

Aquatic Ecosystem Management: The Case of Somalia

Mohamed Hassan Sheikh Abdi¹  Arzu Morkoyunlu Yüce² 

Beril Ömeroğlu Tapan¹  Füsün Öncü¹ 

1 Kocaeli University, Institute of Science, Department of Fisheries Kocaeli, Turkey

2 Kocaeli University, Hereke Asım Kocabıyık Vocational Schools, Environment Cleaning Services Department, Kocaeli, Turkey

Abstract

Water is the basis of life and the driving force behind economic and social development and eradicating poverty. Water scarcity is the biggest problem facing the Somali people, where the water assets are inadequate to meet domestic, economic development, and environmental needs. Most of the data used in this study belongs to the Ministry of Energy and water resources and the Ministry of Agriculture and Irrigation of Somalia. In addition, scientific studies on the most important water resources done by the public and private institutions, local and international NGOs in Somalia have also been benefited. Apart from Jubba and Shabelle rivers, Somalia's main important water resources are underground waters such as boreholes, shallow wells, and springs. The Ministry of Agriculture and Irrigation is responsible for water resources management. This ministry conducts several works related to water and agriculture development in general. These include projects to boost irrigation systems and power output. The dependence on water is compounded by the fact that most Somalis rely on agriculture and livestock for their livelihood. Like many other developing countries, Somalia faces the challenge of efficiently developing and managing its limited water resources while maintaining water quality and preserving essential ecosystems on which water resources depend.

Keywords: Ministry, Agriculture, Aquatic Ecosystems, Somali

Bu makaleden şu şekilde alıntı yapınız / Cite this article as: Abdi MHS, Yüce Morkoyunlu A, Tapan Ömeroğlu B, Öncü F. Aquatic Ecosystem Management: The Case of Somalia: Chj 2021; 2(2):43-46

Sorumlu Yazar / Corresponding Author:
Mohamed Hassan Sheikh Abdi, Kocaeli University, Institute of
Science, Department of Fisheries, Kocaeli, Turkey
E-mail: almubarak144@gmail.com



Content of this journal is licensed under a Creative Commons
Attribution-NonCommercial 4.0 International License.

1. INTRODUCTION

Somalia is an East African country that covers a total land area of 637,660 km². It was officially established as a Republic in 1960 by a coalition of the former British protectorates and Italian colonies (Janzen et al., 2021). The country is bordered by Djibouti to the north-west, Kenya to the south-west, and Ethiopia to the west. It borders the Gulf of Aden northwards and the Indian Ocean eastwards. Together, these ecosystems make Somalia a home to the longest coast in Africa. Geographically, Somalia is divided into three regions the northern coastal plain of Guban, the ragged northern highlands, and the Ogaden regions, which descends to the south from the highlands and consists of shallow plateau valleys, wadis, and broken mountains. Somalia has the longest coastline, 3025 km, in Africa, with an estimated shelf area of 32 500 km². Eastwards, the continental shelf of Somalia is among the Somali Coastal Current, a Large Marine Ecosystem including Kenya and Tanzania (Alexander, 1998; Okemwa, 1998). The continental shelf is generally flat with diverse habitats and organisms; coral reefs, mangroves, seagrass meadows, beaches, and estuaries, within a 700 000 km² stretch from Dar es Salaam to the north of Ras Hafun (Carbone & Accordi, 2000).

Agriculture is central to Somalia's economic development. Livestock is also the main source of economic activity, employment, and exports in Somalia, followed by the fishery sector and trade. Somalia. With the exception of those living along the Juba and Shabelle Rivers, the Somali population relies on groundwater for domestic water supply, livestock, and small-scale irrigation. The two rivers originate from Ethiopia. The two rivers serve as the breadbasket for the majority of Somalis in the south. However, lack of extension services, modern farming techniques, dilapidated irrigation infrastructure, and general insecurity have resulted in low productivity and yields. (World Bank, 2017). This document presents a review on the aquatic ecosystems of Somalia with emphasis on the marine, freshwater, coastal features, and their management. The work is presented in five subtitles namely; marine and coastal resources, coastal features and ecosystems, freshwater resources and drainage, management, climate, and challenges.

2. MARINE AND COASTAL RESOURCES

Somalia has the longest coastline on mainland Africa, measuring 3,333 kilometers, and is rich in marine

resources. The Somali Current Marine Ecosystems, one of the most important large marine ecosystems in the Indian Ocean, is found in its maritime region. (UNEP, 2005). This area was given in figure 1.

Figure 1. Somalia (Türkiye-rehberi. net)



Variable ocean conditions sustain a wide range of fish species in Somali waters, from demersal fishes associated with reefs and the seafloor to pelagic species that feed on prey backed by nutrient-rich upwelled waters. The Somali marine environment is home to a wide range of living resources. Migratory tuna, billfish, and sharks are attracted to the area's dynamic oceanographic features. Warm tropical waters host hundreds of species of marine life on coral reefs, and highly active open waters support schooling pelagic creatures, including sardines and squid. (Glaser et al., 2015) Numerous endemic species, or species found nowhere else on the planet, can be found in the country, including six different birds, mammals, and reptiles (UNEP, 2005).

2.1. Coastal features and ecosystem

The coast is divided into two distinct ecological zones: (1) the Gulf of Aden, which includes the coastlines of Somaliland and northern Puntland, and (2) the Indian Ocean coastlines of northern Puntland, Central, and South Somalia. The continental shelf is roughly 15 kilometers wide, with a steep drop off into deeper water. The shelf stretches for nearly 80 kilometers between Ras Aseyr and Ras Hafun on the northeast coast. (ASCLME, 2012)

2.2. Freshwater resources and drainage

Except for those living along the Juba and Shabelle Rivers, the Somali population relies on groundwater for domestic water, livestock, and small-scale irrigation. Boreholes, shallow wells, and springs are Somalia's primary groundwater sources. Boreholes are the most important water sources in Somalia as they provide water during the year and when other sources run dry. The two perennial rivers, the Juba and the Shabelle, both of which flow from Ethiopia to the Indian Ocean and cut through the southern part of the country, are Somalia's main surface water supplies. (Houghton-Carr et al.,2011). The survival of the Somali national economy and its social and environmental well-being is inextricably related to water supplies in the two rivers. The rivers pass through ecologically important areas, inland and coastal, and supply Somalia's rice bowl and environmental well-being. Since the hydrogeological conditions in these areas are strong, finding groundwater in Southern Somalia, where these rivers flow, is very convenient. Agriculture alone accounted for 97% of all freshwater withdrawals, due mainly to irrigation in southern Somalia. (World Bank,2020)

2.3. Water resource management in Somalia

The water resource of Somalia is managed by the ministry of energy and water resources. The ministry has the mandate to formulate, direct, and coordinate the national and water resources. (Moewr,2021)

Furthermore, the ministry involves policy-making, setting standard operation, national planning, regulation, monitoring, and technical support of regional states concerning energy and water resources to promote the country's social-economic development. The Ministry of Planning, Agriculture, Livestock Forestry and Range, Health, and Juba Valley Development is part of the water management structure among local and international organizations.

The Juba and Shabelle rivers are crucial to the Somali economy and support significant projects targeting agriculture development. Some notable projects include; the Mugaambo Rice Irrigation Project, the Juba Sugar Project (JSP), and Arare Banana Irrigation Project (Mohamed, 2013). In addition, these rivers are also useful sources of hydropower generation, Dam Project (BDP), and flood mitigation. Unfortunately, most of the valuable projects have been destroyed due to the civil war after the collapse of the central government.

2.4. Climate of Somalia

Generally, the climate of the Somali coast is hot and humid, while the interior of the country is mainly hot and dry semi-arid to arid. Somalia has four seasons, two of them are rainy, and the other two are dry seasons. The first rainy season is locally known as Gu' starts from April to June and flows by a dry season known as (Hagaa) from July to September. The second rainy season (Dayr) occurs between October and November, followed by a very harsh and dry season known as Jiilaal between December and March. The four seasons are driven by the monsoon winds which blow across the Somali region. Fishing, Agriculture, and livestock activities are largely subjective to these seasons. (Carbone & Accordi, 2000)

2.5. Challenges of water resource management in Somalia

Water scarcity is the biggest problem facing the Somali people, where the water assets are inadequate to meet domestic, economic development, and environmental needs.

Water scarcity reasons in Somalia can be divided into natural water scarcity and Human-induced Water Scarcity. Natural water scarcity such as; aridity low, rainfall, and high evaporation, Drought such as; absence of expected rainfall and climate change; global warming due to emissions. Furthermore, human-induced water scarcity such as Demographic Water Scarcity; growing and urbanizing, population Technical Water Scarcity; low level of water development, land-use Mismanagement; Land degradation, deforestation, pollution, and urbanization.

3. RECOMMENDATION AND CONCLUSION

Water is the basis of life and the catalyst for economic and social growth and poverty eradication. The importance of sustainable water resource management cannot be underestimated. ((WWAP,2015). It's vital to build dams and other diversions along the two rivers to get sustainable and regulated flow. Farmers, livestock owners, fisheries (though no aquaculture farms are currently available in Somalia, future planning is possible), and other domestic uses would benefit from these projects. Some other recommendations are also listed here:

Predict environmental consequences.

Plan for the provision and development of potable water.

Greater attention needs to be paid to water efficiency, e.g., rainwater collection, improved urban efficiency, and distribution.

Assess and plan for the two permanent rivers in terms of potentially competing demands.

Raising public awareness.

Fostering economic growth to achieve economic water efficiency

- Retrieved from: <https://moewr.gov.so/departments/energy/overview-of-the-department-of-energy/2021>
- Janzen, J. H.A. and Lewis, Ioan M. (2021, March 10). Somalia. Encyclopedia Britannica. <https://www.britannica.com/place/Somalia>.
- World Bank, (2020) Country Environmental Analysis. Diagnostic study on trends and threats for environmental and natural resources challenges.
- WWAP (United Nations World Water Assessment Programme). 2015. The United Nations World Water Development Report 2015: Water for a Sustainable World. Paris, UNESCO.

KAYNAKLAR / REFERENCES

- Alexander, L. (1998) Somali Current Large Marine Ecosystems and related issues. In Large Marine Ecosystems of the Indian Ocean: Assessment, Sustainability, and Management, eds. K. Sherman, M. Ntiba and E. Okemwa, pp. 327±333. Blackwell Science, Oxford.
- Bariş, M. E., & Karadag, A. A. (2007). Water resources management issues in Turkey and recommendations. *Journal of Applied Sciences*, 7(24), 3900–3908. <https://doi.org/10.3923/jas.2007.3900.3908>
- Carbone, F., & Accordi, G. (2000). The Indian Ocean coast of Somalia. *Seas at the Millennium - an Environmental Evaluation - Volume 2*, 41(00), 63–82.
- Glaser, S., Roberts, P., Mazurek, R., Hurlburt, K., & Kane-Hartnet, L. (2015). Securing Somali Fisheries. <https://doi.org/10.18289/OEF.2015.001>
- World Bank. (2017). Somalia Economic Update: Transition amid Risks with a Special Focus on Intergovernmental Fiscal Relations. World Bank Group, 1, 1–66.
- IUCN Eastern Africa Regional Office. (2006). Country Environmental Profile for Somalia.
- Mohamed, A. E. (2013). Managing shared river basins in the horn of Africa: Ethiopian planned water projects on the Juba and Shabelle rivers and effects on downstream uses in Somalia. *WIT Transactions on Ecology and the Environment*, 172, 139–151. <https://doi.org/10.2495/RBM130121>
- UNEP. (2005). The State of the Environment in Somalia: A Desk Study. 269. http://wedocs.unep.org/bitstream/handle/20.500.11822/8425/State_of_environment_Somalia.pdf?sequence=3&isAllowed=y
- H. A. Houghton-Carr, C. R. Print, M. J. Fry, H. Gadain & P. Muchiri (2011) An assessment of the surface water resources of the Juba-Shabelle basin in southern Somalia, *Hydrological Sciences Journal*, 56:5, 759-774, DOI: 10.1080/02626667.2011.585470.
- ASCLME 2012. National Marine Ecosystem Diagnostic Analysis. Somalia. Contribution to the Agulhas and Somali Current Large Marine Ecosystems Project (supported by UNDP with GEF grant financing).