AfDB Sector Brief: WASH and Nutrition

Human Capital, Youth and Skills Development Department (AHHD)

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This technical brief provides guidance to African Development Bank (AfDB) team members and decision-makers in designing nutrition smart WASH projects by taking into account special considerations related to the contextual factors and different pathways by which water, sanitation and hygiene (WASH) interventions can ultimately increase impact on nutrition outcomes. This technical brief highlights key features and considerations that need to be considered on a case-by-case basis to design nutrition smart WASH projects which directly respond to the priority needs of beneficiaries. It also complements the implementation of the AfDB Multi-Sectoral Nutrition Action Plan 2018-2025 and provides guidance for integrating nutrition smart actions into relevant pillars of Country Strategy Papers (CSPs) and Regional Integration Strategy Papers (RISPs) in order to catalyse nutrition smart investments to support a 40% stunting reduction in Africa by 2025.

This is one brief in a five-part series on the importance of multi-sectoral approaches to nutrition. To read the other briefs, contact nutrition@afdb.org.

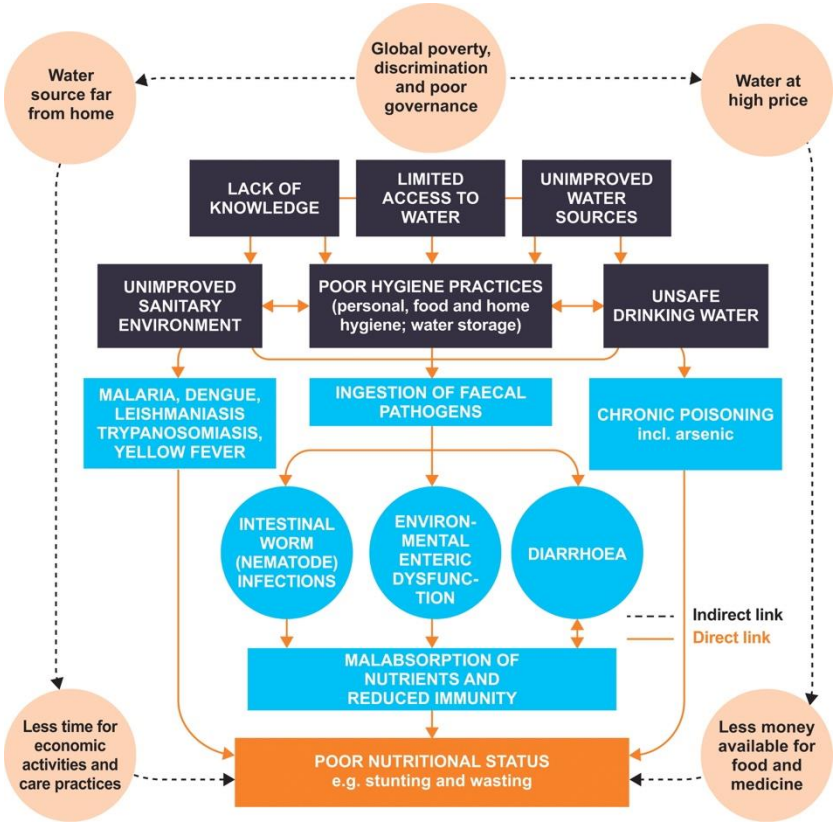
Why is WASH Important for Nutrition?

Stunting is an outcome associated with the cycle of poverty and inadequate WASH conditions which are linked to nutritional status through multiple pathways: social, environmental, health-related and economic.[1] Several studies have shown the association between improved WASH conditions, child growth and stunting reduction.[2] One study in Peru found a positive association between improved water sources and child growth, demonstrating that this effect was greater when the intervention was combined with improved sanitation facilities.[3] A cross-sectional analysis of health surveys in India showed that the risk of stunting decreased significantly when caregivers reported optimal handwashing practices in addition to sanitation improvements.[4] In their meta-analysis, Dangour, et al[5] found a modest but significant effect of different interventions that aimed to improve water quality and handwashing in the height-for-age Z-score (HAZ)[6] of children under the age of five; the effect was greater in children under two years of age.

Inadequate WASH is linked to child nutritional status in different ways through multiple pathways (see Figure 1). At the biological level, there are three main pathways: repeated diarrhoea episodes, soil-transmitted infections (helminths) and Environmental Enteric Dysfunction (EED). Other health risks linking WASH and undernutrition include infections, such as malaria or acute respiratory infections, which are often associated with poor WASH conditions such as standing water where mosquitos breed or poor hand-washing leading to disease transmission. WASH conditions also impact **non-biological** causes of undernutrition. A wide variety of social and economic costs related to lack of access to domestic water and sanitation exist, such as water expenditure, time or resources spent in fetching water, and cost for the treatment of diseases linked to poor hygiene and lack of access to domestic water and sanitation. This could all lead to time and resource constraints for caregivers—mainly women—and may impact the caregivers physical and mental health, such as lack of privacy or insecurity in accessing distant facilities, conditions that influence the quality of care provided to children.

[1] WASH and Nutrition. WASH Nutrition Forum; 2015; Bonn
[2] Ngure FM, Reid BM, Humphrey JH, Mbuya MN, Pelto G, Stoltzfus RJ. Water, sanitation and hygiene (WASH), environmental enteropathy, nutrition, and early child development: Making the links. Ann N Y Acad Sci. 2014; 1308 (1): 118-28
[3] Checkley W, Gilman RH, Black RE, Epstein LD, Cabrera L, Sterling CR, et al. Effect of water and sanitation on childhood health in a poor Peruvian peri-urban community. The Lancet. 2004; 363 (9403): 112-118
[4] Rah JH, Cronin AA, Badgaiyan B, Aguayo VM, Coates S, Ahmed S. Household sanitation and personal hygiene practices are associated with child stunting in rural India: a cross-sectional analysis of surveys. BMJ Open. 2015 Feb 12; 5(2): e005180
[5] Available http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009382.pub2/abstract
[6] Height-for-age Z-score: Height-for-age (H/A) is an anthropometric indicator of linear growth. The Z-score or standard deviation system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value.

Figure 1
Relationship between inadequate WASH and child undernutrition



Source: Dangour at.al (2013), which was adapted by Lapegue J., ACF (2014) "WASH and nutrition factsheet"

Impact Pathways from WASH to Nutrition

The Rural Water Supply and Sanitation Initiative (RWSSI) is an Africa-wide initiative hosted by the AfDB as a focused regional response to Africa's rural water supply and sanitation crisis. RWSSI was launched in 2003 as a framework for resource mobilisation, investment, and development of rural water supply, improved sanitation, and hygiene behaviour change across Africa. The overall objective of RWSSI is to reduce poverty by accelerating access to improved rural water supply and sanitation facilities from a baseline of 47% and 44% respectively in 2000, to 100% by 2025.

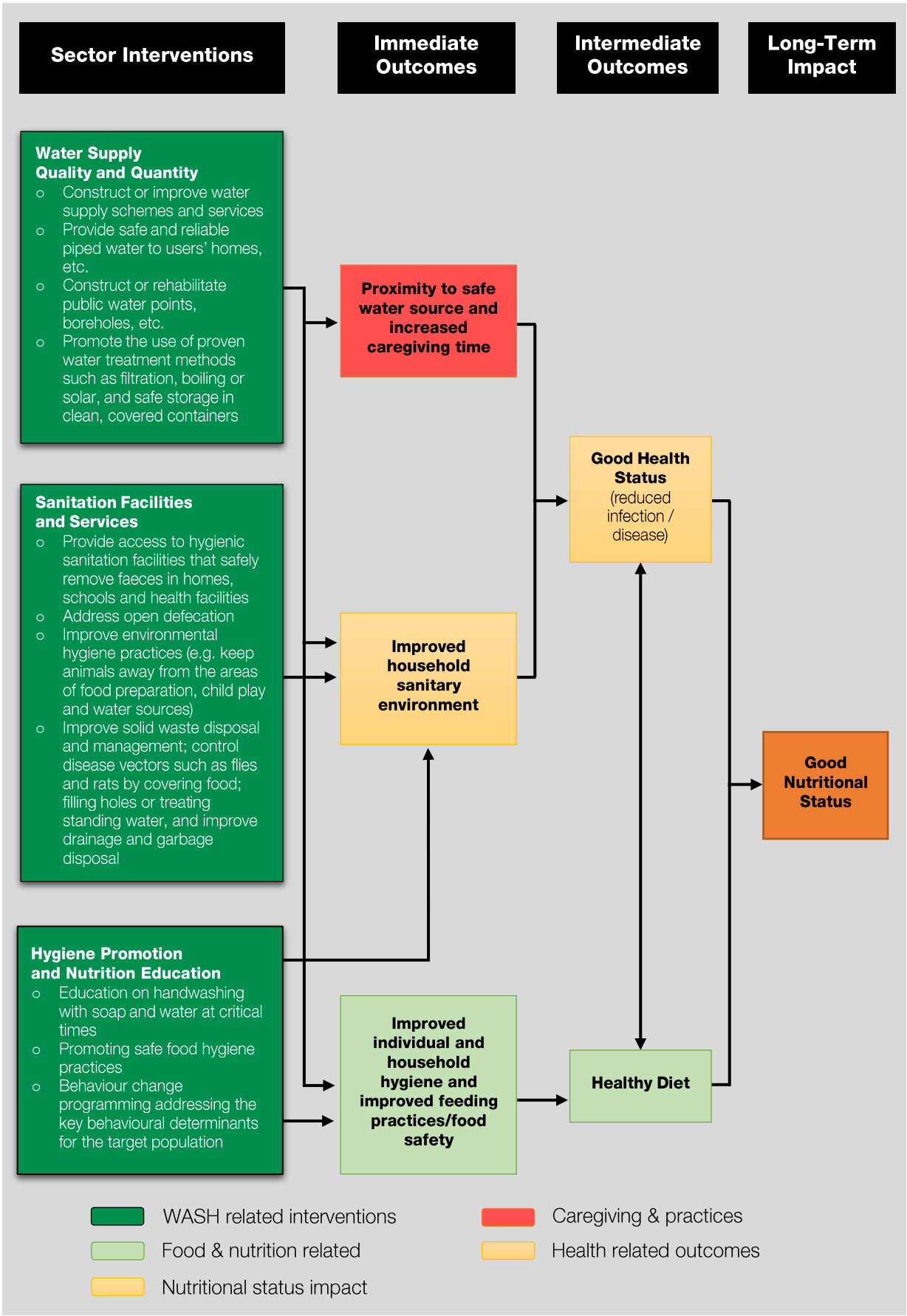
Access to safe drinking water and improved sanitation is improving but remains very low in Africa despite increasing official development assistance (ODA) for the sector.[7] Access to safe drinking water in Africa is generally low by global standards and characterised by wide disparities between and within countries. Overall, access is higher in North Africa compared to the rest of the continent. In 2015, the proportion of people with access to safely managed sources of drinking water in Africa—excluding North Africa—was 23.7%; barely one-third of the global average of 71%. Coverage varies widely between countries; thus, access ranges from 100% in Mauritius to 19% in Eritrea. Access is also uneven within countries, and rural-urban disparities persist in most parts of Africa. In 2015, approximately 82% of the urban population of Africa—excluding North Africa—had access to basic drinking water services, compared to only 43% of the rural population.

[7] Key findings of the 2018 Africa Sustainable Development Goals (SDG) Report

Where sanitation is concerned, access to safely managed services is improving but remains low both in Africa and at the global level. At the global level, only 39% of the population—fewer than four out of 10 individuals—have access to safely managed sanitation services. Precise data for this indicator is lacking for most of Africa. In North Africa, for which data are available, the proportion of people with access to safely managed sanitation services was 25.1% in 2015, up from 18.1% in 2005. These trends notwithstanding, Africa (excluding North Africa) receives the largest amount of ODA for water supply and sanitation. Funding for this purpose has been rising in all regions except in Eastern Asia and, for Africa, this funding has doubled between 2000 and 2015.

Figure 2 outlines the impact pathways from WASH to nutrition based on the analysis of WASH-related interventions in AfDB projects that are linked to improved health and nutrition outcomes. Three main pathways have been identified, namely: water supply quality and quantity, sanitation facilities and services, and hygiene promotion and education.

Figure 2
Impact pathways from WASH to nutrition



Source: Created for AfDB Nutrition Smart WASH Projects (Nutrition International, 2019)
(Adapted from the UNICEF Conceptual Framework of Child Malnutrition, 1997)

Differentiating a Nutrition Smart WASH Programme from a Conventional WASH Programme

Feature	Conventional WASH	Nutrition Smart WASH
Primary outcomes of interest (impact indicators)	Clinical disease outcome (for example, diarrhoea, trachoma, neglected tropical disease)	Nutritional outcome (for example, stunting, anaemia) in addition to clinical disease outcomes
Primary target group	All age groups, community-wide	The first 1,000 days from conception through two years (focus is on caregivers, since the baby is dependent on their actions)
Infrastructural choices	Toilet, water supply	Toilet, water supply, protected play space
Sources of contamination	Human faeces	Human and animal faeces
Vectors of faeco-oral transmission	Fingers (with a focus on caregiver hands), fluids, flies, fields	Fingers (focusing on both caregiver and baby hands), fluids, flies, fields (especially soil)
Targeted behaviours (behavioural/process indicators)	Disposal of faeces, handwashing with soap, water treatment, food hygiene	Disposal of faeces (with added emphasis on animal stool and child faeces), handwashing with soap (focusing on both caregiver and baby hands), water treatment, food hygiene, exclusive breastfeeding, removal of mosquito breeding waterholes
Factors influencing choice of combinations of intervention components	Communicable disease prevention or control; ministerial or donor priorities	Nutritional outcomes
Evidence base	Strong randomized trial evidence	Strong observational evidence base and plausibility basis

Source: Mduduzi Mbuya (Adapted from Global Nutrition Report 2016: From Promise to Impact)

Priority Actions for Nutrition Smart WASH Programmes

1. **Focus on nutritional outcomes.** WASH programmes inherently address crucial underlying drivers of foetal and child nutrition and development, and can therefore be made nutrition smart. They can be further leveraged for nutrition actions when they are implemented in a manner that protects women's time; reducing the time women spend fetching water can affect the time they have available for child care and other activities associated with improved consumption.[8] Nutrition smart WASH programmes should engage women and include interventions to protect and promote their nutritional status, well-being, social status, decision-making and overall empowerment as well as their ability to manage their time, resources and assets.

2. **Target the first 1,000 days.** The first 1,000 days after conception have been identified as a critical point in a child's development because of the rapid process of linear growth, which mirrors brain development. WASH programmes targeted to this age group are therefore more likely to achieve nutritional outcomes and prevent the developmental deficits associated with early growth faltering.

3. **Focus on the causal linkages between WASH and nutritional outcomes.** Conditions of poor WASH can affect nutritional status through diarrhoeal disease and parasitic infections. A recent hypothesis posits that a subclinical gut disorder called environmental enteric dysfunction is a primary mediator of the association between WASH, stunting and anaemia. Focusing only on clinical disease outcomes may thus underestimate the impact of WASH interventions. WASH programmes should be implemented with a time frame that permits changes in nutritional outcomes to be realized and evaluated for additional outcomes related to diarrhoea incidence and prevalence.

[8] Pickering and Davis 2012; WHO, UNICEF and USAID 2015.

4. **Align WASH interventions with these causal linkages.** A primary objective of nutrition smart WASH programmes should be to prevent children from ingesting faecal microbes in the first 1,000 days. Research in rural Zimbabwe[9] and elsewhere suggests that the faeco-oral transmission pathways for adults differ from those of infants and young children who engage in mouthing and exploratory play. Nutrition smart WASH interventions should:
   - Reduce the environmental microbe load through household sanitation and hygiene;
   - Reduce faecal transmission via hands through washing of caregivers' and children's hands with soap;
   - Improve drinking water quality through improved access to protected water sources and hygienic methods of household water treatment and storage;
   - Promote exclusive breastfeeding for the first six months of life to ensure adequate consumption of key nutrients and to avoid containers and non-breastmilk liquids that may be contaminated;
   - Avoid child faecal ingestion during mouthing and exploratory play by ensuring a clean play and infant feeding environment; and
   - Provide hygienically prepared and stored complementary food that is fed to children using clean utensils and hands.

5. **Ensure good geographical concentration of WASH projects in the areas affected by undernutrition.** Regions with the highest stunting rates or lowest access to clean water and sanitation facilities should be targeted for WASH projects.

6. **Place emphasis on behaviour change.** Knowing that the provision of hardware only (e.g. access to water and sanitation facilities) brings little benefit to health if it is not accompanied with suitable hygiene behaviours, WASH projects should include nutrition promotion and behaviour change strategies. For example, promoting handwashing at critical times (e.g. after defecation and disposal of child faeces, prior to preparing and handling food, and before eating) will have impact on health and nutrition outcomes.[10]

7. **Engage women and include interventions** to protect and promote their nutritional status, well-being, social status, decision-making and overall empowerment as well as their ability to manage their time, resources and assets.

8. **Improve coordination and enhance partnerships** among relevant ministries (e.g. health, agriculture, education, water resources and sanitation), humanitarian organisations and other relevant stakeholders to ensure the integration of health and nutrition goals in all WASH projects from the outset. For example, a link between WASH and education could be the promotion of handwashing facilities near toilets and areas where food is consumed in a school. Investments in humanitarian emergencies present vital opportunities for AfDB nutrition smart WASH projects to prevent infection and address malnutrition.

[9] Ngure et al. 2013; Mbuya et al. 2015

[10] WHO, 2015: Improving nutrition outcomes with better water, sanitation and hygiene: practical solutions for policies and programmes

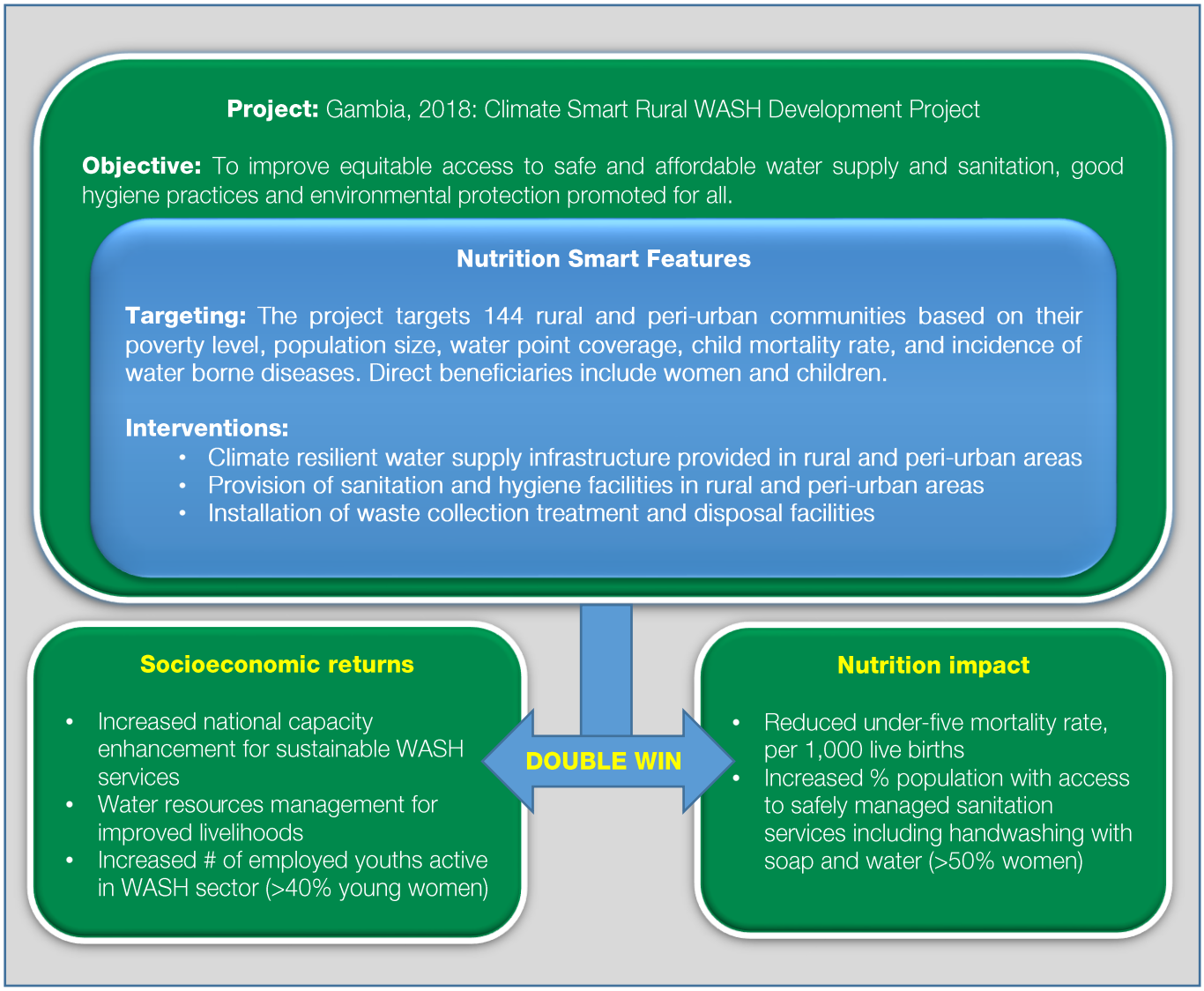
Case Study of AfDB's Nutrition Smart WASH Project

Gambia, 2018: Climate Smart Rural WASH Development Project

Stunting affects about 25% of children in The Gambia and 58% of women of reproductive age suffer from anaemia. Poverty and climate change underlie a very fragile state of food and nutrition security, which is exacerbated by inadequate basic services. Only 47% of infants are exclusively breastfed and large numbers of people lack access to basic sanitation and water supply. In 2015, it was estimated that 47.6% of households had access to piped water indoors or in the compound.

The overall goal of the Gambia Climate Smart Rural WASH Development Project is to contribute to the National Development Plan water sector goal of "Improved equitable access to safe and affordable water supply and sanitation, good hygiene practices and environmental protection promoted for all." The specific objectives of the proposed project are to: (i) increase sustainable access to safe water by 17% and access to safely managed sanitation by 2%; (ii) enhance services delivery capacity in the sector; and (iii) improve livelihoods through nurturing safe water and sanitation services related opportunities for women and youth employment.

The project will directly benefit an estimated 200,000 rural and peri-urban Gambians, particularly women and children who are expected to live healthier lives and to reduce distances required to fetch water. An additional 300,000 people will benefit from the interventions in improved solid and liquid waste management as well as mitigation of the rapidly deteriorating aquatic environment. Other public and private sector institutions—including schools, health units, markets and small and micro-enterprises—will also benefit from the project.



Monitoring and Evaluation Indicators

Examples of Core Sector Indicators:

- Sustainable access to clean water:
- Percentage (%) of population using an improved (i.e. clean) water source year-round
- Sustainable access to improved sanitation:
- Percentage (%) of population using an improved sanitation facility year-round
- Gender equality
- Number (#) of women (including adolescent girls) who benefitted from WASH interventions

Examples of Custom Project Output Indicators:

- # of WASH facilities constructed and/or rehabilitated
- # of households with handwashing stations
- # of schools with water points, single-sex sanitation facilities and handwashing stations
- # of people reached with one or more water, sanitation or hygiene promotion intervention
- # of people reached with access to improved hygiene through AfDB support to hygiene promotion

Note: At national level, WASH indicators may be collected through:

- National Population and Housing Census
- Multiple Indicator Cluster Surveys (MICS)
- Other national (and sub-national) household surveys
- SMART surveys

Collaborating Partners

Collaborating partners will be country specific but usually include:

- Ministries of Water and Sanitation, Health, and Education
- Decentralised sector agencies and municipalities
- Relevant United Nations agencies, namely United Nations Children Fund (UNICEF), World Health Organization (WHO), etc.
- International Water Management Research Agencies
- Non-governmental organisations (NGOs) and Community Based Organisations (CBOs) working in the areas of WASH and health

Suggested Resources

1. Action Contre la Faim (ACF). (2017). A practical guidebook on increasing nutritional impact through integration of WASH and Nutrition programmes (Rep.). Paris. doi:https://www.actionagainsthunger.org/sites/default/files/publications/2017_ACF_WASH_Nutrition_Guidebook_BD.pdf
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3. Chase, Claire; Ngure, Francis Muigai. (2016). Multi-sectoral approaches to improving nutrition: water, sanitation, and hygiene (English). Water and sanitation program. Washington, D.C.: World Bank Group. Doi: http://documents.worldbank.org/curated/en/881101468196156182/Multi-sectoral-approaches-to-improving-nutrition-water-sanitation-and-hygiene
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8. World Health Organization. (2015). Improving nutrition outcomes with better water, sanitation and hygiene: Practical solutions for policies and programmes (Rep.). Geneva. doi:https://apps.who.int/iris/bitstream/handle/10665/193991/9789241565103_eng.pdf;jsessionid=56CF13B03BB583C7C28240181F54C395?sequence=1

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