USAID | ZAMBIA
FROM THE AMERICAN PEOPLE

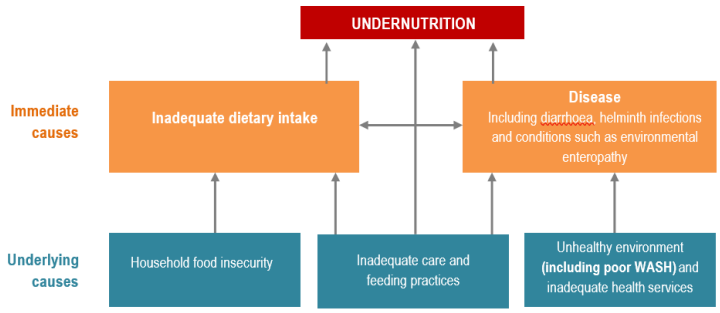
SCALING UP NUTRITION (SUN) 2.0 / FIRST 1000 MOST CRITICAL DAYS PROGRAMME (MCDP II) WASH FACTORS ASSOCIATED WITH CHILD STUNTING

WHY IS WASH IMPORTANT FOR IMPROVING CHILD STUNTING?

Water, sanitation, and hygiene (WASH) practices in a household can reduce the likelihood of transmission of diseases that affect nutrient absorption and, thus, reduce rates of diarrhoea and malnutrition in the household. Inadequate WASH practices are linked to the transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid, and polio.[1] In Zambia, a recent national survey showed that 15% of children under 5 years of age had diarrhoea.[2] Access to WASH is a fundamental element of healthy communities and has an important positive impact on nutrition.[3] WASH improvements can reduce the total burden of disease linked to undernutrition, which in turn is linked to poor hygiene practice.[4] Undernutrition is the underlying cause of 45% of child deaths each year.[5] Figure 1 shows the relationship across factors that result in undernutrition outcomes.[6]

Figure 1: Undernutrition and WASH

Conceptual framework of causes of undernutrition



Source: World Health Organization, UNICEF, & United States Agency for International Development. (2015). *Improving Nutrition Outcomes with Better Sanitation and Hygiene.* Available at: http://www.unicef.org/media/files/IntegratingWASHandNut_WHO_UNICEF_USAID_Nov2015.pdf

Undernutrition is directly caused by inadequate dietary intake or disease and is indirectly related to many factors, including contaminated drinking water and poor sanitation and hygiene.[7] WASH improvements that include safe drinking water, water resource management, sanitation, and hygiene practices can reduce the total burden of disease worldwide by nearly 10%.

The most important period for a child's growth and development is the first 1,000 days from conception until the child's second birthday. Adequate nutrition during this time is required for healthy physical

WASH factors associated with child stunting

The 2019 First 1000 Most Critical Days Programme Phase II Baseline Survey measured the status of WASH and WASH factors associated with child stunting and found the following:

- Throughout the year, only 37% of households had access to safe and clean water, within 30 minutes or less.
- Only 14.6% of households had access to water and soap at a handwashing facility.
- A majority (79.5%) of households used an unimproved sanitation facility.
- Access to improved sanitation facilities and improved water sources were associated with reduced prevalence of diarrhoea and child stunting.
- WASH factors that that were associated with reduced incidence of diarrhoea were also associated with reduced child stunting.

growth and brain development. Undernutrition not only results in disease and death, but it can also lead to long-term consequences on cognitive and social abilities, school performance, and work productivity in adulthood.[8.]

2019 BASELINE SURVEY FINDINGS

The First 1000 Most Critical Days Programme Phase II (MCDP II) 2019 Baseline Survey results show that malnutrition is significantly associated with household factors, such as WASH characteristics, economic status, and educational level of household head. Addressing malnutrition should take a holistic approach and target household conditions affecting a child's nutritional status and access to WASH interventions. This summary report discusses four broad WASH factors: access to safe water, access to improved sanitation facilities services, access to handwashing facilities, and access to safe play areas for children.

MCDP II Baseline Survey methodology

Baseline, cross-sectional survey:

Household survey:

- 7,500 households sampled, with a final study subsample of 7,486 households with children under 2 years of age from 10 enumeration areas
- In each enumeration area, a random selection of 25 households with children under 24 months of age

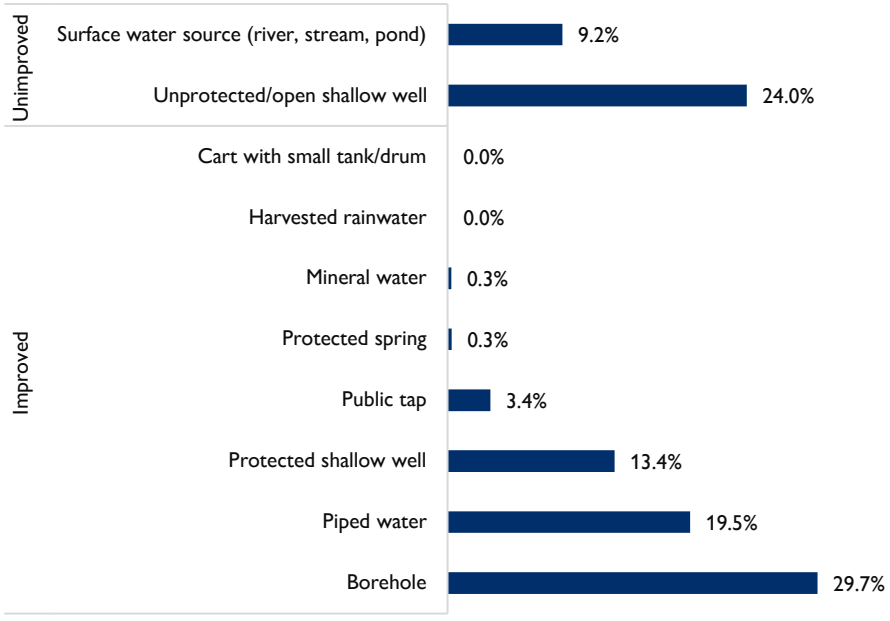
Key informant interviews:

- 51 key informant interviews (KIIs)
- KIIs involved district and provincial programme officers in SUN priority districts

Access to Safe Water

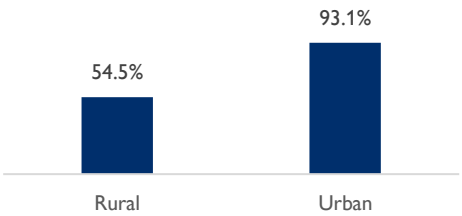
Access to safe water was low among households in the Scaling Up Nutrition (SUN) districts. Although the majority of households (66.7%) had access to safe water sources, only 37% had access to a safe water source throughout the year and were able to access it within 30 minutes or less. The most common source of water for those who had access to safe water was a borehole (29.7%). The most common source of water for those who accessed their water from an unsafe water source was an unprotected shallow well (24%). Figure 2 shows the percent distribution of access to improved and unimproved water sources.

Figure 2: Percentage of households with access to improved/unimproved water by type of water source



In examining access to water by region (rural compared to urban), there was a statistically significant difference (p<0.000) among households with access to improved water sources and households with access to unimproved water sources. The Baseline Survey included 2,373 urban households and 5,113 rural households. Nearly all urban households (93.1%) used an improved water source, compared to slightly more than half of rural households (54.5%) (Figure 3).

Figure 3: Percentage of households that had an improved water source by region



Treating Water from Unsafe Water Sources

It is recommended that households that access water from an unimproved and unsafe water source treat the water using a recommended water treatment technology (e.g., use of bleach or boiling). However, only a small percentage of households (9.5%) reported treating their water using any of the recommended water treatment technologies. For those that did treat their water, boiling and use of bleach were the most commonly used water treatment technologies.

Households in urban areas that used unimproved water sources were more likely to treat water sources (18.5%), compared to rural households (8.4%). Results were statistically significant (p<0.000) (Table 1).

Table 1: Association of selected factors and use of appropriate water treatment technologies

Category	Households using recommended water treatment technologies
Residence type (n=3,112)	*p<0.000*
Rural	8.4
Urban	18.5
Maternal age group (n=3,018)	*n/s*
15–19	8.1
20–24	9.3
25–29	11.8
30–34	9.9
35–39	7.7
40–44	6.6
45–49	2.7
Maternal education level (n=3,024)	*p<0.000*
None to primary	7.4
Secondary	14.5
Higher	31.8

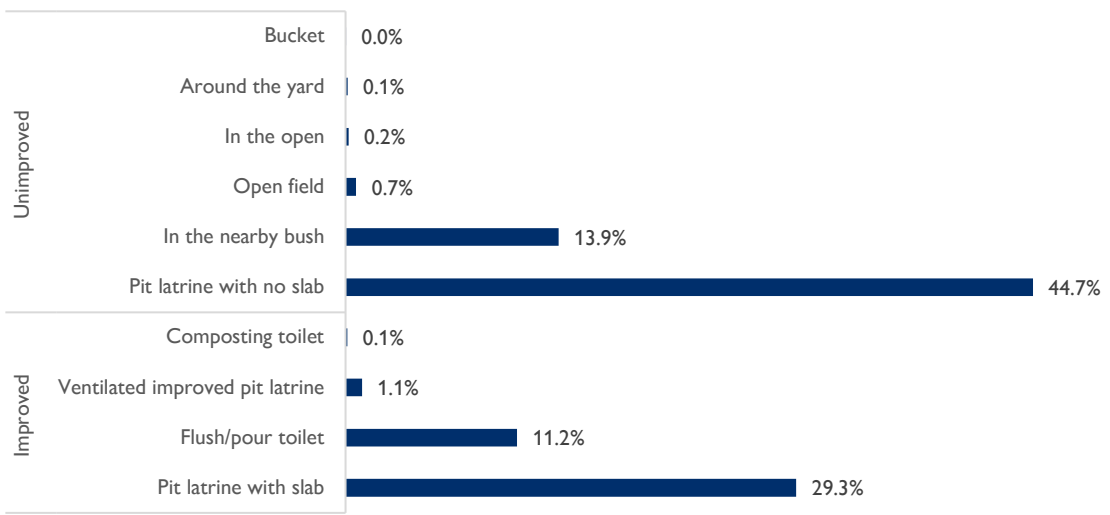
n/s=not significant

Access to Improved Sanitation Services

The majority of households (79.5%) used an unimproved sanitation facility. Among these households, the most common type of facility was a pit latrine without a slab (44.7%). About 14.9% of households practiced various types of open defecation, with the most common being the use of a nearby bush (13.9%). For improved sanitation facilities, the most common was a pit latrine with a slab (29.3%).

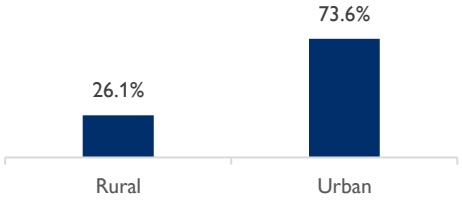
Figure 4 shows the percentage distribution of access to unimproved and improved sanitation facilities by type of facility.

Figure 4: Percentage of households with access to improved sanitation facilities by type of facility



Overall, 41.1% of sample households used some type of improved sanitation facility. Households in urban areas showed a much higher use of improved sanitation (73.6%) methods, compared to rural households (26.1%). (p<0.000) (Figure 5).

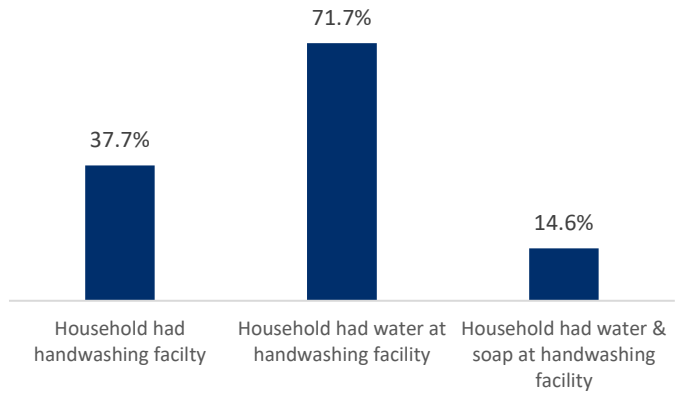
Figure 5: Percentage of households with improved sanitation facilities by region



Access to Handwashing Facilities

Proper handwashing practices are another factor that significantly contribute to improved health outcomes, particularly for infants and children. The Baseline Survey showed that few of the 7,486 households surveyed (37.7%) had a handwashing facility. Among those households with a handwashing facility, although most had water available (71.1%), few had both water and soap available (14.6%) (Figure 6). Access to handwashing facilities was generally low among households in the SUN districts.

Figure 6: Percentage of households with access to handwashing facilities



Looking at handwashing facility access, there was a statistically significant difference (p<0.000) among households by region (Table 2). Nearly 51% of urban households had a handwashing facility, compared to about 32% of rural households. The age group of the child's mother showed statistically significant differences in ownership of a handwashing station at a household level, with ownership increasing with increasing age group of the mother. However, findings showed no statistically significant difference in having a handwashing facility based on the sex of the household head.

Table 2: Association between demographic factors and having a handwashing facility

Category	Household had a handwashing facility
Type of residence (n=4,663)	*p<0.000*
Rural	31.6
Urban	50.8
Maternal age group (n=4,503)	*p<0.000*
15–19	33.6
20–24	34.1
25–29	38.3
30–34	40.6
35–39	41.2
40–44	36.8
45–49	37.1
Sex of household head (n=4,663)	*n/s*
Male	37.4
Female	39.1
Total	37.2

ns=not significant

Access to Safe Play Areas for Children

The majority of households did not have a safe play area for children. The Baseline Survey showed that a high percentage of children (48.8%) were exposed to environmental waste (animal and bird excreter) because households did not often protect and clean the areas in which their children played (Table 3). The Baseline Survey showed that exposure to animal waste predisposed children to diarrhoeal diseases (p<0.000). Looking at environmental waste exposure by region, children living in rural households (n=4,014) were much more likely to be exposed to unhealthy waste, compared to those living in urban areas (n=1,901), with the results statistically significant (p<0.000). Increasing education level of household head was associated with a reduction in children's exposure to unsafe play areas; 60% of children with household heads with none to primary education were exposed to unsafe play areas, compared to about 18% of children with household heads with higher education (p<0.001). Further, rural household members were more likely to be employed in agriculture, increasing the likelihood of exposure to environmental waste.

Table 3: Association of selected factors and children's exposure to unsafe play areas

Category	Children exposed to unsafe play areas
Type of residence (n=5,915)	*p<0.000*
Rural	63.8
Urban	17.2
Education level of household head (n=3,028)	*p<0.000*
None to primary	60.5
Secondary	42.7
Higher	17.9
Sex of household head (n=3,028)	*n/s*
Male	51.3
Female	50.9
Total	48.8

n/s=not significant

Association between WASH Factors and Incidence of Diarrhoea in Children

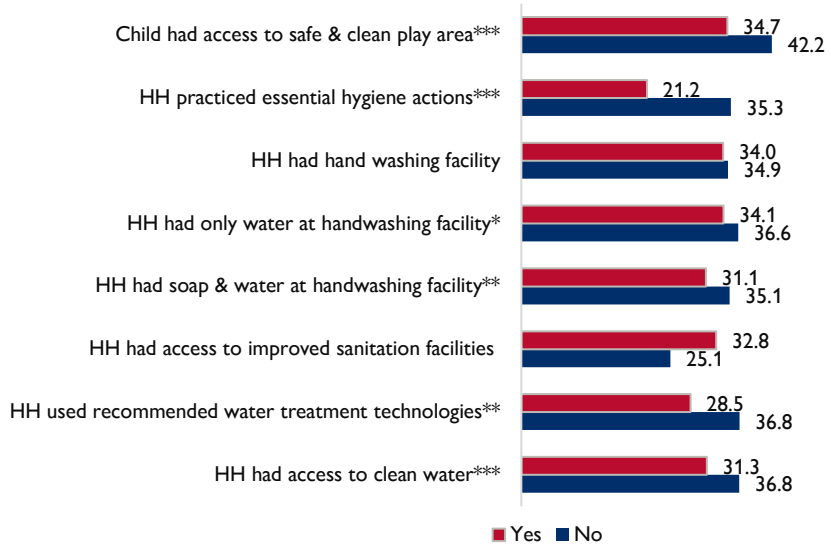
The UNICEF framework for determinants of child stunting shows poor WASH factors as one of the important causal pathways for increased stunting in children. The Baseline Survey indicated a strong relationship between WASH factors and incidence of diarrhoeal diseases in SUN districts. Results showed that 64.9% of children had diarrhoea in the 2 weeks before the survey. Table 4 shows the association of selected demographic factors and incidence of diarrhoea. Increasing education level of the child's mother and practicing exclusive breastfeeding were both associated with a reduction in the incidence of diarrhoea ($p<0.000$). Children who were not exclusively breastfed were about twice as likely to be experience diarrhoea (24.8%) as those who were exclusively breastfed (12.4%).

Table 4: Association of selected factors and incidence of diarrhoea among children in the 2 weeks before the survey

Category	Experienced diarrhoea in 2 weeks before the survey
Maternal age group (n=4,686)	*p<0.000*
15–19	33.3
20–24	38.5
25–29	33.7
30–34	33.3
35–39	32.2
40–44	30.1
45–49	32.9
Maternal education level (n=4,692)	*p<0.000*
None to primary	37.3
Secondary	32.6
Higher	18.3
Exclusive breastfeeding status (n=1,617)	*p<0.000*
Did not practice exclusive breastfeeding	24.9
Practiced exclusive breastfeeding	12.4

Figure 7 shows the association between WASH factors and prevalence of diarrhoea among children. Study findings indicated that having access to the necessary facilities and infrastructure contributed towards improved hygiene practices, which, in turn, supported a reduction in the incidence of diarrhoea. Fewer children who had access to safe and clean play areas (34.7%) had diarrhoea in the 2 weeks before the survey, compared to those who did not have access to safe and clean play areas (42.2%). Having soap and water at a handwashing facility was associated with a lower incidence of diarrhoea (31.1%), compared to not having soap and water (35.1%). The findings highlight a combination of key factors (handwashing facilities and soap, improved water facilities) and improved behaviours that are important contributors in achieving overall improved hygiene and reduced incidences of diarrhoea.

Figure 7: Association between selected WASH factors and prevalence of diarrhoea among children



Note: * p<0.05, ** p<0.01, *** p<0.000, HH =household

Figure 8: Percentage of childhood stunting by region

Overall, 30.2% of sampled children under 2 were stunted, and children in rural areas had slightly higher stunting levels (32.7%), compared to children in urban areas (24.8%) (p<0.000) (Figure 8).

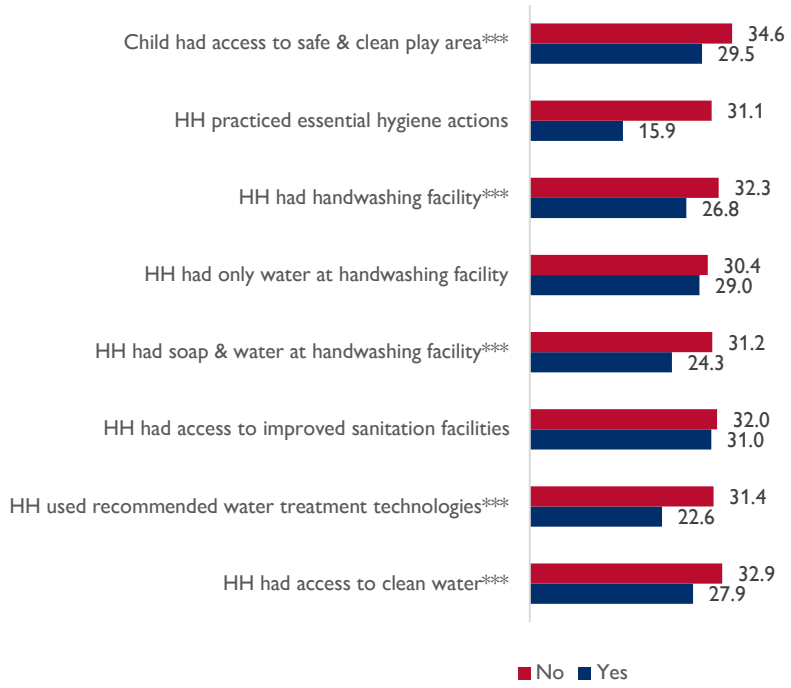
Baseline Survey findings showed that access to and the practice of essential hygiene actions were associated with reduced prevalence of diarrhoea among children in the 2 weeks preceding the survey (21%), compared to the prevalence of diarrhoea among children in households that did not practice essential hygiene actions (35%) (p<0.000). Essential hygiene actions measured in the Baseline Survey included the following: access to clean drinking water (i.e., accessing water from improved sources, treating water using recommended treatment methods, storing adequate quantities of water, and correct storage of drinking water); having access to a handwashing facility (tippy tap) and having soap at a handwashing facility; and having access to clean latrines and environment (safe disposal of faeces and safe play areas for children). For example, those households that had access to improved sanitation were less likely to have a child with diarrhoea, compared to those who did not have access to improved sanitation services (p<.017). Further, more children who reported having diarrhoea 2 weeks before the survey were stunted (33.0%), compared to those who did not report an incidence of diarrhoea during the reference period (38.0%) (p<0.000).

Relationship between WASH Factors and Stunting

Figure 9 shows associations between selected WASH factors and stunting in children. The findings show that more children who were stunted (33%) lived in households without access clean water, compared to children who lived in households with access to clean water (28%). Having access to soap and water at a handwashing facility, having a handwashing facility, and using recommended water treatment technologies were significantly associated with a lower prevalence of child stunting. For example, fewer children were stunted (23%) who lived in households that treated their water using recommended water treatment technologies, compared to children who lived in household that did not treat their water using recommended water treatment technologies (31%). In addition, households that had a clean and safe play

area for their children had fewer children who were stunted (30%), compared to those whose play areas were not clean and safe (35%).

Figure 9: Percentage of child stunting by environmental animal waste exposure and selected WASH factors



Note: * p<0.05, ** p<0.01, *** p<0.000, HH=household

These findings show that infrastructure and facilities (e.g., improved water facilities, handwashing facilities, safe and clean play areas, and soap) are important factors for achieving improved hygiene and reduced stunting. If infrastructure and associated factors at the household level are not in place, behaviour changes as outcomes from targeted interventions will only achieve marginal improvements in hygiene practices and reduction in stunting and disease.

WHAT DO THE FINDINGS MEAN FOR IMPROVING WASH PRACTICES

WASH practices are strongly associated with child nutrition due to links with transmitting diseases, such as diarrhoea. In the Baseline Survey, children's exposure to environmental animal waste was significantly associated with diarrhoea incidence ($p<0.05$). Diarrhoeal incidence was also associated with increased stunting.

Regression and chi-square analysis of the baseline data at a more granular level show that the education level of the household head and related economic characteristics are associated with higher use of WASH technologies and resulted in overall improved health of children under 2 years of age in the sample. Given this association, the program should further target communities characterized as more marginalized.

Baseline Survey results showed a large variation in WASH access and implementation across districts and regions in Zambia. Differences between urban and rural areas in WASH practices, such as access to clean water and handwashing facilities and children's exposure to animal waste, highlight the need for behaviour change interventions at the community level. Until families understand the importance of steps to improve childhood outcomes regarding stunting and diarrhoea, the needed adjustments will not be

made. Even with behaviour change and other programmatic interventions, the adjustments at household level are likely to be gradual.

Findings from the Baseline Survey further support the need for locally based solutions. Project interventions presented in Table 5 to improve access to clean water and scale up the adoption of improved sanitation and hygiene practices would help support positive health outcomes due to the diverse and complementary nature of the activities. The project should target locally identified solutions and, where feasible, encourage links to the private sector to enhance innovative hygiene and sanitation products and services, with a view towards long-term sustainability.

Table 5: Recommendations and implementation steps and framework

Key recommendations	Implementation steps	Framework for implementation
Promote and emphasise the importance of all essential hygiene practices, including access to clean drinking water, availability of soap and water at handwashing facilities, and access to clean latrines and environment, among all households.	Implement locally identified solutions and, where feasible, establish linkages with the private sector, that should introduce innovative hygiene and sanitation products and services.	Undertake the construction and rehabilitation of boreholes in rural communities for improved access to safe drinking water coupled with social and behaviour change communication, gender equality, and other high-impact interventions.
Promote access to safe drinking water through the provision of safe and clean water points in communities.	The District Water Development Officers, under MCDP II, with support from the partners and in coordination with the District Nutrition Coordinating Committee and Ward Nutritional Coordinating Committee, will map existing water infrastructure (availability of water points, water access, actors involved in provision of safe drinking water) in rural communities.	Under MCDP II, access to water and adoption of improved sanitation and hygiene practices will be improved, giving preference to locally identified solutions and, where feasible, working with the private sector to introduce innovative hygiene and sanitation products and services.
Support safe environments for children through the establishment of safe play areas, penning animals and poultry, and maintaining clean homesteads—especially in districts reporting high levels of animal waste around homesteads.	Training and workshops on the impact of open defecation and unhygienic environments should take place under the guidance of community groups (e.g., Safe Action Groups). These activities will improve community collective self-awareness, and self-selection of small, feasible actions, with a self-monitored action plan.	An Essential Hygiene Actions Toolkit as part of a broader social and behaviour change communication toolkit should be developed by the Ministry of Water Development to promote essential hygiene actions among mothers, fathers, and caregivers of young children. This package should be comprehensive and context specific. This toolkit should also include *BabyWASH* practices to influence hygiene practices for children under 2

Key recommendations	Implementation steps	Framework for implementation
		years of age. Care Group volunteers should promote *BabyWASH* practices through household visits to caregivers of children under 2 years of age. Using a social and behaviour change communication approach, Safe Action Groups and Care Groups will promote the uptake of essential hygiene actions.

ENDNOTES

[1] Word Health Organization. (2019). *Drinking-water.* Available at: https://www.who.int/news-room/fact-sheets/detail/drinking-water

[2] Zambia Statistics Agency, Ministry of Health Zambia, & ICF. (2019). *Zambia Demographic and Health Survey 2018.*

[3] World Health Organization, UNICEF, & United States Agency for International Development. (2015). Improving nutrition outcomes with better water, sanitation and hygiene: Practical solutions for policies and programmes. Available at: https://www.who.int/water_sanitation_health/publications/washandnutrition/en/

[4] Mshida, H.A., Kassim, N., Mpolya, E., & Kimanya, M. (2018). Water, sanitation, and hygiene practices associated with nutritional status of under-five children in semi-pastoral communities Tanzania. *The American Journal of Tropical Medicine and Hygiene, 98*(5), 1242-1249.

[5] Black, R.E., et al. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet, 382(9890), 427–451. Available at: http://www.unicef.org/ethiopia/1_Maternal_and_child_undernutrition_and_overweight_in.pdf

[6] UNICEF. (2016). *Nutrition-WASH Toolkit: Guide for Practical Joint Actions.* Available at: https://www.unicef.org/eap/reports/nutrition-wash-toolkit-guide-practical-joint-actions

[7] UNICEF. (2016). *Nutrition-WASH Toolkit: Guide for Practical Joint Actions.* Available at: https://www.unicef.org/eap/reports/nutrition-wash-toolkit-guide-practical-joint-actions

[8] Save the Children. (2012). *Nutrition in the First 1,000 Days: State of the World's Mothers Report.*

ABOUT SCALING UP NUTRITION ZAMBIA

The Government of the Republic of Zambia (GRZ) is a member of Scaling Up Nutrition (SUN)—a global movement uniting governments, civil society, businesses, and citizens in a worldwide effort to end undernutrition. Phase 1 of the Zambia SUN programme began in 2013 with the goal to reduce stunting among children less than 24 months old in 15 districts.

Currently in its second phase, SUN has increased from 15 to 30 districts, coordinated by the National Food and Nutrition Commission of Zambia, and supported by a variety of partners and donors, including USAID/Zambia who supports the SUN programme through the SUN Learning and Evaluation (SUN LE) project.

This Summary Report was made possible with the generous support of the American people through the U.S. Agency for International Development under USAID contract no. 72061119C00003.

Authors / Contributing Authors:

- Mona Mehta Steffen, Senior Monitoring and Evaluation Lead, ICF
- Lwendo Moonzwe Davis, Manager, Monitoring, Evaluation and Research, ICF
- John Manda, Learning and Dissemination Advisor, SUN LE (ICF)
- Patricia Sakala, Strategic Information Advisor, SUN LE (Khulisa Management Services)
- Mathews Onyango, Chief of Party, SUN LE (Khulisa Management Services)
- Paul Mboshya, Senior Community Development Officer, MWDSEP
- Abel Manangi, Assistant Director - Sanitation, MWDSEP
- Selenia Matimelo, Principal Community Development Officer, MWDSEP

CONTACT US

Scaling Up Nutrition Learning and Evaluation (SUN LE)
Khulisa Management Services, Inc.
4550 Montgomery Avenue, Suite 220
Bethesda, MD 20814 USA
Tel: +1 (301) 951-1835
info@khulisa.com