the design and development of programmes and objectives between different institutions of the United Nations system.

A. The human rights to drinking water and food in transboundary basins

91. Over the past few decades, critical scenarios have emerged and multiple conflicts have broken out at all levels, from local to international, in which water and food insecurity are intertwined. The growing and acute food insecurity crisis, aggravated by the lack of safe drinking water, forced the displacement of 90 million people in 2023.[89] In the context of the climate emergency, mass migration due to lack of drinking water and food is becoming, and will soon be, one of the most worrying elements of instability and insecurity in certain regions.

92. The lack of an effective agreement to manage the Euphrates and Tigris rivers between the countries involved, and the development of large irrigation schemes upstream, together with the impact of drought due to climate change, are leading to an unprecedented humanitarian crisis, especially in the Syrian Arab Republic and Iraq.[90] In Shatt al-Arab, at the confluence of the Tigris and Euphrates rivers,[91] salinization has ruined the traditional fertility of the land and the drinkability of Basrah's water supply for some 4.5 million people.[92]

93. The Special Rapporteur insisted in his 2023 report, entitled "Water as an argument for peace, twinning and cooperation" (A/78/253), on the need to move from

[89] See www.migrationdataportal.org/food-security.

[90] See https://info.undp.org/docs/pdc/Documents/IRQ/JP%20Document_Proposal_final%20-Basra%20water%20project%204.NOV.2020%20UNICEF%20signed[2].pdf.

[91] M. Amirhossein and others, "Effects of upstream activities of Tigris-Euphrates river basin on water and soil resources of Shatt al-Arab border river", *Science of the Total Environment*, vol. 858, No. 1 (February 2023).

[92] See www.unicef.org/media/91401/file/Multi-Tiered-Approaches-to-Solving-the-Water-Crisis-in-Basra-Iraq.pdf.

managing water as a mere economic resource to an ecosystem and human rights-based approach in order to prevent conflicts in transboundary basins, given the current climate change perspectives. Endorsing the United Nations water conventions are crucial to guaranteeing drinking water, food and basic livelihoods for all as a priority.

94. The most terrible result of the lack of agreement to jointly manage transboundary aquatic ecosystems occurs when wars break out, and water and food are used as weapons of war against populations, as has happened and is happening in Gaza, where the blockade of drinking water and food breaks international law. In this regard, the Special Rapporteur recalls that the article 7 of the Rome Statute of the International Criminal Court includes deprivation of access to food and medicine, calculated to destroy part of a population, as a crime against humanity. The Special Rapporteur notes that water is an essential part of food requirements.

B. Advancing the integration of water and food governance at a global level

95. Despite climate change, the link between water and food governance and the sustainable management of aquatic ecosystems is absent from public policies at the national and international levels. Although water is recognized by governments as an enabler in food systems, it has not yet become central to their design.[93] For example, only 30 per cent of countries that have developed a national food system transformation plan[94] include water and just 15 per cent address it explicitly.[95]

96. At the international level, there is a significant delay in achieving Sustainable Development Goals 2 and 6, and a need for accelerated progress. It is crucial to include an integrated perspective on the rights to food and water, based on restoring the health of aquatic ecosystems, in the next phase of the post-2030 Agenda for Sustainable Development. The limited capability of the United Nations to address water issues should be tackled during the upcoming United Nations water conferences by incorporating a human rights approach, which was overlooked in the 2023 United Nations Water Conference. In addition, collaboration and joint efforts between the water conferences and the United Nations Food Systems Coordination Hub, focusing on environmental sustainability challenges and the interconnected rights to water and sanitation, are necessary.

97. Usually, two lines of action have been proposed: public-private cooperation to generate the necessary financing for such objectives, and energizing the dialogue with stakeholders in water and food. Above all, however, it is necessary to reflect on the nature of the challenges faced: billions of people lack guaranteed access to water and sanitation and suffer from hunger and malnutrition, which poses a real democratic challenge and does not offer business opportunities. Considering the nature of the issues and goals, the responsibility for the necessary initiatives should be centred on governments and international institutions that are crucial to the global political, economic and financial order. This includes entities such as the United Nations and the World Bank. Prioritizing public policies and budgets in this regard is an obligation for all, starting with the most powerful countries and institutions, but also including governments and institutions in impoverished countries, because this priority is not excused even by poverty.

[93] Wageningen University and Research, “Making water pivotal in the design of food systems”.

[94] United Nations, “More than 100 countries sign up to development national strategies for transforming food systems”, press release, 26 April 2021. Available at www.un.org/en/food-systems-summit/news/more-100-countries-sign-develop-national-strategies-transforming-food-systems.

[95] Wageningen University and Research, “Making water pivotal in the design of food systems”.

98. Regarding the social strategy to be developed, it is essential to build bridges of dialogue and to recognize and collaborate with rights holders who see their human rights unfulfilled, and, to make matters worse, are criminalized when they demand them. Undoubtedly, the rights holders, with women at the forefront, are most committed to and interested in the realization of the Sustainable Development Goals; indeed, they are the ones who face the daily challenge of bringing water and food to their homes.

VII. The need for an agroecological transition

A. The principle of food sovereignty

99. In contrast to the dominant approach to food systems based on unlimited growth in production and blind reliance on markets, the concept of food sovereignty goes beyond the simple availability of produced food. It demands the right of communities and peoples to make decisions about their food systems, including drinking water, in accordance with their own needs and cultural values; promotes a community-based approach to water management; requires a guarantee of environmental sustainability; considers it essential to confront the problems derived from the power asymmetries; and stresses the need to secure the land tenure and water rights of rural communities and Indigenous Peoples.[96]

100. Given the level of degradation of aquatic ecosystems and agricultural systems, it is necessary to promote regenerative dynamics. Regenerative agriculture is a fundamental pillar of the agroecological transition that urgently needs to be promoted. Measures and strategies for carbon sequestration and soil enrichment must be developed, extensive livestock farming integrated with local agriculture must be promoted, food production must be diversified, aquatic ecosystems must be restored and biodiversity must be increased, thus contributing to strengthening environmental health as a key to climate change adaptation. Regenerative agriculture empowers farmers, promotes social equity and reduces dependency on external inputs, which aligns with food sovereignty.

101. Taking this holistic approach to territorial management, integrating food, water and environmental sustainability and assuming a community vision in the management of what is essential for a dignified life, leaving no one behind, creates a coherent conceptual space for managing water and food, as linked rights, from a human rights-based approach.

102. In an article on his experiences during the 2021 United Nations Food Systems Summit, the Special Rapporteur on the right to food argued: “Communities, peoples and governments will do well to focus their efforts on issues of power in the current food systems and the root cause of the problem within those systems.”[97] Addressing the power asymmetries and structural inequalities in current food and water management systems is necessary. These result in the systemic violence of land- and water-grabbing, the displacement of populations by large dams or the de facto appropriation of rivers and lakes as landfills in the name of progress.

103. In the approaches developed by food sovereignty movements, the ways of life of Indigenous Peoples and peasant communities are valued as living examples of a circular economy, and the diversity of seeds and species adapted to their territories are keys to reinforcing food resilience against the risks that stem from climate change.

[96] Michael Fakhri, “The international political economy of the right to food”, *Human Rights and Global Governance*, 2020.

[97] Michael Fakhri, “The Food System Summit’s disconnection from people’s real needs”, *Journal of Agricultural and Environmental Ethics*, vol. 35, No. 16 (2022).

Developing food sovereignty means foregrounding the values of sustainability and democratic governance and confronting the pressures of the privatization and commodification of water, the short-sighted bias of the purely commercial valuation of food and the suicidal tendencies of speculation in futures markets.

104. Addressing hunger, malnutrition and lack of access to safe drinking water cannot be based on intensifying the unsustainability of aquatic and related ecosystems and the degradation of soil fertility. Nor can it be based on blind trust in the logic of the market, because that marginalizes the most impoverished, destroys resilient productive social fabrics, ignores cultural heritage and knowledge and ruins the human rights to food, drinking water and sanitation of those living in poverty.

105. As with any structural transition, there is the question of the potential funding available. In this regard, it is estimated that $540 billion a year in subsidies sustains current modes of production, 87 per cent of which either distorts prices or supports production strategies that are detrimental to nature or health.[98] Directing these financial capacities to support the agroecological transition would certainly create prospects for the viability of healthier, more sustainable, equitable and efficient food systems. The Special Rapporteur, therefore, welcomes the work and studies promoted by FAO on possible financial strategies that should be put in place to reorient current subsidies and public policies to encourage and finance the necessary agroecological transition.

B. A new concept of progress

106. Water availability in a territory provides the basis of its habitability, and managing water as a common good, accessible to all but not owned by anyone, has made it possible, since ancient times, to build a foundation for coexistence and social cohesion. Prioritizing drinking water and the water needed to guarantee food sovereignty has been and continues to be the floor of coexistence, based on respect for human rights.

107. Once the human rights floor is guaranteed, it is reasonable for people to work to improve their living conditions, using more natural resources and, particularly, more water. However, the vital and unique challenge that humanity faces requires recognizing and respecting the ceiling imposed by the sustainability of ecosystems, particularly the sustainability of the aquatic ecosystems on which we depend.

108. Unlimited economic growth, on which the current neoliberal development model is based, and its projection in most current water management systems and the dominant model in food systems, undermines the sustainability of ecosystems. In the past, the sustainability of ecosystems was rarely in question. Today, it is an unavoidable need to respect this sustainability ceiling in each territory and at a global level with regard to aquatic ecosystems.[99]

109. Between the floor of human rights and the ceiling of sustainability, humanity has its common home, with ample space to build a new concept of sustainable and democratic progress in each territory and in the entire world. There will be no lack of resources to guarantee the human rights to water and food for all.

110. In this context, an agroecological transition is necessary for food systems that guarantees the floor of compliance with human rights and respects the ceiling of environmental sustainability. It is a transition that must also ensure democratic

[98] FAO, UNDP and UNEP, *A Multi-Billion-Dollar Opportunity – Repurposing Agricultural Support to Transform Food Systems* (Rome, FAO, 2021).

[99] N. Matthews and others, “Elevating the role of water resilience in food system dialogues”, *Water Security*, vol. 17 (December 2022).

governance in order to manage, from a human rights-based perspective, the water and food necessary for a dignified life.

111. Satisfying the basic needs of a population on the basis of guaranteeing its human rights, far from generating competition for available resources, reinforces social and community cohesion. Guaranteeing drinking water, healthy food and the other human rights means ensuring a decent life for all without leaving anyone behind. These challenges cannot be faced piecemeal, nor should they be attempted in order to guarantee some human rights based on violating the fulfilment of others; it is necessary to face them comprehensively as a basis for coexistence and social cohesion.

VIII. Conclusions and recommendations

112. **The Special Rapporteur recommends adding sustainability and the good state of aquatic ecosystems to the elements that constitute the human rights to water and sanitation and the right to food.**

113. **Strengthen the linkages between the governance of the human rights to water and sanitation and the right to food by:**

(a) **Incorporating a pillar dedicated to the water/food nexus at the Committee on World Food Security to strengthen its work on water-related issues;**

(b) **Linking the sustainability of aquatic and related ecosystems to the sustainability of food systems at the 2026 and 2028 United Nations Water Conferences;**

(c) **Building bridges of dialogue with rights holders, with women at the forefront, giving them effective participation in global mechanisms to advance Sustainable Development Goals 2 and 6;**

(d) **Prioritizing international and national budgets for integrated programmes and strategies regarding water, hygiene and food, paying special attention to combating chronic childhood undernutrition;**

(e) Supporting the Committee on World Food Security's recommendations on water for food security and nutrition, linking the right to water to the progressive realization of the right to food.

114. **Harness the negotiation of the post-2030 Agenda to advance an agenda that strengthens the interdependence of human rights, and in particular:**

(a) **Develops integrated strategies for Sustainable Development Goals 2 and 6, paying special attention to targets related to environmental sustainability and environmental resiliency (targets 2.4, 2.5 and 6.6);**

(b) **Promotes cross-cutting and multilevel complementary targets between the rights to water and food;**

(c) **Establishes specific measures and targets related to the health of aquatic ecosystems to ensure sustainable food production systems, safe drinking water and increased resilience for climate change adaptation.**

115. **Promote at the global and national levels an agroecological transition, based on the principles of food sovereignty and managing water from a sustainable and human rights-based approach, as a common good, and not as a mere productive input, by:**

(a) **Promoting regenerative agriculture strategies and recovering land fertilization cycles through the use of manure and adequate crop rotations,**

among other measures, in order not only to increase productivity but to reduce the need for irrigation by increasing the moisture retention capacity of soils;

(b) **Recovering the wide variety of seeds and promoting diverse production sources in combination with other activities, such as extensive livestock farming, fishing and forestry, thus strengthening the resilience of family farms;**

(c) **Repurposing public agricultural subsidy policies and providing specific and differentiated public support for the agroecological transition of family farms and the marketing of their products in local markets, and ending indiscriminate agrarian subsidies;**

(d) **Strengthening public support for extensive and family livestock farming that is integrated into a circular livestock farming economy at the local level;**

(e) **Making macro farms illegal, as they are environmentally unsustainable, and regulating smaller, intensive farms to guarantee the controlled and sustainable use of slurry to avoid the contamination of water bodies;**

(f) **Stopping land- and water-grabbing processes and legally securing the land tenure and water rights of Indigenous Peoples, peasant communities and family farmers;**

(g) **Recognizing, respecting and protecting circular economy practices and the knowledge of Indigenous Peoples and peasant communities, and their community water management institutions, and promoting public-community partnership strategies;**

(h) **Developing national and international food information and education campaigns based on the Voluntary Guidelines on Food Systems and Nutrition published by the Committee on World Food Security, and raising awareness about food waste and the amount of wasted water that this entails;**

(i) **Encouraging city governments to sign the Milan Urban Food Policy Pact and promoting healthy food in urban environments;**

(j) **Restoring the good conditions of rivers, lakes and wetlands to ensure the quality of drinking water, and restoring fisheries, which are an essential source of food for many communities, with the smallest possible water footprint;**

(k) **Enacting legal and institutional frameworks that ensure women's equal participation in water and food governance at the local, national and international levels, paying special attention to communities where women bear the burden of searching for water, as they are often the guardians of water sources, especially for Indigenous Peoples.**

116. **Design and develop adaptation strategies to climate change based on a water transition that supports the agroecological transition towards water-responsible food systems, linking the governance of water and food when facing climate change, by:**

(a) **Reinforcing social resilience in the face of climate change, prioritizing compliance with the human rights to drinking water, sanitation and food;**

(b) **Promoting hydrological planning at the basin level that minimizes the impacts of droughts and floods on the towns and communities of the basin, guaranteeing the drinking water, sanitation and food sovereignty of towns and communities in the basin in transboundary basins agreements based on the principles of the United Nations water conventions;**

(c) **Stopping deforestation processes and developing programmes for the recovery of forest and vegetation cover and soil regeneration linked to hydrological plans;**

(d) **Promoting irrigation plans that resize the irrigated surface and adapt water demands to foreseeable availability under climate change, withdrawing irrigation from lands with salinity problems, identifying and protecting valuable traditional irrigation strategies, promoting modernization processes with public support for small producers but recovering savings in supplies to prevent future droughts, developing and supporting low-intensity irrigation strategies adapted to scarcity conditions, and protecting the water rights of small producers, peasant communities and Indigenous Peoples in scarcity scenarios;**

(e) **Promoting rainfed plans adapted to climate change, which value rainfed productive capacities, with adequate seeds and productive strategies, taking into account that food is thus produced without generating a blue water footprint;**

(f) **Promoting public agricultural insurance policies against droughts with specific support for small producers.**

117. **Develop the rigorous regulation of financial markets to end their current opacity and prevent staple foods and water from being traded on futures markets. Promote measures for the international regulation of staple food prices and public water domain governance using a human rights-based approach.**