

A close-up photograph of a young child drinking water from a public tap. The child's face is splashed with water droplets, and they are holding a piece of clear plastic to catch the water. The background is blurred, showing green foliage and a wooden structure. A large green semi-circular graphic is overlaid on the left side of the image.

**SUSTAINABLE
SOLUTIONS TO
WATER
SUPPLY IN
KENYA**



OXFAM

SUSTAINABLE SOLUTIONS TO WATER SUPPLY IN KENYA

1 Overview

Programme information

Name	Kenya Water, Sanitation and Hygiene Resilience and Governance Programme
Country	Kenya
Budget	£2.5m
Start Date	April 2014
End Date	March 2018
Donors	DFID, Projects Direct (Oxfam), Nokia Corporation/Microsoft

Problem analysis

Kenya leads its region in economic growth and was classified as a lower middle income Country (LMIC) by the World Bank in 2014. Over the last decade, it has seen an increase in GDP per capita of \$1,000¹ and 10 years added to average life expectancy.² It has a thriving tourist industry, receiving 1.2 million visitors in 2015.³

The country's apparent growing prosperity masks dramatic divides in wealth, quality of life and access to basic services between the wealthy suburbs of the capital, Nairobi, and marginalized groups living in urban slums and rural areas. In 2015, nearly 20 percent of city-dwellers were without access to an improved water source,⁴ and the figure was 44 percent in rural areas.⁵

Lack of access to water is most acute in the Arid and Semi-Arid Lands (ASALs) of Northern Kenya, resulting from limited annual rainfall – exacerbated by changing weather patterns – and decades of marginalization and under-investment. Turkana and Wajir, two of the poorest regions, both suffer from regular drought, with access to improved water sources far below the national average.

Kenya is urbanizing rapidly, with a total of 11.8 million of its people living in cities,⁶ and urban population growth at 4.28 percent in 2015.⁷ The country's cities are struggling to accommodate endogenous growth and new arrivals from the country; in 2014, over 50 percent of urban inhabitants were estimated to be living in slums.⁸ In 2012, an assessment undertaken by Oxfam as part of its process of strategy development found that slum-dwellers in Nairobi spend up to 20 percent of their incomes on water and 10 percent on sanitation.⁹

Brief programme description

The current Kenya Water, Sanitation and Hygiene (WASH) Resilience and Governance Programme runs from 2014 to 2018, and has a budget of £2.5m across three projects. It is built upon a theory of change, rooted in the Oxfam Kenya Country Strategy, which emphasizes empowerment, rights and the ability of citizens – particularly women – to develop and implement their own strategies for better access to services to improve health and quality of life. The programme's approach holds that the best-placed actors to deliver improved water and sanitation are the country's government, civil society and private sector, who are held accountable by the citizens they serve in promoting the quality and sustainability of services.

The programme addresses water and sanitation challenges in urban and rural settlements of Kenya, strengthening the capacity of county governments, water-user associations and water utility companies to provide safe, sustainable services; developing and piloting innovative solutions; and working with other civil society partners to call for policy changes that address the needs of the most vulnerable people. The programme's three projects are as follows:

1. Consortium for Sustainable WASH in Fragile Contexts (SWIFT)

Oxfam leads SWIFT, a DFID-funded consortium which seeks to deliver sustainable access to water and sanitation facilities, and to promote the adoption of safe hygiene practices in Kenya and the Democratic Republic of Congo. The consortium is comprised of Oxfam, Tearfund and the Overseas Development Institute (ODI), in addition to over 10 national and international NGOs, local and national governments, utility companies and the private sector in-country. The project has been divided into two phases: the first is focused on infrastructure delivery, the second on ensuring the sustainability of results. Activities include infrastructure development (i.e. water delivery), hygiene promotion, capacity building of utility companies, and mobilizing and strengthening village water management committees. Further information about the project can be accessed through the [consortium website](#).

2. Electronic water dispensing units – Water ATMs

The project is working with devolved local authorities and the private sector in Wajir and Turkana to pilot an approach to deliver sustainable access to safe drinking water through metered drinking water taps – known as 'water ATMs'. These charge a nominal and affordable fee for water distribution, ensuring costs of supply and maintenance are covered. A previous pilot, undertaken in Wajir in 2014–15, showed promise in delivering sustainable access to safe water, and is currently being scaled up. See 'In focus' below for more detail.

3. Remote monitoring systems

The project has partnered with Microsoft to develop stronger early-warning systems to enable more timely and effective responses to drought in the ASALs. Information on water-use patterns in drought-affected areas are collected in real time by mobile phone; the data is then transmitted to a monitoring/mapping system managed by the UN Food and Agriculture Organization (FAO). The information is utilized to develop better 'triggers' to enable more timely and effective drought response.

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2 Achievements and challenges

Achievements to date

Harnessing technology for water access

Under the SWIFT project alone, Oxfam has provided clean drinking water to over 123,000 people in Turkana and Wajir. Using renewable energy in the form of solar and hand-pump systems has reduced the cost of water and ensured sustainable access to water. The use of solar panels has increased the resilience of water provision and reduced the need for generators, which are unsustainable and costly. Solar systems have been delivered in partnership with local water providers and civil society actors to ensure that equipment is adequately maintained. Specifically, larger systems have been contractually tied to major private companies with revenue incentives for maintenance, whereas smaller systems have been linked to an insurance scheme managed by the Catholic Diocese of Lodwar. Many systems operate at considerable scale, with the largest system capable of delivering more than 60,000 litres of water per hour – this is currently the most powerful plant of its type in Kenya.

Promoting and strengthening sanitation

The programme has worked with a social enterprise (Sanergy) to deliver appropriate sanitation facilities – with 8,000 individuals now having access to a toilet adjacent to their home. The programme's approach uses a variation of Community Led Total Sanitation¹⁰ to engage communities, triggering a desire for change by highlighting the risks posed by open defecation. As a measure of the success of this approach, the programme has inspired one community in Turkana to build over 1,000 latrines.

Convening for global learning and reflection

In 2016, Oxfam and its partner Sanergy, a Nairobi-based social enterprise, hosted the International Toilet Summit in Nairobi, bringing together service providers and practitioners from Africa, North America, the Caribbean and Europe. The event sought to engage participants in knowledge-sharing and addressing issues such as toilet design and business models, asking the question: 'How do we get a toilet into every household?' The event produced valuable learning, which is being integrated into the programme by Oxfam and Sanergy (see 'Specific challenges' below).

Specific challenges

Container-based sanitation

The International Toilet Summit identified a range of common challenges facing container-based sanitation providers worldwide, including issues surrounding appropriate product design, maintenance and waste collection services; marketing and infrastructure; and cost and affordability.

Participants agreed that the design process is ongoing, and that odour and cost remain an issue with many existing products. It was also agreed that managing waste collection services with appropriate frequency is complex, particularly in informal settlements where it can often be difficult to find service users. Service providers – both private companies and/or social enterprises – also felt that they are frequently mistaken for NGOs, with expectations that there would be no costs for users of their products/services. This has raised the need for stronger marketing practices to enable them to manage expectations and sell their product. Following the Summit, some of the participants have since formed a Container Based Sanitation 'alliance' to help crack this sanitation challenge together.

Payment by results

The SWIFT project is funded by the UK government under a Payment by Results (PbR) contract, through which financing is tied to output, and outcome targets identified and agreed at contract signature. Targets are monitored, verified and evaluated by a third-party organization: the e-Pact¹¹ consortium, which is led by Itad, with Oxford Policy Management (OPM), IWEL and Ecorys.

Working through this innovative contracting process has resulted in key learning for Oxfam, its partners and DFID. A learning brief,¹² which outlines a number of key considerations for NGOs and donors managing WASH projects under a PbR contract, is available via the consortium website.

The document includes recommendations for the various stages throughout the project cycle: from bidding, where key items for costing are identified and critical contracting issues outlined; to design, which covers community selection, partnerships and payment schedules; to the examination of practical issues around inception, implementation and sustainability.

Lessons learned

New technologies require considerable testing, localization and iterative refinement (see 'In focus').

Social enterprises are often mistaken for NGOs, and require investment in marketing and product development to be successful (see 'Specific challenges').

Wherever possible, utilize development programming as the backbone of emergency response (see 'Linkages with other Oxfam programming').

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3 Partnerships and links with other programmes

Partnerships

The Kenya programme boasts a large number of highly diverse partnerships, working effectively with government actors and the private sector alongside more traditional NGO partners.

Since the 2010 constitution, the Government of Kenya has worked towards decentralization in a process that has been described by the World Bank as 'among the most rapid and ambitious devolution processes going on in the world'.¹³ The devolution process has offered opportunities both to work closely with county governments, which now have the financial resources to improve WASH services; and to provide oversight of private sector actors.

Oxfam also works with the private sector, facilitating and catalysing public-private partnerships that ensure WASH outcomes are sustainable – using water ATMs and a mobile phone payment system for revenue collection (see 'In focus', below). In the capital, Oxfam is working with Sanergy to improve access to sanitation in schools, using a business

model based on the processing and sale of waste by-products from human waste. Oxfam is also working with Sanergy to research the market viability of a portable household toilet.

Linkages with other Oxfam programming

The programme has been successful in integrating its activities – which are long-term in nature – with those of Oxfam's emergency programming in Kenya. In 2017, Oxfam plans to use the ATMs as a reliable backbone for water distribution operations in drought-affected communities.

Mapping undertaken through the programme's collaboration with Microsoft has also been vital in supporting the wider response, with strategic boreholes now easily identifiable by agencies engaged in drought response. This approach allows for rapid and effective response to breakages, reducing delays during emergency response.

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4 In focus

Water ATMs: a sustainable solution to water supply?

Ensuring a sustainable water supply from services delivered by NGOs is a well-documented challenge.¹⁴ In addressing this issue, unit maintenance is critical: pumps are easy to install, but often fail when parts break down and need replacing. In Kenya, Oxfam is working with the private sector and devolved county governments to address the issue of sustainability through an electronic, tariff-based system known as 'water ATMs'. Water is dispensed through vending machines, which collect a small and affordable service charge from each user. This provides a private company with a revenue stream – and an incentive to maintain the product and provide safe, clean water.

The system is being delivered in partnership with the government-managed Wajir Water and Sewerage Company and the Dutch company Susteq, which manufactures these machines.

The system provides service users with a contactless, pre-paid card, which can be topped up at local resellers (plans to use the popular **M-Pesa** mobile payment system are currently being explored). This credit can then be redeemed for clean water, dispensed by the machine. In addition to having strong sustainability potential, the water ATMs are accessible 24 hours a day, reducing queuing times; water is paid for up front, making financial management easier for providers; and the system reduces the risk of fraud because there is a digital audit trail.

Testing and improving

As a new technology, iterative testing has been essential. Oxfam has made numerous contributions to the design of the

product, from improvements to the housing of the unit, to shifting from a card to a key-fob based system, which is more appropriate in a context in which few people carry wallets.

The system still requires refinement, and the long-term viability of water ATMs will only be tested with time. However, the initial signs are promising. For example, during the pilot in Wajir county, one village saw water revenue rise by more than 400 percent.

Water ATMs have, however, proven less successful in areas that have wider access to piped drinking water. Former Oxfam Programme Manager Brian McSorley, in a blog-post¹⁵ on the SWIFT website, notes that in Arbajahan village in Wajir, the 'system has not been fully utilised because of the increasing number of households who have their own private household connections.' This has been made possible by the solar pumping system installed by Oxfam as part of the SWIFT project. With increased water availability people are able to have water connections to their house and this is making the kiosks redundant.' Both water ATMs and solar pumping technologies address the sustainability of service provision by the water utilities, but in different ways. The case of Arbajahan has shown that where water production is not an issue, people tend to prefer to have individual connections rather than accessing water from communal water kiosks such as the ATMs. However, ATMs may be a better option where people need access to water as well as increased efficiency and transparency of revenue collection which can support longer-term operation and maintenance of water systems.

For further information about this programme:
www.oxfam.org.uk/wash-kenya

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Notes

¹ World Bank. (2015a). *GDP per capita (current USD)*. World Bank national accounts data. <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KE>. Accessed 06/04/2017.

² World Bank. (2015b) *Life expectancy at birth, total (years)*. Retrieved from <http://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=KE>. Accessed 06/04/2017.

³ World Bank. (2015c). *International tourism, number of arrivals*. World Tourism Organization, Yearbook of Tourism Statistics, Compendium of Tourism Statistics and data files. Retrieved from <http://data.worldbank.org/indicator/ST.INT.ARVL?locations=KE>. Accessed 06/04/2017.

⁴ World Bank. (2015d). *Improved water source, urban (% of urban population with access)*. WHO/UNICEF Joint Monitoring Programme (JMP). 2015. Retrieved from <http://data.worldbank.org/indicator/SH.H2O.SAFE.UR.ZS?locations=KE>. Accessed 06/04/2017.

⁵ *Ibid.*

⁶ World Bank. (2015e). *Urban population*. World Bank Staff estimates based on United Nations, World Urbanization Prospects. Retrieved from <http://data.worldbank.org/indicator/SP.URB.TOTL?locations=KE>. Accessed 06/04/2017.

⁷ World Bank. (2015f). *Urban population growth (annual %)*. <http://data.worldbank.org/indicator/SP.URB.GROW?locations=KE>. Accessed 06/04/2017.

⁸ World Bank. (2014). Population living in slums, (% of urban population). UN HABITAT. 2014. Retrieved from <http://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?locations=KE>. Accessed 06/04/2017.

⁹ Oxfam Urban Programme Strategy Kenya 2012–2024.

¹⁰ SWIFT. *Sustainable Sanitation*. Retrieved from <http://swiftconsortium.org/what/sanitation/>.

¹¹ e-Pact is a consortium formed by Oxford Policy Management and Itad comprising more than 30 organizations. The consortium is able to undertake high-quality evaluations across a wide range of thematic areas. See Oxford Policy Management. *DFID's Global Evaluation Framework Agreement (GEFA)*. <http://www.opml.co.uk/projects/dfid%E2%80%99s-global-evaluation-framework-agreement-gefa>

¹² Feeny, E. (2015). *Implementing WASH Programmes in a Payment by Results Context*. SWIFT. Retrieved from <http://swiftconsortium.org/download/5894/>

¹³ World Bank (nd). *Kenya's Devolution*. Retrieved from <http://www.worldbank.org/en/country/kenya/brief/kenyas-devolution>. Accessed 10/04/2017.

¹⁴ K. Purvis. (2016, March 22). How do you solve a problem like a broken water pump? The Guardian. <https://www.theguardian.com/global-development-professionals-network/2016/mar/22/how-do-you-solve-a-problem-like-a-broken-water-pump>

¹⁵ *Oxfam refines the water ATM approach in Kenya*. SWIFT blog. Retrieved from <http://swiftconsortium.org/portfolio/oxfam-refines-the-water-atm-approach-in-kenya-2/>

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For further information on the issues raised in this paper please email hkuwabara@oxfam.org.uk

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Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

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