ACTIONS FOR UPSCALING ROOFTOP RAINWATER HARVESTING IN SOMALIA

TECHNOLOGY DESCRIPTION

TECHNICAL DESCRIPTION

The process of rooftop rainwater harvesting (RRWH) involves collecting rainwater from catchment surfaces such as roof tops and court yards and storing it near homes. The primary goal of RRWH is to store water for future consumption. The components of a RRWH system include a catchment region, conveyance methods, abstraction mechanism, storage and treatment. The rainwater collected can be stored in surface or subsurface ground water reservoirs using artificial recharge techniques to suit home demands via tank storage. The primary benefit of RRWH is that it supplies water close to the home, reducing the need for long excursions to collect water. Harvested rainwater is a clean, renewable supply of water that may be utilised for residential uses, gardening, and both large-scale and small-scale activities. It also helps lessen the likelihood of flooding and the strain on sewage systems. The affordability, accessibility, and ease of maintenance of a rainwater harvesting system at the household level are what make it so appealing.

CURRENT TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

There is a considerable demand for RRWH in Somalia, although investment in this technology is still modest. Economically, RRWH equipment and material expenses are significant. The initial expenses of RRWH systems are expensive for the majority of individual households. Rooftop Rainwater harvesting in Somalia has not received enough attention in government programmes and initiatives, despite the government having formed lead ministries to coordinate other line ministries in the administration of water policy. This is in contrast to groundwater resources that have received much attention. Rainwater gathering using artificial dams and man-made cisterns for human and livestock consumption is prevalent in Somalia, however unreliable over time because of rainfall season sensitivity. There is a low level of investment willingness in RRWH because potential users do not take into account the possibilities it opens up or the alternative costs. The RRWH technology in Somalia is at development stage with the technology having been demonstrated in the country. However, the RRWH infrastructure is crude and underfunded. Rainwater harvesting technology is in short supply due to the typically low value attributed to investment in RRWH. Hydrological and meteorological data and information is also lacking to enable planning, construction, and deploy RRWH systems in Somalia.

CLIMATE RATIONALE OF THE TECHNOLOGY

The effects of climate change are increasingly becoming evident in Somalia, with changes in climate variables such as rainfall, evaporation and temperature leading to extreme weather events such as floods and droughts. Somalia is situated to the leeward side of the highlands between Kenya and Ethiopia, which exposes it to low rainfall. Rainfall in Somalia often fluctuates, with the middle and lower Juba and coastal portions of the middle Shabelle receiving 700-800

mm/year, while other locations farther inland receive up to 400 mm/year. The average annual rainfall in Somalia is roughly 123 mm, with the Gu season accounting for 75 percent of this total (Basnyat, 2007). Somalia is a water-scarce country and with significant population increase, present per capita level is expected fall further in the future decades. In certain parts of Somalia, the ongoing reduction in freshwater availability has led to conflicts and intense competition for the few available water resources. Somalia's renewable freshwater per capita has declined from 2 087 m^3 in 1962 to just about 411 m^3 in 2017 which is far below the UN recommended threshold of 1 000 m^3 per capita per year (World Bank, 2020). Rooftop rainwater harvesting has the ability to provide water for agriculture and household usage for many rural families during dry seasons in Somalia. Rooftop rainwater harvesting systems are therefore important resilience alternatives for climate adaptation.

AMBITION OF THE TECHNOLOGY

SCALE FOR IMPLEMENTATION AND TIME-LINE

Rainwater harvesting may possibly provide water for home consumption, animal watering, and irrigation to many rural communities in Somalia with an average annual rainfall of 400 to 800 mm; however, adoption of this technology is still in its infancy. The RRWH technology will be targeted in the Shabelle and Juba Basins that have significant rainfall zones, with annual averages of roughly 460 and 427 mm, respectively. The potential of using RRWH is vastly underutilized in these areas. In order to utilise this potential and adapt to the effects of climate change, the goal is to transfer and use RRWH by 2032, with the aim of establishing 261,000 rainwater collecting tanks, each measuring about 10 m^3, to serve 1,500,000 people annually in Somalia. The Somalia National Adaptation Programme of Actions (NAPA) proposes the adaptation options for Somaliland in the water sector to include increasing water availability through rainwater harvesting in areas with higher reliability of rainfall. The proposed actions will be implemented within the timeframe of 8 years 2024-2032. The initiatives will involve boosting cooperation across the housing, infrastructure, agriculture, and water sectors; creating cooperation between the public and private sectors to overcome the high costs that are associated with installation of RRWH; and strengthening RRWH's advisory support capabilities.

EXPECTED IMPACTS OF THE TECHNOLOGY

The technology is expected to help more people in Somalia have access to potable water, lessen the strain on surface and underground water supplies, shorten the distances and time that women and children must travel to fetch water, and make more water available for irrigating crops, watering livestock and household use. Considering the financial outlook of the small unit size of decentralized RRWH system, it allows closer matching of capacity to actual growth in demand, and can be built house-by-house, or cluster-by-cluster moving capital costs of capacity to the future. This means that a household/community will incur less debt, compared to the borrowing requirements of a large up-front capital investment in capacity which can reduce the financing costs for that community. This is expected to increase freshwater by 50% and reduce the use of expensive freshwater sources by 50%.

EXISTING POLICIES IN RELATION TO THE TECHNOLOGY

Somalia NDC identifies the water sector as one of the priority sectors for intervention. It advocates for investment in basic and portable water supply for households and the promotion of rainwater harvesting technologies and water conservation, including improved water use efficiency. The Somalia National Water Resources Strategy 2021 (NWRS), (2021) has provisions to contribute to the strategic plan for the various activities that are needed to address challenges in the water sector in the short- and long-term. Its goals include establishing a functional water sector governance framework; developing policies, legislation, and strategies for improved water sector governance by 2025; and implementing water conservation and water demand management by 2025. The Federal Government's strategy to enhance water and sanitation services nationwide is embodied in the national WASH Sector Policy (2019). It includes a number of policy initiatives pertaining to the provision of water services, including water quality, community-level water resource management, and urban and rural water supply. The National Adaptation Programme of Action (NAPA) (2013) seeks to improve access to water by improving water capture and natural storage and also improving water quality through water treatment plants.

PROPOSED POLICIES TO ENHANCE TECHNOLOGY IMPLEMENTATION

To enhance implementation of RRWH in Somalia, it is necessary to expand opportunities for joint investments and collaboration in rooftop rainwater harvesting. This will involve the housing, water, infrastructure, and agriculture sectors collaborating to advance RRWH in Somalia; strategies and budgets for RRWH to be created jointly by federal, state, and regional governments; formulating or fortifying strategies, regulations and by-laws that are specific to RRWH at regional level; devising incentives such as low taxes with the purpose of encouraging private businesses, non-governmental organisations, and development partners to supply a wide variety of RRWH materials, equipment, and services; policy provisions for developing and strengthening curricula of existing institutes/centres in RRWH exploitation, installation, and maintenance; and provisions for capacity building of SMEs and specialised training for extension agents and administrative assistance for RRWH advisory support.

COSTS RELATED TO THE IMPLEMENTATION OF POLICIES

Policy/Strategy	**Cost (USD)**
National strategies and budgets for RRWH to be created jointly by federal, state, and regional governments	7,000
Formulating or fortifying strategies, regulations and by-laws that are specific to RRWH at regional level	66,000
Devising incentives such as low taxes with the purpose of encouraging private businesses, non-governmental organisations, and development partners to supply a wide variety of RRWH materials, equipment, and services	43,000
Policy provisions for developing and strengthening curricula of existing institutes/centres in RRWH exploitation, installation, and maintenance	14,200
Provisions for capacity building of SMEs and specialised training for extension agents and administrative assistance for RRWH advisory support	852,000
Total	**982,200**

References

Basnyat, D. B. (2007). *Water Resources of Somalia* (Technical Report W-11). FAO-SWALIM.

World Bank. (2020). *Somalia Country Environmental Analysis; Diagnostic study on trends and threats for environmental and natural resources challenges*. World Bank.

USEFUL INFORMATION

CONTACT DETAILS

TNA Coordinator

Hafsa Omar Abdilahi - Tel: +252634536811 Email: climate@moecc.gov.so

Champion from the Government

Najib Ahmed - Tel: +252613983913 Email: najeb@moecc.gov.so

LINKS TO TNA REPORTS

Relevant Links

https://tech-action.unepccc.org/country/somalia/

https://moecc.gov.so/policies-and-strategies/

https://moa.gov.so/department-of-irrigation-and-early-warning/

https://moa.gov.so/department-of-agribusiness-cooperative-development-and-food-reserve/

https://mop.gov.so/national-development-plan/

https://moewr.gov.so/wp-content/uploads/2023/12/National-Water-Stratgey.pdf

https://moewr.gov.so/water/

https://moewr.gov.so/ova_doc/national-water-strategy/