WASH RESEARCH & DEVELOPMENT STRATEGY 2016-2020

OXFAM WASH TEAM

www.oxfam.org

OXFAM

1. RESEARCH AND DEVELOPMENT FOCUS

The WaSH team's research and development work will primarily focus on identifying affordable, appropriate and sustainable WaSH solutions for fragile areas prone to natural disaster and conflict.

Given the myriad of challenges facing the humanitarian and development sector, it is **vital that Oxfam keeps abreast of the issues it confronts (climate change, urbanisation, evolving communicable diseases, forced migration due to conflict, lack of facilities, and/or eroding environmental conditions, and protracted crises) and adaptive in its approach to finding technically relevant solutions in crisis-affected communities.** In spite of the limited time during emergencies, our aim is to identify and initiate sustainable and locally appropriate WaSH interventions[1] that address community's identified needs, builds on their coping mechanisms, and their resilience to withstand further shocks.

Globally, Oxfam is known for its dynamic, effective and timely emergency response across various contexts and countries, working with diverse teams ranging from WaSH, EFSVL[2], gender, and protection. Thereafter bridging the response from humanitarian to development, the WaSH team is equipped with skills in water governance, community engagement, behaviour change communication, market based approaches, institution building and strengthening in order to deliver sustainable WaSH solutions in vulnerable and/or chronically water insecure and/or fragile contexts. Collectively, the WaSH team have an acknowledged reputation in the sector for research and development initiatives (at the field and global levels), plus product development in coordination with the logistics team (e.g. Oxfam water bucket, steel water tanks, household hand washing device).

Therefore, the WaSH team's research and development work will primarily focus **on identifying affordable, appropriate and sustainable WaSH solutions for fragile areas prone to natural disaster and conflict**. To achieve this, we seek to pro-actively broaden our alliances: externally with academic institutions, the private and technical sectors (at local, regional and global levels); the local Government (local, national and provisional level) and internally by collaborating with other Oxfam WaSH teams (humanitarian and development), and sectoral technical teams such as EFSVL, Economic Justice, Gender and Protection towards the goal of more systematic and integrated programming.

Our speciality will follow our appetite as well as expertise in identifying and applying technical WaSH solutions; such as approaches to engage meaningfully with communities to reduce public health risks, to advancing our options in treating saline water, to ensuring market system and needs analysis informs programming, and appropriate designs for sanitation in hard rock, concrete, and flooded areas. It will also entail the application of a combination of applied and academic research in new and ongoing emergency responses, and as a result strengthen our technical work to support better quality programming.

In 2014, 90% of countries experiencing humanitarian crises had humanitarian appeals for more than 30 years.

Currently there are more than 65.3 million people displaced across the globe (UNHCR, 2016).

Average length of conflict-induced displacement in a camp setting is a staggering 26 years! (UNCHR, 2016)

Variety and severity of health outbreaks has necessitated humanitarians to think and respond differently (e.g. Ebola, Zika virus, Hepatitis E/C)

Water scarcity, quality and hydro-politics are recurring issues in many water stressed regions such as the Middle East, Asia and Africa

85% of the world's population have access to a mobile phone; 64% have access to working toilets (UN News, March 2013)

Cover Photo: © Oxfam
Dadaab Refugee Camp in Kenya, where Oxfam installed the **first solar pump** and demonstrated it to be a reliable and cost effective alternative to diesel generators, paying for itself within three years. Between 2010-13, Oxfam refined the **dome slab** to make it lighter, cheaper, more durable latrine slab, introduced a **new pit liner** for dealing with collapsible soils in one camp and improved the tap stand design.

OBJECTIVES 2016-2020

1. Through carrying out targeted research and development initiatives, the WaSH team wish to develop and contribute to effective, efficient quality humanitarian responses that are adaptable to changing contexts;

2. Through action and/or academic research, we shall endeavour to support the contextual analysis of our WASH programmes, and generate evidence which shall inform our impact, and help leverage a greater space for WASH innovation approaches, and resources;

3. To increase our diversity in collaboration with traditional and non-traditional stakeholders throughout research and development initiatives

Through extensive discussions, the WASH team have generated key technical priorities that are based on the field-experience of programme needs, sectoral gaps and emerging humanitarian challenges. Our key technical priorities respond to a diverse, and complex range of contexts ranging from floods, drought, urban and rural, to camp settings, to host populations hosting a displaced population, and protracted crises, which our R & D strategy needs to respond to with technical skill, and agility – *thinking out of the box.* The following table provides a summary of the key technical priorities for the WaSH team, which are explained in detail in section 2.

Key Technical Priorities	Focus
Water Security	- Systemise context, vulnerability and market systems in our responses (pre, during, and post) - Water management and conservation strategies - IWRM, demand and supply chain models - Technological & response options: role of markets, multi sectoral approaches, and ICT
Water Quality	- Household, communal and / or bulk removal of fluoride, and salinity - Household water treatment (affordable and easy to use) - removal of viruses, and / or 1 step use 'Real time' water quality testing apparatus
Community engagement	- Community engagement framework - Proxy indicators to measure community participation and impact - Community led WaSH programming – increased capacity - Multi sector approaches to promote people centred responses
Sanitation	- Participatory methodologies to increase involvement of different aged and gendered user groups in the design of appropriate sanitation solutions - Container based sanitation - Advances in toilet design technologies and faecal waste collection, treatment and disposal - Sanitation marketing
Hand washing	- Hand washing kit - Hand washing behaviour change methodologies - Proxy indicators to monitor changes in hand washing behaviour
Cash + Market Based Programming	- Market based programming – market assessment, response analysis and programme implementation – pre crisis, and response to crises - Multipurpose cash grants + WASH - Innovative finance models for WASH (supply + demand) - Private sector engagement for advances in technology and management

Research and development principles

Global and country led:

Our problem statements should be developed through a variety of ways: as a result of observing field realities to responding to core needs communicated by our staff and communities, and / or informed as a gap within the humanitarian sector externally (Humanitarian Innovation Fund and WaSH Cluster) and internally (Oxfam);

Scale vs. sustainable and successful solutions:

Too often there is the misconception that innovation is only successful if it can be brought to scale. Success is something that strives to be sustainable, cost efficient and embraces failure in a learning environment (a good failure). Scale is not only about numbers; for Oxfam it is also about having the potential to influence others – at the national, regional and global levels. Furthermore, Oxfam does not think that one size fits all methodologies and technologies, but believes in approaches that are aligned with the context, attitudes and beliefs as far as possible;

Community driven research:

Means to cultivate an approach in which insider and outsider skills and resources are brought together to facilitate dialogue, and hereby understand how we can promote change and provide crisis affected communities with the means to address the problem;

Learning:

Learning by doing, learning by failures, and positive outcomes all are critical to the success of developing new technologies, tools and or methodologies;

Evidence and impact:

Generating evidence should be the first principle, thereby establishing an understanding about the impact of the research.

Large solar array that Oxfam installed in Kataboi, Turkana - 30KW of panels delivering 20-25m3/hr to an elevation of 100m. © Brian McSorely/Oxfam

2. KEY TECHNICAL PRIORITIES

2.1 WATER RESOURCES

Water insecurity

Rationale: In response to the recent humanitarian crises Oxfam has responded to, we have made substantial progress in developing technical solutions to chronic water scarcity spanning from rural to complex urban and middle income contexts. However, in view of the increased scale of humanitarian responses in drought and conflict situations, substantial challenges remain when it comes to the design and implementation of context-appropriate and cost-efficient models to reduce public health risks, which are able to absorb immediate and/or recurrent shocks to the water system, and being equipped and adaptable to provide water for multiple needs – drinking, domestic, livestock and agricultural purposes.

Effective integrated water resource management and management of assets (discharge from aquifers, sustainable governance management systems, the numerous hand pumps and WASH committees not functional) - remains a huge challenge. Oxfam and others need to seek assistance from a diverse range of experts and approaches to make any radical advances in this challenge.

Aim: to develop an overarching framework that enables technical teams (and decision-makers) to identify solutions and priority actions to reduce public health risks, in water scarce contexts, and against the background of conflict and drought responses[3]. This should equip communities with an integrated and accountable water resource management structure, links to the market value chain and environment to sustain the equitable provision of drinking, domestic and productive use water, and means to monitor the access, vulnerability and equity of water provision.

Specific focus:

- Development and practice of systematic context and market analyses in order to understand how people access water pre crisis, and post crisis; the power dynamics and vulnerabilities associated in drought and conflict;

- Water management & conservation strategies at individual / household and communal level: model community mobilisation and public health promotion approaches which triggers collective and individual action, in conjunction with the engineered solutions;

- Development of integrated water resource management, demand and supply chain model arrangements for water supply through social enterprise models, community groups, local Government and the private sector (appropriate governance structures). *Question: how can Oxfam do better on the classic water user committees, cost recovery collection fees, training of hand pump mechanics – 30+ years of community management has failed*

Collecting safe, cheap drinking water from a water dispenser in Dhaka, Bangladesh. © Oxfam

- Technological options, both cost-effective and with the potential of providing lasting solutions across different response stages and contexts (urban and rural) factoring in the role of markets and multi-sectoral approaches, and advances in ICT - for example ICT early warning monitoring systems, groundwater recharge systems

---

[3] Physical, economic and socio-cultural

Water Quality

Rationale: Climate change; ranging from the increased severity, frequency and life span of droughts, to an increase in sea level, increased saline intrusion along coastal areas, and other quality parameters such as fluoride associated with the geological terrain, all present challenges in ensuring good quality water for both drinking and domestic use. Hydro-politics in neighbouring countries also acerbate this issue – for instance the Mekong Delta is suffering from the extent of saline intrusion given poor annual rainfall, and neighbouring countries withholding the upstream water which does not recharge downstream river and irrigation channels, and equally the water quality issues are a grave issue in the Middle East (saline water, hydrogen sulphide, and high temperature).

Aim: is to develop robust options for testing water quality in the field with the communities, to develop an emergency household water filter that removes viruses, and to develop an array of cost efficient and easy to use options for removal of salinity and fluoride that can be used at the household, communal and large scale level by WaSH practitioners.

Specific focus:

- For the purposes of removing fluoride, and salinity – our focus is to develop an affordable treatment option, either for use at household and/or communal level and to designate a mobile treatment system for use in emergencies;

- To find a low cost and easy to use household water treatment system, which offers removal of viruses, and the use involves ONE step, container, and / or device – *in a sense dirty water in, and treated water out;* and

- To develop a 'real time' water quality testing apparatus that will inform practitioners and communities on the spot the water quality results (similar to a pregnancy kit). This should help and shape the modelling of changing behaviour for example towards safe water chain practices. *Question / hypothesis[4]: does a water quality testing apparatus that tells you-there-and-then make a difference for the household and/or community in changing their behaviour and action in relation to safe water chain practices?*

Wading through annual floodwaters to collect water, rural Bangladesh:

© Oxfam

---

[4] Question/hypothesis: this is not exclusive but rather a suggested, and potential question to ask oneself

2.2 COMMUNITY ENGAGEMENT

Rationale: Community engagement is a critical component when responding to humanitarian disasters: it tailors humanitarian assistance to people's needs and ensuring participation of communities can significantly contribute to making services more accountable and sustainable. Fostering the participation of crisis affected populations to reduce and/or prevent public health risks is hereby one of Oxfam's core competencies. This has been clearly demonstrated during various emergency responses across the world,[5] most recently during the Ebola outbreak in 2014-15 in West Africa. However, past experience has also revealed important challenges when promoting people centred-responses: for example the need to clearly define what community engagement in WaSH means. To date, there is also limited evidence to inform the appropriateness of community participation and engagement in (humanitarian) WaSH and there is a need to diversify our approaches to community engagement factoring in the differences between urban and rural contexts.

Aim: to develop and promote a global community engagement framework which guides technical teams in the design and implementation of community-led approaches. This framework will contribute to generating evidence of appropriate community engagement models, which can stimulate (sustainable) behaviour change and result in a better quality response to WaSH emergencies.

Specific focus:

- Develop and trial a community engagement framework across different humanitarian responses (in camp, rural and urban contexts), and this will involve the development of learning frameworks (e.g. case studies) and will include guidelines;

- Explore community engagement models which provide key parameters for the design of Public Health Promotional strategies in emergencies; [6]

- Develop and trial proxy-indicators and tools to measure community participation and its impact on community ownership and behaviour change towards positive public health outcomes ;

- Develop capacity building guidelines and tools to equip technical teams with the technical know-how to develop and implement community-led WaSH programming; and

- Capitalise on new / ongoing community engagement initiatives and use learning framework to identify multi-sector opportunities to promote people-centred response.

Community dialogue during the Ebola Crisis response; creating space to listen in the chaos and to research requires time and specialised skills. It enables practitioners to leverage space at the coordination level, ultimately increasing the efficacy of the response.

© Oxfam

---

[5] i.e. Cholera outbreak Haiti 2011, Earthquake Nepal 2014, Ethiopia drought 2011-2012, Syria refugee crisis - ongoing, Yemen conflict - ongoing

[6] For example for urban and/or middle income contexts, conflict and fragile states etc.

2.3 SANITATION

Rationale: Pit latrines are the norm in many humanitarian response plans, however they are costly in terms of the re digging and/or desludging once they are full. WaSH practitioners need to 'think out of the box' in contexts where the area is flooded, characteristic of hard rock, and or hard concrete areas in a crowded urban setting. Too often WaSH practitioners focus on the design and construction of the toilet itself ensuring containment of the faecal waste, neglecting the importance of developing options also for emptying the faecal waste (desludging), treatment and final disposal of the waste (including options for waste to value).

Oxfam's WaSH team is involved in a range ongoing sanitation work: tiger worm toilet pilots in Liberia, Sierra Leone, Ethiopia and Myanmar; development of emergency sanitation equipment via the OFDA funded Emergency Sanitation Project (ESP) with WASTE, Netherlands Red Cross and IFRC (development of raised latrines, superstructures, linking kits etc); development of participatory methods and tools with children and their carer's in South Sudan and Tanzania when designing appropriate sanitation solutions targeting children, and the development of *Fresh Life* and (household and school latrines) *Fresh Fit* (in house urine diversion toilet, formerly known as IHud) sanitation options in Kenya with Sanergy, which incorporate enterprise models with the local communities to distribute, operate, and maintain the facilities, and treatment and disposal of the waste.

Aim: to develop sustainable sanitation solutions *(supply)* that are adaptive to different contexts; such as urban, rural, camp settings that speak well to the preferences of different users (adults: women & men, children, squatters/sitters, washers/wipers etc), and create a *demand* for sanitation facilities amongst the communities. Our focus should provide a menu of options for cost effective and sustainable solutions that are appropriate to environmental and social parameters, reduce operation and maintenance costs, and promote options for developing livelihood opportunities such as skills training, enterprise development, and waste to value options.

Specific focus:
- Participatory methods and tools to increase the involvement of different aged and gendered user groups in the demand for and design of appropriate sanitation solutions and motivate them to change and/or adopt positive behaviour;

- Advances in toilet design technologies, and faecal waste collection, treatment and disposal e.g. a) tiger worm toilets, b) urinetricity/pee power c) urine diversion, d) modified septic tank

- Container based sanitation (CBS) – options for containment and disposal of faecal waste for contexts characterised with hard rock areas, urban setting, and flooding. Through field based evidence, build the case for endorsement of CBS as an 'improved sanitation' option in the WHO standards;

- Sanitation through a market-based approach – sanitation marketing:
  a) Market-based approaches – development of sanitation business enterprises to increase availability of products and services;
  b) Innovative sanitation products – development of affordable, and innovative sanitation products and services, to increase affordability and performance of sanitation products and services; and
  c) Innovative finance models – collaboration with micro-finance institutions to develop pro-poor finance products for households and sanitation enterprises, such as low interest loans.

Adding worms to tiger worm vermi filter toilet system in Monrovia, Liberia. The worms consume the faecal waste negating the need for emptying

@ Liberia/Oxfam

2.4 HANDWASHING

Rationale: Handwashing is critical for achieving positive health outcomes in emergencies.[7] Over the past decade, Oxfam has made substantial investments in hand washing research and development including handwashing measurements, social marketing strategies for handwashing promotion and appropriate handwashing promotion at all critical times, and a water dispensing unit (Handy WASH). However more needs to be done to understand to which extent hardware and software initiatives impact on changes in handwashing behaviour.

Aim: to create an enabling environments that stimulate handwashing behaviour change in emergencies through appropriate handwashing kits such as the Handy WASH, creative promotional materials and improved monitoring and evaluation methodology,

Specific Focus:

- Develop and trial handwashing kit (Handy WASH);

- Design appropriate handwashing behaviour change methodologies including tools to encourage community and household level dialogue (Unilever: magic hands);

- Explore (context-specific) proxy-indicators to monitor changes in hand washing behaviour;

- Develop formative research methodology to inform about nudges and triggers for sustainable behaviour change related to handwashing; and

- Design a handwashing "package" (software and hardware) for emergencies with impact on handwashing behaviour change in an epidemic context.

Nyarabatsi Bora, a 29 year old refugee living in crowded Rubaya Camp, uses a handwashing station outside the communal toilets in the Democratic Republic of Congo.

She has followed the colourful footpath from the toilet to the handwashing point; a simple yet highly effective motivational trigger to encourage good hygiene.

© Rolande Maoundonodji Djerade/Oxfam

---

[7] cc Curtis V. and Cairncross S. (2003). Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. *Lancet Infectious Diseases* 2003; 3: 275-281.

Rabie T. and Curtis V. (2006). Evidence that handwashing prevents respiratory tract infection: a systematic review. *Tropical Medicine and International Health*; 11(3): 1-10.

Luby S., Agboatwalla M., Feikin D., Painter J., Billhimer W. and Altaf A. (2005). Effect of handwashing on child health: a randomised controlled trial. *The Lancet* 2005; 366(9481): 225-233.

2.5 CASH & MARKET BASED PROGRAMMING

Rationale: Day to day, communities' access a market to obtain WASH goods and services, and the relevant market actors (public and private) respond to this demand via their networks, and links between the small to large market actors. Other components include the market environment – the institutions, rules, norms, and trends, and key infrastructure inputs, and support services.

In simple terms, our assessments, analysis and response recommendations should include a market lens – simply asking households, and communities how they accessed markets for hygiene NFIs, latrine and shelter construction materials, labour, food, water for drinking and domestic purposes - before and during the crisis. Market based responses can be incremental in a response as the market recovers. For example, one should justify the need to distribute hygiene NFIs purchased elsewhere, where there is a local market.

Pre crisis market mapping analysis also has a huge value in identifying opportunities to strengthen local markets to mitigate risks, and to pre-empt a potential response based on certain scenarios. Pre crisis market mapping can inform country level contingency planning.

The High Level Panel and Humanitarian Cash Transfers, Grand Bargain, and the World Humanitarian Summit have all vocalised that cash should play a big role in our future humanitarian responses– 'why not cash?' and 'if not now, when?' (6% of humanitarian aid is accounted for by cash and vouchers). WASH are not against cash – yet one must find which modality, context, and phasing where unconditional cash could be appropriate, but still achieve our public health objective e.g. cash plus, plus – i.e. unconditional cash, capacity building, grants and or loans for a water kiosk, community engagement, and hygiene awareness

Aim: to create an understanding of the importance, and value in carrying out market assessments, analysis, and response recommendations pre crisis, and during a response; to demystify the concept of market based programming; and to understand under which contexts, and phasing is unconditional cash for a WASH outcome possible, coupled with the other response modalities.

Specific Focus:

- Market based programming – increase capacity at the field level in market assessments, analysis and programme implementation activities pre crisis, and during a response to a crisis
- Multipurpose cash grants and WASH – understand under which context, and phasing could unconditional cash be provided for a WASH outcome, whilst continuation of the other WASH activities implemented in conjunction with the cash;
- Develop innovative finance models for WASH – supply, demand, and sustainable operating and maintenance systems; and
- Seek opportunities with the private sector for advancement in WASH technology, community engagement approaches, management, and finance models

Cambodia – provision of water through the set up of water stations, which use solar powered pump to draw water from nearby wells, and teat via several sand filters.

Monsom (left) is an employee at the water station – she cleans the bottles, pumps the water from the well, and fills the water bottles with clean water before distribution to the shops, and households

© Simon Crawles/Oxfam

3. OUR APPROACHES

3.1 ENABLING ENVIRONMENT

> **Enabling environment**
>
> *In order to achieve a step change in the key technical priorities identified, Oxfam commits to supporting an enabling environment for research and innovation to flourish in:*
>
> - Drawing on our principles we aim to engage proactively with country teams and foster internal and external relationships to establish an understanding about the scope of our research and development work, and the willingness to facilitate context appropriate initiatives.
>
> - This will also mean to clarify areas of support and identify potential risks prior to the development of any research and development project. A country's readiness includes the management buy-in, technical capacity, resources plus the support function is critical to the success of research and development initiatives.

3.2 OUR COLLABORATORS AND PARTNERS

Over the years, Oxfam has collaborated with a variety of stakeholders (academia, other NGOs and the private sector) in their research and development initiatives. Current and potential strategic and collaborative partners in our WASH R&D strategy include:

- Local NGOs
- Country-level research and academic institutions.
- National government – in particular WASH-related departments and public bodies
- INGOs and UN agencies
- Specialist global WASH R&D institutions (e.g. WEDC, LSHTM, Surrey, Cranfield, CDC, Tufts)
- Private sector at local, national and global levels
- Professional Bodies (e.g. Chartered Institute of Civil Engineers, Chartered Institute of Water and Environmental Management
- Donors

Our appetite, ambitions and aspirations for this R & D strategy is to continue with our current partners, but also to diversify our connections further; with a particular focus on building alliances and research partnerships with Southern hemisphere institutions/partners (e.g. Jijiga University of Ethiopia), the private sector, and diversify our funding streams (e.g. R2HC[8]).

Additionally, Oxfam is involved with the Humanitarian Innovation Fund[9] (managed by ELRHA[10], and hosted by Save the Children) in two ways: Andy Bastable (Oxfam Head of Water & Sanitation) is the Technical Lead of the WaSH Technical Working Group (TWG); and Jenny Lamb (PHE Advisor) represents Oxfam in the TWG. HIF supports organisations and individuals to identify, nurture and share innovative and scalable solutions to challenges facing effective humanitarian assistance.

---

[8] R2HC – Respond to Health Crises

[9] Humanitarian Innovation Fund: http://www.elrha.org/hif/home/

[10] Enhancing Learning and Research for Humanitarian Assistance: http://www.elrha.org/

3.3 RESEARCH OUTCOME DISSEMINATION

> **How research outcomes will be disseminated:**
>
> - Sharing our research learning and progress is key to our strategy. Communications and publications will be adapted to suit a variety of audiences, such as WaSH practitioners, technical teams, research institutes, donors and the private sector.
>
> - *Internally* the team will utilise platforms such as regional WaSH and global learning events, Oxfam Policy and Practice blogs, Facebook for Work, newsletters, webinars, and country level workshops
>
> - *Externally* opportunities for external discussion will be mapped and include the Emergency Environmental Health Forum (EEHF), Global WaSH Cluster meetings, HIF WaSH Technical Working Group, Sustainable Sanitation Alliance forum (SuSanA) and collaborations with WaSH-focused funders (Reinvent the Toilet Fair hosted by Gates Foundation) and peer-reviewed papers in journals such as Waterlines and at the WEDC annual conference.

4. CONTACTS

For further information about this strategy, please contact:

- Andy Bastable: Head of Public Health Engineering, Global Humanitarian Team

- Marion O'Reilly: Head of Public Health Promotion, Global Humanitarian Team

- Jenny Lamb: Public Health Engineering Advisor, Global Humanitarian Team

- Lucy Polson: WaSH Fund Manager, Global Humanitarian Team (WaSH Innovation)