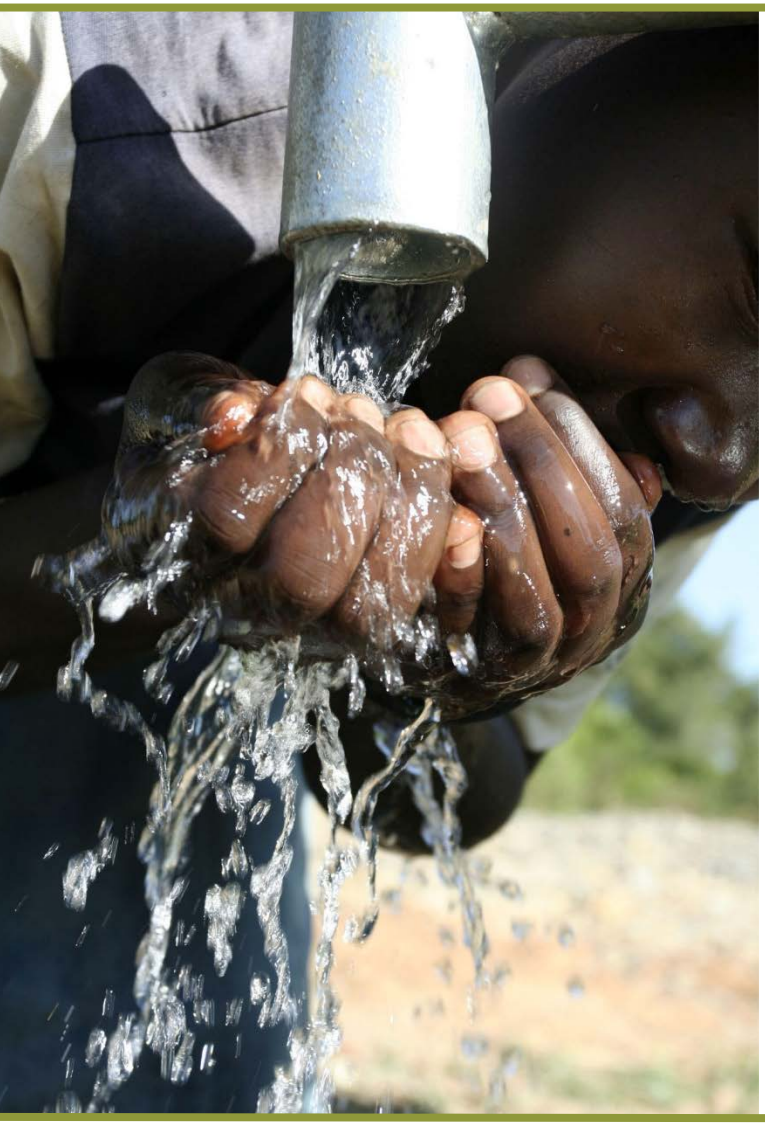
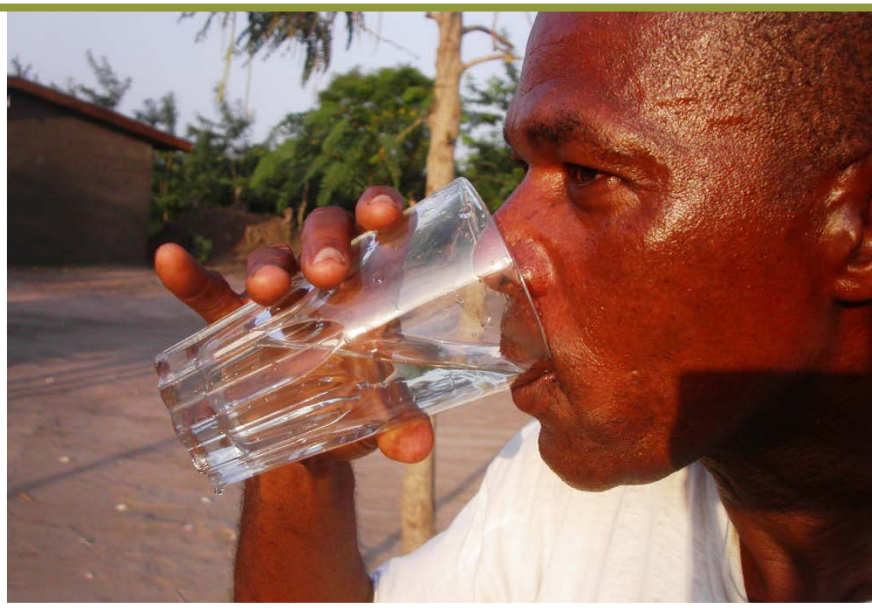
FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Multiple-Use Water Services

Toward a Nutrition-Sensitive Approach





USAID
FROM THE AMERICAN PEOPLE

SPRING
Strengthening Partnerships, Results and Innovations in Nutrition Globally

Multiple-Use Water Services

Toward a Nutrition-Sensitive Approach

July 2014

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is supported by the American people through the U.S. Agency for International Development (USAID) under Cooperative Agreement No. AID-OAA-A-11-00031.

DISCLAIMER

This report is made possible by the generous support of the American people through the U.S.Agency for International Development (USAID) and Feed the Future, the U.S. Government's global hunger and food security initiative, under the terms of the Cooperative Agreement AID-OAA-A-11-00031 (SPRING), managed by the JSI Research & Training Institute, Inc. (JSI).The contents are the responsibili- ty of JSI, and do not necessarily reflect the views of USAID or the U.S. Government.

ABOUT SPRING

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is a five-year USAID-funded Cooperative Agreement to strengthen global and country efforts to scale up high-impact nutrition practices and policies and improve maternal and child nutrition outcomes. The project is managed by JSI Research & Training Institute, Inc., with partners Helen Keller International, The Manoff Group, Save the Children, and the International Food Policy Research Institute. SPRING provides state-of-the-art technical support and focuses on the prevention of stunting and maternal and child anemia in the first 1,000 days.

RECOMMENDED CITATION

SPRING. 2014. Multiple-Use Water Services: Toward a Nutrition-Sensitive Approach. Arlington, VA: USAID Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project.

ACKNOWLEGEMENTS

SPRING would like to thank the staff at Catholic Relief Services (CRS) in Ethiopia, Global Water Initiative (GWI) in Ghana, International Development Enterprises (iDE) in Nepal, Millennium Water Alliance (MWA) in Kenya, UNICEF in Ethiopia, and Winrock International who generously provided their time and insights to generate a better understanding of these issues and improve programming. Special thanks to lead author, Jordan Teague (WASH Advocates), and contributor, Samantha Clark (SPRING), for designing, writing, and editing this report.

SPRING

JSI Research & Training Institute, Inc. 1616 Fort Myer Drive, 16th Floor Arlington,VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Email: info@spring-nutrition.org
Internet: www.spring-nutrition.org

COVER PHOTOS

Girl drinking water, © 2006 Felix Masi, Courtesy of Photoshare; Man drinking water, © 2001 Erberto Zani, Courtesy of Photoshare; Women using water pumps, © 2007 Felix Masi, Courtesy of Photoshare

Contents

Acronyms

CBN	community-based nutrition
CLTS	community-led total sanitation
MUS	multiple-use water services
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally
WASH	water, sanitation, and hygiene
CRS – Ethiopia	Catholic Relief Services – Ethiopia
GWI – Ghana	Global Water Initiative – Ghana
iDE – Nepal	International Development Enterprises – Nepal
MWA– Kenya	Millennium Water Alliance – Kenya

Executive Summary

Multiple-use water services (MUS) is a participatory, integrated approach to water management that supports both agricultural production and domestic activities at or near the home. One of its principle strengths is that it overcomes traditional barriers between the domestic and productive water sectors.

MUS has the potential to bridge agriculture and nutrition through water use: enhance crop production and household income, increase access to diverse foods, decrease disease transmission, and empower women and communities through income generation and time and labor savings. Additional nutritional benefits from MUS may be linked to safer drinking water and improved hygiene.

With emerging evidence suggesting that stunting cannot be addressed without also focusing on WASH, SPRING wanted to better understand current WASH and water strategies that sought to bridge agriculture and health to reduce undernutrition at the community, farm, and household level.

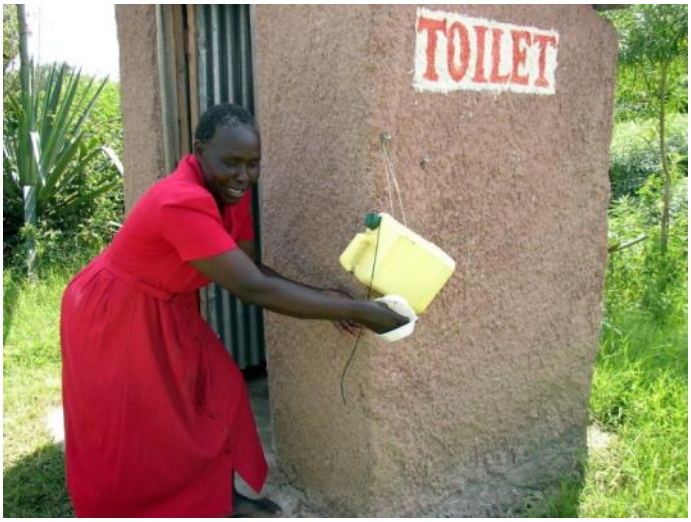
Through document reviews and interviews with six key organizations implementing MUS, SPRING found several promising practices currently being assessed and undertaken by the surveyed organizations. SPRING believes MUS has the potential to contribute nutrition outcomes, as it provides two necessary components:

- Opportunity for water to improve health through the provision of safe drinking water; and,
- Availability of water for agricultural purposes, resulting in increased food production and agricultural income.

In addition, many MUS systems are community-managed, and can provide opportunities for community organization and women's empowerment, an essential step toward improved nutrition.

SPRING also identified several areas that could be improved or expanded to make the MUS approach more nutrition-sensitive. It is clear that the *potential* impact of MUS on nutrition is recognized across most MUS activities, and each activity that SPRING features in this report did plan and program additional nutrition-sensitive or nutrition-specific interventions to support such outcomes. However, measurement was often inadequate to be able to determine the contribution that MUS made to these metrics. In order to take full advantage of MUS towards improving nutrition outcomes, additional nutrition-related programming and a commitment to measurement is necessary.

Background



© 2006 Greg Allgood, Courtesy of Photoshare

Water plays an integral role in both agriculture and nutrition. However, existing approaches to water service delivery rarely consider the needs of each sector. For example, rural water planning models typically do not meet the range of water users' needs, as many include single-use systems designed to keep domestic and productive activities separate. In communities, this often means drinking water is provided through boreholes, standpipes, or dug wells at the household or community level. The design of these sources typically only takes into account the household or community's average domestic water needs and usage. Conversely, agricultural single-use water systems are designed solely with agricultural needs in mind. Regardless of how the systems are designed, however, when single-use approaches are the only type available, households generally use one water source for consumption as well as for other purposes, such as livestock and home gardens. This may cause extra stress and damage on the system including the natural resource environment (e.g. watersheds) and may lead to conflicts over water quantity and quality.

Multiple-use water services (MUS) is a participatory, integrated approach to water management that supports both agricultural production and domestic activities at or near the home and overcomes traditional barriers between the domestic and productive water sectors (van Koppen et al. 2006). The MUS approach provides a source of safe drinking water for households, as well as a source of water for washing, bathing (hygiene), and cooking. In addition, MUS provides a convenient and steady water source for livestock, watering of kitchen gardens, and crop irrigation. The design of all MUS programs is dependent on context and community needs, but the basic tenets of the approach are universal. First, the water for the system can come from either a single source or multiple sources, but must be designed to sustain both domestic and agricultural water use (Winrock International 2014). Second, MUS approaches can be categorized as either domestic-plus or irrigation-plus (Adank et al. 2012). Domestic-plus systems aim to increase the level of water service provided, enabling community or household members to have access to enough water for productive uses in addition to domestic uses. Irrigation-plus approaches develop or re-develop irrigation systems so that water can be used for non-irrigation purposes. At its most basic, an example of a single-source MUS program might include a water tank that distributes water to tap stands that have been constructed near the households and fields to reduce water collection time for both types of needs (Winrock International 2014). Many MUS programs include other components to supplement the multiple-use system, such as:

- Watershed protection to ensure a more reliable source of water
- Irrigation kits to aid in productive water use
- Sanitation and hygiene promotion to enhance the health effects of safe drinking water
- Nutrition education and support for growing nutritious foods

- Agricultural and livestock extension to support increased production and livelihood activities

MUS is featured in the 2013–2018 USAID Water and Development Strategy (2013), USAID's guidance to its missions on its approach to water programs, as an important approach to bridging water needs for health and for food. USAID is shifting its strategic focus to include more attention to MUS for agricultural use as a way to provide a steady water supply to meet all water needs of the community and thereby improve health and livelihoods.

Nutrition, which is linked to both water and agriculture, may be improved through MUS in a variety of ways. A steady supply of water has applications ranging from watering of kitchen gardens to micro-drip irrigation of farm crops. Application of MUS, especially when supplying a steady year-round supply of water, can support increased crop production. With higher production, households may sell more produce in local markets, thereby increasing household income. MUS can also have great impacts on women's empowerment through income generation, by saving women's time and labor, and by providing opportunities for women's engagement in leadership through community water management. Women make up a large portion of the agricultural workforce in the developing world and can reap the benefits of increased income from selling extra crops. In addition, MUS provides access to safe drinking water and water for agricultural uses near the home. With this access, women save the time they previously used to collect water for child care, domestic, and agricultural livelihood purposes. Further, many MUS systems are community owned and managed, which provides leadership opportunities for women are within community water associations. Lastly, access to a source of safe drinking water provides health benefits to households through decreased disease transmission. Due to the health and nutrition benefits of safe drinking water and hygiene, and increased access to plant and animal-sourced foods, nutrition is a clear (although indirect) benefit of MUS.

Objectives and Methodology

Within the water, sanitation, and hygiene (WASH) sector, there are many mechanisms and activities that may lead to improved nutrition; MUS is one option. SPRING wanted to better understand the opportunities and challenges around linking MUS to improved nutrition so that best practices and lessons learned may be identified and potentially shared with Feed the Future countries. In particular SPRING hoped to address several key questions:

1. What are the assumptions behind improving nutrition outcomes through MUS?
2. Has there been any documented evidence of the nutrition benefits of MUS?
3. Are there any lessons learned that may be applied to other countries and contexts?

In consultation with USAID, implementing partners, and other key stakeholders, SPRING undertook a review of MUS activities that sought to bridge agriculture and health initiatives to reduce malnutrition at the community and household levels. SPRING identified 39 organizations conducting MUS activities in a variety of capacities, including implementation, research, or technical assistance. From those 39, SPRING identified six key organizations or activities (see Table 1) to review in more detail (see Annex A for more details on the organizations and activities). The following criteria guided the selection process:

- The program is located in one or more Feed the Future focus countries;
- Improved nutrition is listed as an explicit benefit, intended outcome, or goal in MUS program aims; and/or
- The program includes nutrition indicators in its evaluation plan(s).

SPRING reviewed relevant activity documents such as work plans, annual reports, and fact sheets and conducted key informant interviews for each organization (see Annex B for the Interview Guide). Interviews were conducted over Skype or phone. Staff at Millennium Water Alliance – Kenya was not available for a key informant interview; only document reviews were undertaken for this project.

Table 1. Six Key Organizations or Activities Identified for Further Review on MUS

Catholic Relief Services (CRS) – Ethiopia
MUS is a core component of their WASH strategy. A large focus of their MUS activities is increasing kitchen gardening where crops can be sold in local markets and/or consumed by households. In addition to providing a source of water for irrigation through MUS, CRS also promotes household-level ecological toilets, called Arborloos. These Arborloos provide a safe method of excreta disposal and compost those excreta to enhance crop production.
Global Water Initiative (GWI) – Ghana
The purpose of their MUS activities is to increase access to water supply for households during the dry season and is intended to benefit household gardening and livestock watering. Sanitation and hygiene promotion, CLTS, school health and hygiene education, and agricultural extension are also included as integral parts of the project.

International Development Enterprises (iDE) – Nepal

The main goals of their MUS activities are increased income, women's empowerment, and improved nutrition. iDE uses MUS in Nepal to provide a source of safe drinking water near the communities and a year-round water supply for agricultural activities. The MUS activities have been combined with other efforts, including production and marketing of high-value commodities and literacy, health, and nutrition trainings, and have produced a significant increase in community income, as well as improvement in nutritional indicators.

Millennium Water Alliance (MWA) – Kenya: Kenya Arid Lands Disaster Risk Reduction Program

The program's overarching goals are to increase access to WASH and build resilience to climate change to reduce diarrheal disease as well as to increase food security in areas with recurrent malnutrition. The MUS activities are implemented with IRC's and Acacia Water's 3-R strategy – Recharge, Retention, and Reuse – to ensure year-round availability of water. Other components of the program include community-led total sanitation (CLTS), household water treatment and safe storage, hygiene promotion, and improving WASH in health and nutrition facilities.

UNICEF – Ethiopia: Integrated Water, Sanitation and Hygiene (WASH), MUS, and Community-Based Nutrition (CBN) Program

This program was designed to demonstrate the benefit of MUS as an approach to improve WASH services, food security, and nutrition. Key interventions to complement their MUS activities include community-managed water supply, improving WASH in schools, school-managed market gardens, equipping rural health facilities with WASH, CLTS, and communication for behavior and social change for sanitation, hygiene, and nutrition promotion. The nutrition component specifically includes support to production of complementary foods, nutrition education in schools, micronutrient supplementation, and strengthening the capacity of health workers on nutrition and data management.

Winrock International

Their MUS approach, applied in several countries around the world, aims to improve health and livelihoods by meeting water needs. Components of environmental sustainability, health, and livelihoods are incorporated into the MUS strategy. Supplemental activities may include watershed management; nutrition, sanitation, and hygiene promotion; and agricultural extension and support for local markets.

Summary of Findings

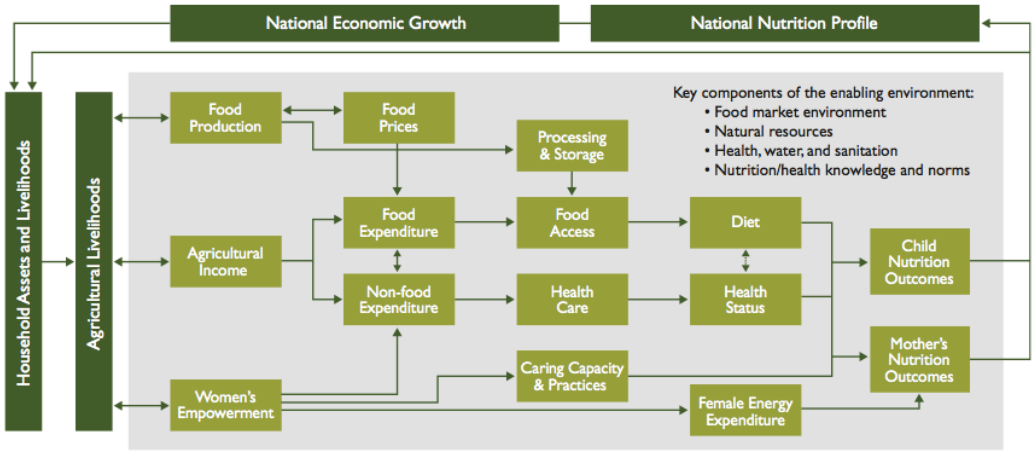
Linking Agriculture and Nutrition through MUS

Agricultural livelihoods affect nutrition of individual household members through multiple pathways and interactions. The Herforth, Harris, and SPRING figure below illustrates how various agriculture outcomes might improve access to food and health care; how they impact and are affected by the enabling environment; and how they ultimately affect the nutrition of women and children (Herforth and Harris 2014).

In general, the pathways can be divided into three main routes at the household level: 1) food production, which can affect the food available for household consumption as well as the prices of diverse foods; 2) agricultural income for expenditure on food and non-food items; and 3) women's empowerment, which affects income, caring capacity and practices, and female energy expenditure.

Acting on all of these routes is the enabling environment for nutrition, including several key components: the natural resources environment; the food market environment; the health, water and sanitation environment; nutrition/health knowledge and norms; and other factors such as policy and governance.

FIGURE. CONCEPTUAL PATHWAYS BETWEEN AGRICULTURE AND NUTRITION



Adapted for Feed the Future by Anna Herforth, Jody Harris, and SPRING, from Gillespie, Harris, and Kadiyala (2012) and Headey, Chiu, and Kadiyala (2011).

Water is intricately linked with both agriculture and nutrition. Using the agriculture to nutrition pathways of food production, agricultural income, and women's empowerment, MUS has the potential to contribute to improved nutrition in several ways:

- Through prevention of disease (*health status*) by providing a source of safe drinking water;
- Through labor and time saving (*female energy expenditure* and *caring capacity*);
- Through providing opportunities for women's engagement in and management of community water organizations (*women's empowerment*); and
- Through production of a more diverse variety of foods (*food production*) and resultant increases in income (assist with the *purchase of food*).

All of the organizations that SPRING contacted recognized the impact that MUS may have on nutrition; however, several of them did not explicitly include health-related or nutrition-specific activities and/or did not measure the nutritional impact of their MUS programs. Implementers themselves described their own pathways that they assume illustrate the impact that MUS can have on nutrition (see Table 2). There are a number of potential pathways to improved nutrition that the MUS approach may affect, and as Winrock International noted, "The impact pathway for nutrition is really complicated."

Table 2. Assumed Pathways of MUS to Improved Nutrition

UNICEF – Ethiopia: Integrated WASH/MUS/CBN Program	Diversified economic use of water ➔production of highly valuable crops ➔more crops to sell in the market ➔family income ➔improved family nutrition
Winrock International	Better water services ➔more home gardens, livestock, and enterprises ➔better nutrition
GWI – Ghana **iDE – Nepal** **CRS – Ethiopia**	Steady water supply ➔access to vegetables year-round to consume and sell ➔improved nutrition and increased income
iDE – Nepal	Better water quality ➔women are healthier ➔women have more time to care for children ➔improved nutrition
iDE – Nepal	Access to water near the house ➔women spend less time fetching water ➔women have more time to care for children ➔improved nutrition
CRS – Ethiopia	Access to water near the house ➔women spend less time fetching water ➔livestock productivity increases ➔household consumption of dairy increases ➔improved nutrition

Limitations in Current Practice

SPRING found several gaps, or areas that could be improved or expanded in making the MUS approach more nutrition-sensitive. While MUS may be combined with nutrition-specific activities, SPRING also wanted to explore other ways in which MUS activities could impact nutrition, such as sanitation and hygiene promotion.

1. ***Assumption without action***

   While these pathways are logical, those shown in Table 2 are based on many un-programmed assumptions. In addition, there are several missing steps that are not taken into account between each of the arrows. Without taking these steps into account, it would be difficult to ensure a result of improved nutrition. For example, there are many steps and conditions that need to be in place and several key assumptions proven correct in order to move from "family income" to "improved family nutrition" (see Herforth and Harris 2014). Activities indicated that their approach improved nutrition but did not always make a point to support all activities and conditions needed to achieve improved nutrition. GWI – Ghana noted, "Nutrition was not really taken up as a key component but was an obvious and important benefit of the gardening programme."

2. *Lack of nutrition objective*

Additionally, while some programs do include improved nutrition as an explicit goal or objective of the MUS activity, others do not. Without such a goal or objective, it is difficult to measure progress toward nutrition; activities will not use the appropriate indicators and funding will not be allocated toward activities meant to improve nutrition. GWI – Ghana explained, "Nutrition objectives were not explicitly included in the results framework of the GWI programme. It was therefore not deliberately planned and budgeted for."

3. *Assumption without verification*

It was also determined from the interviews that, for the most part, these pathways are assumed without being verified by monitoring the appropriate nutrition-related process indicators. In several interviews, organizations asserted that their MUS activities improved the nutrition of the community, but these organizations did not measure this in their monitoring and evaluation efforts to verify the assumption.

© 2004 Ingrid Hesling, Courtesy of Photoshare

It is clear that the *potential* impact of MUS on nutrition is recognized across most MUS activities, and several even include nutrition as a goal or objective. However, that seems to be the limit of what most MUS activities attempt in terms of including improved nutrition as a part of their design. In order to assert that MUS improves nutrition, more studies and activities need to deliberately include nutrition-sensitive and/or nutrition-specific activities and messages, and monitor the appropriate, relevant nutrition-related indicators in their programs.

Promising Practices

In many cases, it is intuitive that nutrition is incorporated into MUS programs. Of the organizations and activities SPRING focused on, iDE – Nepal and UNICEF–Ethiopia explicitly incorporate nutrition into their MUS approach, and Winrock International includes nutrition in their *Guide to Multiple-Use Water Services* (Winrock International 2014). Additionally, iDE –Nepal stated that in almost all of their proposals, MUS and nutrition are now included together. There are several ways that nutrition can be incorporated into a MUS approach, including through promotion of nutrition through nutrition-sensitive activities, nutrition-specific activities, and monitoring of nutrition indicators.

1. *Using MUS as a platform for promoting nutrition*

iDE – Nepal uses MUS activities as a platform to deliver essential nutrition messages in order to improve nutrition, a goal of iDE – Nepal's MUS activities. iDE – Nepal goes beyond hoping for improved nutrition to including nutrition activities in its MUS programs. In an upcoming proposal, iDE –Nepal includes nutrition through literacy training as part of their MUS approach. Households receive literacy training in which nutrition, health, and WASH messaging are embedded. Per the agriculture to nutrition pathways (Herforth and Harris 2014), iDE – Nepal works to keep nutrition-specific components that improve behaviors through a range of nutrition, health, and WASH messages in line with their other two goals,

income generation and women's empowerment. The latter two goals are made more nutrition-sensitive through WASH and nutrition training/extension in the context of their agricultural livelihoods interventions.

Nutrition-sensitive messaging and activities, such as sanitation and hygiene promotion, can also be included in the MUS approach to improve nutrition. Winrock International created *A Guide to Multiple-Use Water Services* (Winrock International 2014) with the Rockefeller Foundation and IDEO.org. In the guide Winrock International clearly demonstrate how water, health, and livelihoods are interrelated and affected through MUS. The guide encourages implementers to consider including sanitation and hygiene promotion along with latrines and handwashing facilities in their MUS approach. Winrock International uses these guidelines to shape their MUS activities. CRS – Ethiopia, MWA – Kenya's KLDDR-WASH program, and GWI – Ghana also included activities covering sanitation and hygiene in their approaches.

2. Implementing nutrition-specific activities alongside MUS

Winrock International's guide also encourages implementers to consider how the health benefits of MUS may be improved by adding nutrition activities. Their assumption is that increased access to vegetables grown through MUS will improve nutrition. However, the guide does not go so far as to instruct *how* vegetable production results in improved nutrition. Messages and strategies for promoting consumption of a diverse and adequate diet are beyond the scope of the guidance.

As part of their MUS activities, UNICEF–Ethiopia conducts gardening demonstration programs in the schools to support irrigated school gardens. This introduces the production of valuable and higher nutrient crops. The school gardens are meant to be used as a demonstration to households in the community who will then replicate the practice. Once households gain gardening knowledge from these demonstrations, nutritious foods are introduced into household diets. In some cases, the vegetables grown are sold in the market to increase household income, which UNICEF–Ethiopia then *hypothesizes* is used to increase consumption of nutritious foods. UNICEF—Ethiopia also conducts a community based nutrition (CBN) program including production of complementary foods, nutrition education in schools, behavior change communication, and micronutrient supplementation as part of its Integrated WASH/MUS/CBN Program.

3. Inclusion of nutrition indicators in monitoring and evaluation plans

iDE –Nepal also monitors nutrition indicators for each of their MUS programs. In the aforementioned proposal, iDE – Nepal will track anthropometric, household behavior, and dietary diversity indicators. In Nepal, iDE has seen changes in underweight and stunting in a short time period in areas with their MUS programs as compared to similar livelihoods strengthening programs that do not use MUS. They partially attribute this to the sudden shift from food insecurity to improved access to income, food, and high nutrient crops with the implementation of MUS. They have seen that, on average, about 30 percent of crops grown in vegetable gardens are consumed in the household and the rest are sold for profit. While iDE – Nepal has not done a rigorous evaluation, they *hypothesize* that the income is then returned to the household in the form of food and education for the children.

UNICEF – Ethiopia, in their Integrated WASH/MUS/CBN Program, conducts regular growth monitoring in the communities in which they work in addition to measuring prevalence of severe acute malnutrition, moderate acute malnutrition, diarrheal disease, exclusive breastfeeding, complementarities of food, school feeding programs, access to nutritionally-dense foods, and food diversity.

Conclusions

MUS has great potential to be a nutrition-sensitive approach to water for health and for food through both nutrition-sensitive actions and nutrition-specific activities. MUS offers opportunities for both approaches, as demonstrated by the organizations featured in this brief review. MUS can be used as a platform to promote nutrition through nutrition-sensitive activities and messaging such as access to latrines or hygiene promotion. MUS can also be combined with nutrition-specific activities as in the case of UNICEF–Ethiopia's CBN program to reach the same target populations.

© 2003 Amelie Sow-Dia, Courtesy of Photoshare

SPRING believes MUS has the potential to achieve nutrition outcomes for the following reasons:

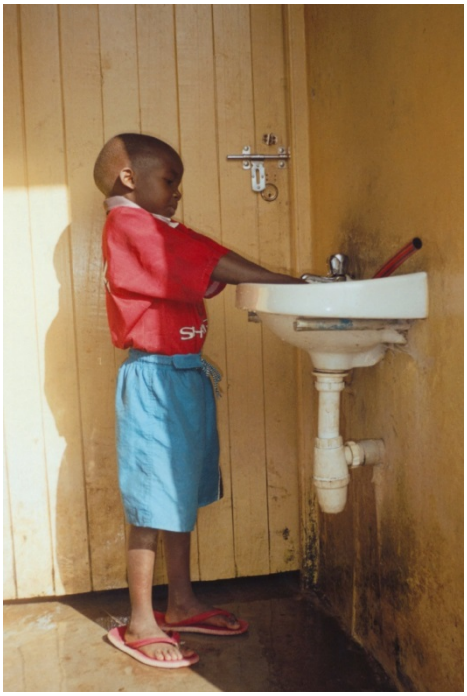
- MUS provides two necessary components for nutrition: 1) opportunity for water to improve health through the provision of safe drinking water; and, 2) availability of water for agricultural purposes, resulting in increased food production and agricultural income.
- Many MUS systems are community-managed, and can provide opportunities for community organization and women's empowerment, an essential step toward improved nutrition.

When such supplemental activities as discussed in this review are included in a MUS program, relevant nutrition indicators must be included in a monitoring and evaluation plan. It is unwise to claim a benefit of nutrition without verifying this assumption. However, relevant nutrition indicators should only be monitored in programs where nutrition-sensitive or nutrition-specific activities are planned and undertaken.

The pathways between MUS and nutrition should not be assumed to be linear or to be relevant or applicable to all contexts. A range of factors, such as environmental conditions, governance, cultural practices, and market conditions affect steps between MUS and nutrition and must be taken into account in activities and in measuring outcomes. In order to take full advantage of pathways linking MUS to improved nutrition, additional programming may be necessary to connect the steps along each pathway and to reach the assumed impact or benefit of improved nutrition.

Next Steps

This research demonstrates that organizations conducting MUS programs want to improve nutrition but face a variety of challenges in doing so. The MUS approach may be used as a nutrition-sensitive intervention if specific steps are taken and if specific elements are included in programs. SPRING identified several areas where organizations desiring to improve nutrition through MUS might benefit from additional resources and/or design, implementation, or monitoring and evaluation assistance.



© 2003 Jones Kilonzo, Courtesy of Photoshare

There are several opportunities that have become evident through this review of MUS activities that may be useful in making MUS more nutrition-sensitive:

- Identify situations and provide recommendations in current agriculture and nutrition programs where MUS isn't present but has the potential to contribute to support both agricultural production and nutrition outcomes.
- Support efforts (already started by Winrock International) to draft nutrition indicators relevant to MUS programs.
- Use existing communities of practice and/or other fora to engage a range of stakeholders working in the area of agriculture irrigation systems and technologies, WASH, nutrition, and health to discuss MUS and how it could be improved to better include nutrition goals, activities, and outcomes. This could include a workshop around the linkages between water, nutrition, and agriculture and provide an opportunity for knowledge exchange, sharing of better practices, and practical application of evidence in developing program-specific plans for improving nutritional outcomes through MUS. Potential additional themes or topics for discussion include but are not limited to: approaches to community water access, preventing and reducing child exposure to human and animal waste, aflatoxins, and environmental enteropathy.

References

Adank, Marieke, van Koppen, Barbara, and Stef Smits. 2012. *Guidelines for planning and providing multiple-use water services.* IRC International Water and Sanitation Centre and International Water Management Institute. Retrieved from: http://www.musgroup.net/home/publications_and_resources/books_case_studies_and_reports/global_guidelines_for_planning_and_providing_multiple_use_water_services.

Herforth, Anna, and Jody Harris. 2014. *Understanding and Applying Primary Pathways and Principles. Brief #1. Improving Nutrition through Agriculture Technical Brief Series*. Arlington, VA: USAID/Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project. Retrieved from: http://www.spring-nutrition.org/sites/default/files/publications/briefs/spring_understandingpathways_brief_1.pdf.

USAID 2013. *USAID Water and Development Strategy 2013–2018.* Retrieved from: http://www.usaid.gov/sites/default/files/documents/1865/USAID_Water_Strategy_3.pdf.

van Koppen, Barbara, Moriarty, Patrick, and Eline Boelee. 2006. *Multiple-use water services to advance the Millennium Development Goals.* Research Report 98. Colombo: International Water Management Institute. Retrieved from: http://www.musgroup.net/page/1056.

Winrock International 2014. *A Guide to Multiple-Use Water Services.* Retrieved from: http://www.rockefellerfoundation.org/uploads/files/6017a66b-db64-46ca-97ff-2db8e873cc04.pdf.

Annex A

Key Organizations and Activities

Name	Countries	Project Name (If Applicable)	Partners (If Applicable)	Timeline (If Applicable)	Activities	Goals	M&E Indicators
iDE	Nepal			Ongoing	Design and demonstration of using solar lifting for MUS designed for domestic and agricultural needs	Increase Income	Anthromorphic indication
					Literacy Classes with health, WASH, and nutrition messages embedded	Women's empowerment	Household behavior indicators
					Drip irrigation	Improve nutrition	Dietary diversity indicators
					Women farmers' groups		
					Multiple-use water services		
Catholic Relief Services	Ethiopia	There are 5 WASH projects in 16 districts	USAID	2011 - 2016	Taps - drinking / cooking	To create water services and meet people's drinking hygiene, sanitation, and livelihoods needs	National level nutrition indicators
					Basins / Showers - washing		USAID Title II Indicators
					Troughs - livestock watering		
					Drip irrigation kits / sprinklers		
					Soil / water conservation		
					Livestock management		
					Water Source Construction		
					Sanitation coverage / latrine construction		
					Health Education		
					Income generation support		
					Ag / Home garden support		
Global Water Initiative	Ghana	GWI - Ghana	Catholic Relief Services	2009 - 2012	Increased access to appropriate and sustainable potable water delivery and sanitation systems	Ensure that vulnerable populations in the Upper West Region have reliable access to water and sanitation in a way that will preserve their dignity, rights, culture, livelihoods, and natural environment	
			CARE		Building water constituencies	Nutrition is listed as a benefit of MUS, but not specifically part of goals, objectives, or activities	
			IUCN		Improved and functional water governance and partnership mechanisms for IWRM		

Name	Countries	Project Name (If Applicable)	Partners (If Applicable)	Timeline (If Applicable)	Activities	Goals	M&E Indicators
Winrock International	Ghana, Burkina Faso, Niger, Mali	GWI - Ghana	USAID	2009 - 2012	Identify promising locations for implementing MUS	To introduce economically and technically viable MUS that enable poor rural households to achieve sustainable and equitable access to water and improvements in health, food, security, and income	
			Florida International University		Provide reliable access to MUS that sustainably meets domestic and productive water needs		
			Global Water for Sustainability Program		Improve health for poor rural households by providing access to safe drinking water and promoting improved hygiene practices at the household level		
			Association nigerienne de marketing social		Increase annual income, enhance food security, diversify livelihoods of poor rural households through locally appropriate strategies that support and sustain income from productive water use activities, focusing on horticulture and livestock		
			Building Partnerships for Development in Water and Sanitation		Catalyze a supportive environment for MUS learning, replication, and scale up through outreach, education, and stakeholder learning workshops		
			CARE				
			IRC				
			PROMACO				
			UNESCO - IHE				
			RAIN				
			Water and Sanitation for Africa				
			PRONET North		Sustainable management of water resources through environmental protection and adaptation to climate change		
			Howard G. Buffett Foundation				

Name	Countries	Project Name (If Applicable)	Partners (If Applicable)	Timeline (If Applicable)	Activities	Goals	M&E Indicators
Millennium Water Alliance	Kenya	Kenya Arid Lands Disaster Risk Reduction (KALDRR - WASH) aka MWA - Kenya Program	USAID	2013 - 2014	Prioritize those communities most vulnerable to flood and drought within five target countries	To increase resilience to drought and flash floods while simultaneously increasing access to improved water supply and sanitation services and improving hygiene behaviors for poor and vulnerable populations	
			Food for the Hungry		Train community water committees on the life-cycle cost approach and connect them with banks and government to enhance long-term system management	Objectives:	
			Catholic Relief Services		Apply the 3R - retention, recharge, and reuse - strategy to increase water storage for use in dry times	Increase water storage capacity in arid lands	
			CARE		Build water supply using low-cost, resilient technology	Improve WASH conditions at health facilities and nutrition centers frequently used during emergencies	
			Aqua for All		Promote MUS for income generation	Improve access and use of safe drinking water, point of use water treatment, good hygiene behaviors and sanitation facilities as a means of reducing diarrheal diseases in areas with recurrent emergency levels of malnutrition and around areas of improved storage	
			Akvo.org		Promote household water treatment and safe storage (HWTSS) techniques		
			World Vision		Apply CLTS		
			Acacia Water		Collaborate with USAID's APHIAplus program in health facilities and nutrition centers		
			IRC		-Stimulate the local market for WASH materials and the emergence of private sector suppliers -Utilize multiple avenues for hygiene promotion including radio and participatory education theater -Use a collective, real-time monitoring system supported through the online FLOW and RSR platforms -Systematize learning opportunities to replicate successful innovations between implementing partners		

Name	Countries	Project Name (If Applicable)	Partners (If Applicable)	Timeline (If Applicable)	Activities	Goals	M&E Indicators
UNICEF	Ethiopia	Integrated Water, Sanitation and Hygiene (WASH), MUS and CBN	Government of Ethiopia	2013 - 2017	1,800 community-managed water supply systems established in 30 woredas (districts) benefiting 630,000 people with safe drinking water, and promoting Multiple-Use of Water (MUW)	The program is designed to demonstrate the benefit of MUS as an approach to improve WASH services, food security, nutrition, as well as productivity and income levels of community members through the demonstration of school gardens in selected 60 schools	Prevalence of severe acute malnutrition
			Government of Netherlands		150 rural primary schools (97, 500 school children) provided with a complete WASH package comprising water systems, child friendly sanitation and promotion of hygiene		Prevalence of moderate acute malnutrition
			Government of Canada		Establishment of 60 school-managed market gardens to demonstrate the benefits of MUS to the surrounding communities		Prevalence of diarrheal disease
					150 rural health facilities provided with complete WASH package		Prevalence of exclusive breastfeeding
					Community Led Total Sanitation and Hygiene promoted resulting in home-built toilets, benefiting an estimated 280,000 families		Complementarities of food
					Strengthened intervention schools' and communities' capacity for communication for behavior and social change, resulting in improved hygiene, nutrition and reproductive health knowledge, attitudes and practices		Prevalence of school feeding programs
					Scaling-up of CBN package in 15 woredas targeting 134,000 children under-two years with GMP activities		Access to nutritionally dense food
					Supporting local production of complementary foods targeting 60 percent of children under-two years		Improved food diversity through consumption of fruits and vegetables
					Implementing CHDs in 15 target woredas		Education Attrition
					Establishing nutrition education in 60 percent of the schools through nutrition clubs and Behavioral Communication for Change (BCC) activities		Performance rates of school children
					Providing micronutrient supplementation using iron-folic acid tablets to 75,000 pregnant and lactating mothers and 50,000 of adolescent girls		Access and utilization of safe water
					Strengthening the capacity of HEWs and health workers on nutrition and data management		Proper hygiene and sanitation practices and behaviors
							Health services utilization rate
							Presence of strong nutrition surveillance and information management systems

Annex B

Interview Guide

1) What are the main goals of your MUS program(s)?
2) How did you select MUS as the approach for promoting water access in the areas you have done so?
3) Do you incorporate anything else besides water into your programming?
4) Based on your experience in MUS, what is your view of the connection between agriculture and nutrition in the MUS context?
5) Does your program have any role in enhancing nutrition? Are your programs doing anything to link MUS, agriculture, nutrition?
6) If so, what are the nutrition or health-related services implemented as part of the MUS activity?
7) If not, are there specific reasons that have prevented you from doing so?
8) Is it something you think your organization would be willing to or interested in doing? What would help you?
9) Is nutrition an explicit part of your MUS activities? Is it implemented in conjunction or separately?
10) If so, how are you measuring the nutrition impacts?
11) Do you have any case studies of your program having an impact on nutrition?
12) What, in your opinion, is needed to make MUS more widely used or applied within and across development programs?
13) What are the main benefits or strengths and the main challenges or weaknesses to MUS?

SPRING

JSI Research & Training Institute, Inc.

1616 Fort Myer Drive, 16th Floor ○ Arlington, VA 22209 ○ USA

Phone: 703-528-7474

Fax: 703-528-7480

JSI Research and Training Institute, Inc. ○ Helen Keller International ○

The International Food Policy Research Institute ○ Save the Children ○ The Manoff Group