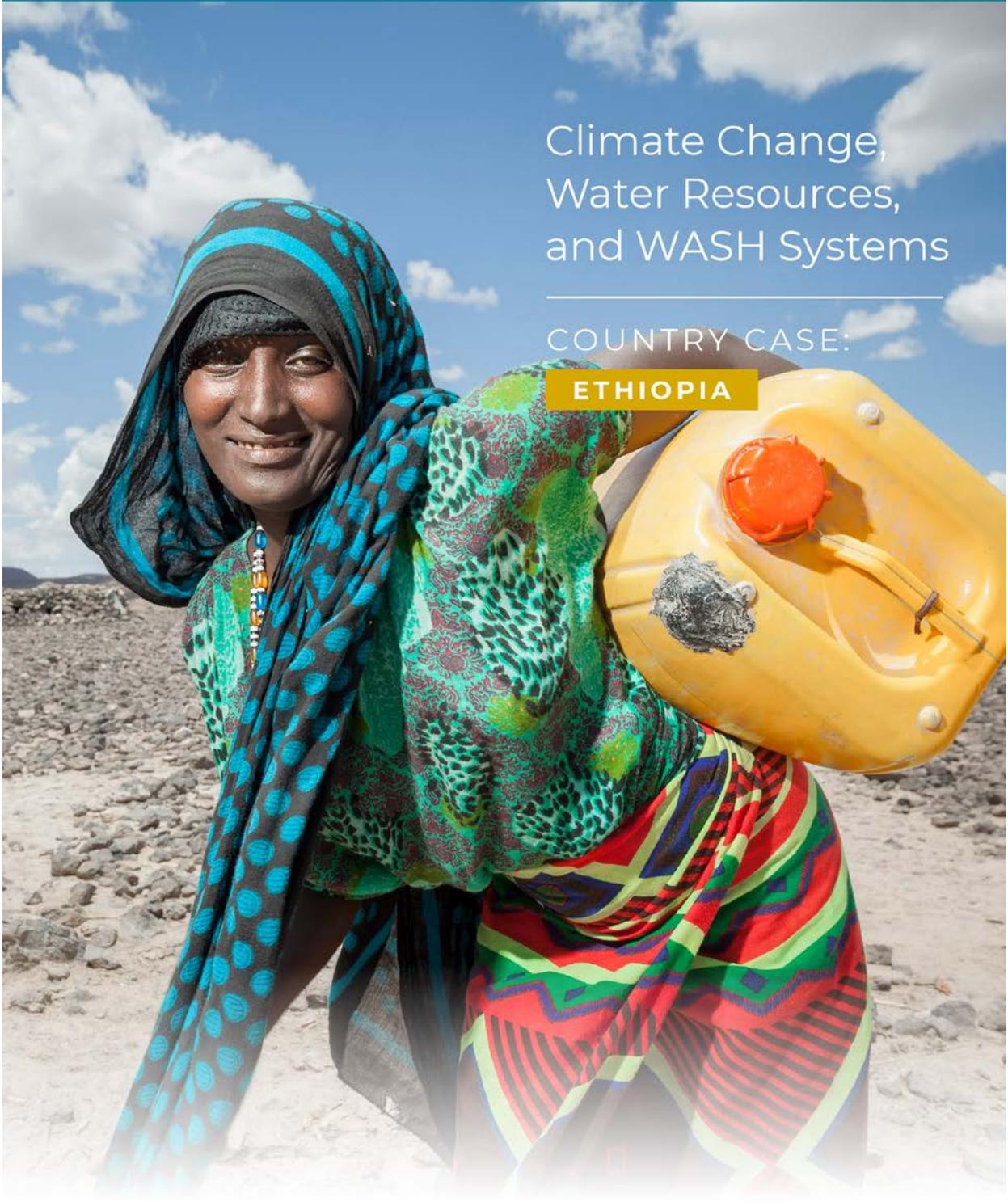


# Climate Change, Water Resources, and WASH Systems

COUNTRY CASE:

**ETHIOPIA**

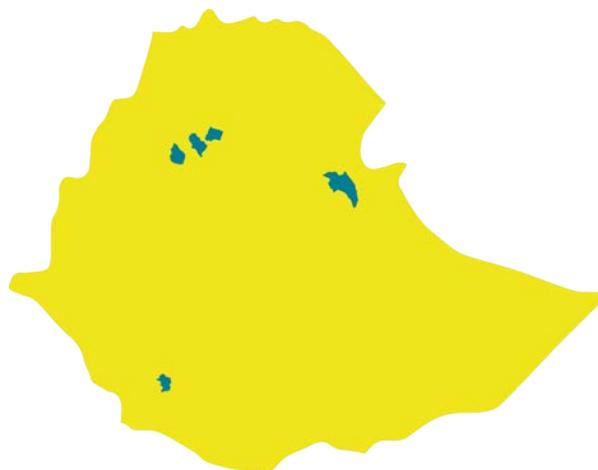


	Risk	Programming	Policy & Planning	
Polluted water	Medium	Limited	NAP	Yes
Too little water	High	Related	National climate policies & plans	Some
Too much water	Low	Related	Extent WASH is included	Moderate

## Climate trends and impacts on water resources

In Ethiopia,<sup>1</sup> the key trends and impacts include:

- Limited and varying (highly seasonal) rainfall, with increases in some areas and decreases in others (though models predict increased rainfall for some areas).
- Water supplies (and the agriculture-based economy) are drought-prone with reduced rainfall linked to El Niño-Southern Oscillation events. Millions are regularly affected by droughts which occur every few years.
- Increased flood risk associated with extreme rainfall events.
- Increasing temperatures (up to 1.9°C increase in T-max over 30 years).<sup>2</sup>



## Impacts on WASH infrastructure and services

Most water supply systems (both rural and urban) depend on groundwater. In the most densely populated highland areas, these include mainly springs and shallow wells. In lowland areas, boreholes may be hundreds of meters deep to tap deep groundwater. All groundwater sources are relatively well-buffered from climate fluctuations, as compared to surface water supplies, and localized impacts of abstraction for other water uses are likely to present a greater threat than reductions in groundwater recharge.

Surface and groundwater are increasingly at risk of pollution linked to agricultural and industrial development. Most household sanitation facilities are on-site and unimproved. Emptying of latrines is limited, and treatment facilities for wastes are inadequate.

There is an increasing flood risk to water installations within and near watercourses, due to more extreme weather events and a large increase in water supply facilities. Especially in lowland areas, boreholes are often constructed along or near rivers that are prone to occasional flooding.

## Climate and WASH policy and initiatives

Water supply and sanitation were missing in Ethiopia's 2007 National Programme of Action<sup>3</sup> which mainly focused on agriculture and natural resources management. More recently, the

<sup>1</sup> IRC focuses on Mile and South Ari districts and is also active in Dra, Farta, and Woliso.

<sup>2</sup> Gebrechorkos et al., 2019.

<sup>3</sup> <https://unfccc.int/resource/docs/napa/eth01.pdf>

water sector has more actively engaged in climate-related initiatives. The 2015 Climate Resilience Strategy for Water<sup>4</sup> specifies two priorities related to WASH which focus on vulnerable populations and enhancing self-supply.

The National Adaptation Plan<sup>5</sup> published in 2019 includes improving WASH systems and increasing access to potable water. An Ethiopian Climate Resilient Green Economy<sup>6</sup> facility was established in 2012 to finance carbon reducing projects, with total expenditure reaching US\$2,000,000 by 2020.<sup>7</sup>

Climate resilient WASH is a flagship government initiative and part of the One WASH National Programme.<sup>8</sup> It seeks to drought proof water supplies in the vulnerable lowlands through investment in siting deeper wells and multi-village piped water supply schemes.

### **Country program activities: mitigation and adaptation**

A main concern of IRC is the potential impact of climate change on the frequency of droughts and, to a lesser extent, floods. Frequent droughts have major impacts on water supplies, especially in the lowlands. IRC's work includes substantial activities in lowland areas in Afar, Somali, Oromia, and Southern Nations, Nationalities, and People's Regions.

The WASH cluster coordinates emergency responses to drought and other humanitarian emergencies (such as displacement of people within and across borders) with government, UN agencies (especially UNICEF), and NGOs (such as Oxfam) who are required to truck water at a huge expense. There are many refugee camps located around the borders of Ethiopia where the government is supported with WASH efforts by United Nations High Commissioner for Refugees and NGOs such as International Rescue Committee. There are also large numbers of internally displaced persons (due to conflict) within dry and drought-prone areas.

IRC activities support government and development partner initiatives to improve climate resilience and the ability to withstand drought-induced shocks, especially in the lowlands. We challenge the assumption that deep boreholes and multi-village piped water schemes are necessarily resilient. While these technical solutions lend themselves to climate resilience (drawing on deeper reliable water supplies and distributing them across areas), they require higher levels of management than community managed schemes. This is a critical weakness we seek to address with a focus on supporting professionalization of support to rural water supplies and alternatives to community water supply. Research using sensors on systems in these areas shows that facilities are often underutilized and frequently in need of repair.<sup>9</sup>

Our activities include supporting Afar and Somali regions (working with USAID Lowland WASH and UNICEF, respectively) to establish monitoring networks for motorized boreholes<sup>10</sup> and innovate in rural water supply maintenance models. This includes supporting government and

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<sup>4</sup> <http://extwprlegs1.fao.org/docs/pdf/eth170274.pdf>

<sup>5</sup> <https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH%20FINAL%20VERSION%20%20Mar%202019.pdf>

<sup>6</sup> <https://www.undp.org/content/dam/ethiopia/docs/Ethiopia%20CRGE.pdf>

<sup>7</sup> <http://mptf.undp.org/factsheet/fund/3et00>

<sup>8</sup> <https://www.unicef.org/ethiopia/media/1111/file/OWNP%20Phase%20II.pdf>

<sup>9</sup> <https://www.sciencedirect.com/science/article/pii/S0048969719306941>

<sup>10</sup> <https://www.ircwash.org/resources/real-time-monitoring-improved-water-services-ethiopian-lowlands>

UNICEF is learning about the effectiveness of new rural public water utilities. Solar-powered pumping appears to offer a win-win in regions like Afar where the cost of diesel is the major issue in operating boreholes. Such facilities promise low running costs while reducing the sector's demand for fossil fuels. However, introducing solar technology potentially undermines the basis for fee collection by committees (leading to no income for repairs), and the necessary new supply chains and repair services are not yet in place.

### Key challenges

Key challenges include improving service levels and the continuity of WASH services and positioning resilient WASH services as a key climate adaptation measure.