



**wash**plus  
Supportive Environments for Healthy Communities

# Mali End of Project Report

JUNE 2016





## ABOUT WASHPLUS

The WASHplus project supports healthy households and communities by creating and delivering interventions that lead to improvements in WASH and household air pollution (HAP). This five-year project (2010-2015), funded through USAID's Bureau for Global Health and led by FHI 360 in partnership with CARE and Winrock International, uses at-scale programming approaches to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under age 5 globally.

## RECOMMENDED CITATION

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## INTRODUCTION

### Background

Mali is currently ranked 179 of 188 countries in the human development index (2015). It has one of the highest fertility rates in the world (6.6 children/woman),<sup>1</sup> and a 2015 child mortality rate of 115 per 1000 live births.<sup>2</sup> The country experiences food insecurity and hunger. Studies indicate that undernutrition is the cause of 45 percent of child deaths globally. Further, stunting (low height for age) has lifelong consequences impacting the physical and mental growth of children, which reduces educational gains and economic potential. Poverty and food insecurity that contribute to undernutrition rates have changed little in Mali and are exacerbated by inadequate feeding practices as most children are not exclusively breastfed, and few children under 2 years receive a minimum acceptable diet.<sup>3</sup>



*Mothers feed their children nutritious porridge after a cooking demonstration.*

The causes of undernutrition are complex and varied, but most hinge on inadequate water, sanitation, and hygiene (WASH) and nutrition-related behaviors. The behaviors result from a range of factors—insufficient information on appropriate hygiene and nutrition practices along with poverty, lack of key critical supplies and services, and cultural practices and social norms, such as extended family dynamics and unequal gender relations, which affect family food allocation.

### Project Overview

The WASHplus project, led by FHI 360 with CARE USA as a core partner, created and supported interventions leading to improvements in WASH and explored and promoted innovation in the WASH sector, including integrating WASH into related areas such as nutrition. In 2012, USAID/Mali requested WASHplus to submit a plan for an integrated WASH and nutrition project in the Mopti region of Mali.

<sup>1</sup> USAID: Mali Nutrition Profile. 2014. [https://www.usaid.gov/sites/default/files/documents/1864/USAID-Mali\\_NCP.pdf](https://www.usaid.gov/sites/default/files/documents/1864/USAID-Mali_NCP.pdf)

<sup>2</sup>The World Bank, Under 5 Mortality Rate.

<http://data.worldbank.org/indicator/SH.DYN.MORT><http://data.worldbank.org/indicator/SH.DYN.MORT>

<sup>3</sup> USAID: Mali Nutrition Profile. 2014. [https://www.usaid.gov/sites/default/files/documents/1864/USAID-Mali\\_NCP.pdf](https://www.usaid.gov/sites/default/files/documents/1864/USAID-Mali_NCP.pdf)

WASHplus targeted 180 villages in 18 communes in 3 districts (Mopti, Bandiagara, and Bankass) in northern Mali—USAID priority areas. The program benefitted from the CARE presence in each district, but the villages selected had very few, if any, latrines. Working through CARE Mali, the WASHplus/Mali project goal was to improve the nutritional status of children (especially those under 2 years of age) in poor, rural households and communities. The program had three objectives to reach this goal:

1. Increase supply of appropriate, affordable, and sustainable WASH solutions
2. Increase demand for low-cost sanitation
3. Improve sanitation and hygiene practices and nutrition behaviors

Implementation villages were selected using a participatory methodology orchestrated by the government at district and commune levels to allow for transparent selection using an objective, needs-based approach that avoids duplication with other development partners working in the same communes. This process also effectively garnered broad institutional support among government stakeholders in the district offices of health, water, and sanitation.

The local partners introduced the project to the local district authorities and collected additional baseline information that helped to refine the project strategy. The project found that active women's groups existed in all intervention villages as did community health workers, though some were not very active. Most communities had nonfunctional WASH committees, and villagers rarely contributed to maintaining and repairing community water points.

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## PROJECT ACTIVITIES

The project developed a comprehensive strategy to guide all activities at the beginning of the project, which was completely understood and executed by the field team. This strategy was based on an assessment of what has worked in WASH and nutrition in Mali and around the world and discussions with partners and communities.

WASHplus's core activity revolved around community-led total sanitation (CLTS). The promise of project support for digging or rehabilitating water points was designed as an incentive for communities to become open defecation free (ODF). WASHplus emphasized improving nutrition and hygiene practices through a range of behavior change approaches and identified undernourished children and referred them to community health/nutrition centers for treatment.

## Sanitation and CLTS+

CLTS is a participatory approach to improve access to and use of latrines in place of open defecation. Community members analyze their traditional sanitation practices and discuss publicly what happens to all that “shit” in the environment. Effective CLTS community triggering events “ignite” a sense of shared disgust and shame when members realize they are ingesting one another’s feces. This spurs latrine construction at the village level. WASHplus introduced a CLTS+ approach that also promoted handwashing with soap.



*Animator discusses health topics at community meeting.*

Understanding that CLTS is a process rather than a one-time community mobilization event, WASHplus established a calendar for monitoring visits. Village sanitation

committees and facilitators monitored villages that have not yet reached ODF status even after being triggered. The external monitoring by commune, district, and regional staff helped to maintain community commitment to latrine construction and served to reinforce important hygiene messages such as washing hands with soap, exclusive breastfeeding until six months, and complementary feeding for children over 6 months.

Latrine construction in the Mopti region’s rural communities has long proved challenging because different geographic areas required different types of latrines depending on the soil type. In areas that have a high water table or are flood prone, the pits are shallow and fill quickly. In sandy soils, the pits tended to collapse during the rainy season, and in the rocky soil of the Dogon Plateau, the population could not dig holes by hand. Thus, WASHplus and technicians from the public health offices in each district worked with one mason selected from each district to design new latrine models to fit the geologic context. Two masons from each village were trained in latrine construction. The masons learned simple techniques to identify the type of pit required as well as how to protect the wood and strengthen the waterproofing of the slab. Training masons **before triggering the villages** was a WASHplus innovation that ensured that masons were able to provide advice and/or construct the latrine when households were ready for a small fee using materials secured by the villager.

Rehabilitating water access points was planned to incentivize villages to become ODF. At the start of the project, WASHplus inventoried the existing water points in the target villages and identified problems. Villages were ranked by district and by commune based on their CLTS+ progress. In each district, the first two villages in each commune to reach ODF status were selected for water point rehabilitated or to receive a new water point. This competition

motivated communities to become ODF quickly. WASHplus assisted more than 55 percent of villages that reached ODF status to rehabilitate at least one water point.

### **Behavior Change Efforts/Hygiene Promotion**

Community health workers, called *relais*, are central to the Malian health system as messengers of information and promoters of healthy behaviors. WASHplus worked closely with *relais* to promote behavior change at the household and community levels and to offer support, outreach, and extension services to the community health clinics. The project organized training and capacity-building sessions for *relais* to use the Ministry of Health–approved and WASHplus-developed WASH-nutrition job aids to facilitate behavior change. They were taught how to negotiate improved behaviors with mothers, depending on their current behaviors.



*Community relais shows women how to hold a child for breastfeeding and reinforces the need to breastfeed exclusively until the child is 6 months.*

Each village received a set of visual aid toolkits for the *relais*. Facilitators and supervisors also received the visual aids and trainers’ guide. *Relais* organized awareness-raising sessions with community groups using the job aids. Trainers and participants alike highly appreciated them, noting that they are valuable resources to use when counseling mothers. After the Ebola virus was detected in Mali, WASHplus integrated Ebola messaging into the training guide to help people understand the history, transmission modes, and hygiene measures to prevent the disease.

The *relais* used the existing women’s groups—including village savings and loan associations (VSLA)—as entry points to promote improved nutrition and hygiene behaviors. During household visits, *relais* counseled caregivers on practices tailored to a particular household such as handwashing with soap; safe treatment and storage of drinking water; exclusive breastfeeding; complementary feeding and safe disposal of feces. A competition was also initiated among villages in the three districts to create and use tippy taps to promote handwashing.

**Water treatment.** WASHplus, in collaboration with the Regional Directorate of Health, trained community health workers in the different point-of-use water treatment methods. They further refined the materials and cascaded the training to all community health workers and community health agents in the 18 project communes. In 2015, WASHplus began conducting water treatment demonstrations using PUR that clearly showed that unprotected water in villages is not safe.

**Exclusive breastfeeding.** The project promoted exclusive breastfeeding in two ways. The relais visited VSLAs and other women's groups and used the counseling cards to talk with new mothers about the importance of exclusive breastfeeding. The relais also conducted household visits to support women with problems breastfeeding and promote exclusive breastfeeding with other family members such as the husbands and mothers-in-law. Radio spots and live debates supported these messages.

**Nutrition demonstrations.** Nutrition demonstrations showed parents how to expand children's diet by introducing locally available and affordable food products and recipes. WASHplus trained relais and community health workers to organize and lead nutrition demonstrations at the commune and village levels and at community health facilities. The cooking demonstrations covered infant and young child feeding practices, including how much food children of different ages should be eating. In addition, parents were taught how to classify foods into food groups and the importance of giving children food from each different group. Parents attending the demonstrations were taught to prepare nutritious recipes using locally available and affordable products, such as enriched porridge made of millet, beans, peanuts, salt, sugar, baobab tree fruit, or tamarind. Demonstrators also showed how to breastfeed and integrated WASH into these nutrition sessions by modeling handwashing with soap before touching food and demonstrating and/or discussing point-of-use water treatment.

**Media.** WASHplus developed a radio strategy to improve communication and raise awareness about WASH and nutrition. Each radio station used a weekly timeslot to broadcast the results of CLTS+ monitoring visits in local languages to create a sense of friendly competition among the villages. The station then hosted debates with local champions. Radio spots also advised taking severely malnourished children to health centers. These programs helped to maintain community momentum around latrine construction and use and nutrition screenings.

**Nutrition referrals and support for accompanying caretakers.** During their household visits, relais screened children under 5 years old for malnutrition by measuring the circumference of the child's mid-upper arm. Severely and moderately malnourished children were triaged and referred to health centers. Health center personnel also attended village events and screened children. WASHplus facilitators worked with health workers at the community health centers (CSCOM) to screen children and enter data into the registers. Before WASHplus began, data from January 2013 showed that 17 percent and 6 percent of children in Bankass and Bandiagara, respectively, did not visit the referral centers because caretakers could not afford the trip. To promote adherence, WASHplus covered the transport and food costs for caretakers of all children with severe malnutrition with complications from intervention villages, while UNICEF contributed food products to rehabilitate malnourished children to all referred children in these two districts. Now families bring their children to the referral centers. Furthermore, as the project ended, WASHplus developed an approach to support VSLAs in 20 villages to assume the transport and food costs in the future.

## Project Accomplishments

After 30 months of implementation, the WASHplus project in Mali made steady progress and accomplished its objectives. These accomplishments fall into three main categories including: improved policies adopted at the regional level that may become national standards; increased capacity within the intervention districts to provide WASH and nutrition interventions; and improved infrastructure and practices at the community level that will help to enhance the health outcomes of women and children in the targeted villages.



*A family stands in front of their newly built latrine.*

## Program Outputs

**Table 1. Program Outputs—Cumulative**

<b>SANITATION AND HYGIENE OUTPUTS</b>	<b>NUMBERS</b>
New latrine designs developed	4
Villages reaching ODF status	146
Villages with post-ODF plans	100
New or rehabilitated latrines	10,230
New handwashing stations	15,423
People gaining access to an improved latrine facility	71,610
<b>WATER ACCESS</b>	
Village water committees with sustainability strategies	47
New water sources created/renovated	98
People gaining access to improved drinking water	39,200
Aquatabs sold	174,208
<b>NUTRITION OUTPUTS</b>	
Cooking and breastfeeding demonstrations	1,233
Water treatment demonstrations	1,875
Children under 2 screened periodically throughout the year	19,000
<b>ENVIRONMENTAL OUTPUTS</b>	
Trees planted	7,269

## **Policy**

WASHplus worked closely with the regional directorates for health, sanitation, and water services. The project supported these government entities to celebrate the various global days related to WASH and nutrition, including International Women’s Day, African Women’s Day, World Water Week, National Immunization Day/ National Week of Enhanced Nutrition, National Week of the Environment, Global Handwashing Day, and World Toilet Day. WASHplus showcased its activities and innovations at a national forum on water and sanitation and at regional WASH dialogues that were established to feed into a national event. Key recommendations included:

- Improving communication and experience sharing among stakeholders
- Sharing ownership and facilitation of future WASH meetings between the regional directorates of sanitation and water
- Using WASHplus innovations for constructing latrines within the national CLTS program.

The Government of Mali’s national CLTS policy was updated to incorporate the WASHplus-developed latrine options that target different types of latrines for different zones—flood, sandy, rocky.

In addition, WASHplus worked with the government to improve the training guide for communities to develop post-ODF action plans: first developing a module to help CLTS facilitators revitalize WASH committees and implement a sustainability plan and second promoting tree planning to mitigate the effects of cutting trees for constructing traditional latrines. The regional director of sanitation in Mopti is seeking to include tree planting as a condition of post-ODF planning.

## **Increased Capacity**

WASHplus trained about 400 community extension workers to negotiate improved WASH and nutrition practices at the household level reaching community members in 180 villages. These included CLTS triggering and nutrition and water treatment demonstrations at the community level and individual household visits that focused on promoting exclusive breastfeeding, handwashing with soap, and nutrition counseling and referrals.

These workers regularly monitored and referred malnourished children in project intervention villages. In the target areas, the number of children referred has diminished drastically as shown in the chart below.



*Relais prepare to visit children in their villages to measure mid-upper arm circumference and discuss improved WASH and nutrition practices with the community.*

**Table 2. Quarterly Nutrition Referrals at Beginning and Middle of Project**

	REFERRALS APRIL– JUNE 2014	REFERRALS APRIL– JUNE 2015
Moderately malnourished children	2,050	334
Severely malnourished children with complications	269	38

During the period January–March 2016, only 4 of the 38 severely malnourished children with complications at the Nutrition Rehabilitation Unit came from the project area.

### ***Improved Community Infrastructure and Practices***

Communities have eagerly embraced the ODF village concept. By the end of the project, 81 percent of villages triggered by WASHplus were certified as ODF. Within these communities, over 10,000 latrines were constructed, rehabilitated, or upgraded since the start of this project, and more than 11,000 latrines have been equipped with a handwashing device. Several villages also built communal latrines in farms, gardens, schools, and markets to ensure the community remains ODF. A total of 98 water points were constructed or rehabilitated to ensure communities have access to water, and the government is testing the water quality. Further, many households now understand that most drinking water is not safe to drink and are purchasing water treatment tablets (over 174,000 tablets in the 180 villages). With project support, communities planted over 7,000 fruit trees to mitigate the environmental impact of using wood to build latrines with a 65 percent survival rate.



*WASHplus-trained mason reinforces the latrine walls in the sandy zone.*

To sustain ODF status, WASHplus assisted 100 ODF communities to develop post-ODF action plans. All the communities have implemented these plans and some have developed follow-on plans. WASHplus has also assisted all ODF villages to improve their environmental sanitation by providing sanitation kits.

### **Indicators**

WASHplus has come within 10 percent of meeting or has exceeded all of its program indicators as noted in the table below.

**Table 3. Cumulative Indicators Table with Target Included**

(All data is project monitoring data except where specified)

INDICATOR	TARGET	RESULT	COMMENT (PLEASE EXPLAIN WHY YOU ARE ABOVE OR BELOW TARGET BY 10%)
<b>MATERNAL AND CHILD HEALTH</b>			
Number of households with soap and water at a handwashing station used by family members in USG-supported programs	10,540	15,370	Intensive competition among post-ODF villages producing tippy taps led to higher than expected results
<b>NUTRITION</b>			
Number of people trained in child health and nutrition through USG-supported programs	430	444	All were trained two times: once for testing and referrals for malnutrition and another for using the WASH-nutrition communication tools
Number of men		321	
Number of women		123	
Number of children under 5 reached by USG-supported nutrition programs	20,000	19,579	
Number of male children	9,800	9,836	
Number of female children	10,200	9,743	
Prevalence of exclusive breastfeeding of children under 6 months of age (Standard)	34.3%	63.3%	The work plan objective was a 20% increase compared to baseline study. But results far surpassed this, due primarily to the development and implementation of a comprehensive behavior change strategy at the beginning of the project, which was completely understood and executed by the field team. (Source: Baseline and endline surveys)
Prevalence of children 6–23 months receiving a minimum acceptable diet (Standard)	8.1%	32.9%	The work plan objective was a 20% increase compared to baseline study. But results far surpassed this, due primarily to the development and implementation of a comprehensive behavior change strategy at the beginning of the project, which was completely understood and executed by the field team. (Source: Baseline and endline surveys)

<b>WASH</b>			
Number of communities certified as ODF as a result of USG assistance	145	146	
Number of people gaining access to an improved sanitation facility	70,000	71,610	
Number of men	34,300	35,089	
Number of women	35,700	36,521	
Number of individuals trained to implement improved sanitation methods	364	359	
Number of men	364	359	
Number of women	0	0	
Number of people with access to drinking water	41,200	39,200	NB: 5 planned water points could not be finished before project ended on April 30, 2016 (within 10%)
Number of men	20,188	19,208	
Number of women	21,012	19,992	

WASHplus conducted baseline and endline studies to determine the effects of the intervention. The following table compares the indicators detected at baseline with those found at the endline after two years of the intervention.

The changes in the intervention zone (gray column) are significant at 95 percent or higher (cells with bold numbers) for 18 of the 19 listed indicators (diarrheal incidence is not significant) from baseline to endline. In comparison, in the control zone, only 14 of the 19 indicators showed a similar significant change (cells with bold numbers). The four cells in the intervention zone column that are highlighted in darker gray are the ones where the change is significant in the intervention zone, but not in the control zone.

**Table 4. Comparison of Indicators from Baseline and Endline Surveys for Intervention and Control Areas**

Indicator	INTERVENTION			CONTROL		
	Baseline N = 860	Endline N = 800	p value (Kolmogorov)	Baseline N = 860	Endline N = 800	p value (Kolmogorov)
<b>Health</b>						
% of households with children under 2 who had diarrhea in the two weeks before the study	34.5%	27.3%	0.29	33.6%	30.1%	0.62
<b>Sanitation</b>						
% of households who defecated in the open	53.0%	5.9%	<b>0.00</b>	58.1%	26.9%	<b>0.00</b>
% of households with improved sanitation	18.4%	57.5%	<b>0.00</b>	16.9%	31.8%	<b>0.00</b>
% of mothers who effectively disposed of their children’s feces	21.6%	83.5%	<b>0.00</b>	28.0%	53.5%	<b>0.00</b>
% of mothers who used potty to collect child’s feces	43.8%	84.6%	<b>0.00</b>	44.1%	67.0%	<b>0.00</b>
<b>Water</b>						
% of households who did not know that water should be treated	18.4%	3.6%	<b>0.00</b>	21.3%	7.8%	<b>0.02</b>
% of households who used solid chlorine (Aquatabs) to treat drinking water at home	4.9%	7.8%	<b>0.00</b>	4.8%	2.1%	0.94
% of households who used liquid chlorine to treat drinking water at home	15.2%	36.4%	<b>0.00</b>	13.1%	15.1%	0.97
% of households who used jerry cans to transport drinking water	25.3%	31.1%	<b>0.00</b>	19.6%	23.7%	0.14
% of households who used a jar to store drinking water	8.5%	97.6%	<b>0.00</b>	7.5%	98.1%	<b>0.00</b>

% of households who practiced good drinking water conservation (water container well-closed, adjusted, and out of reach of children and animals)	25.7%	43.5%	<b>0.01</b>	26.6%	34.5%	<b>0.01</b>
<b>Hygiene</b>						
% of respondents who said they washed their hands after defecation	65.9%	83.9%	<b>0.01</b>	65.2%	75.0%	<b>0.02</b>
% of respondents who said they washed their hands before eating	59.5%	83.4%	<b>0.00</b>	61.6%	73.8%	<b>0.03</b>
% of respondents who said they washed their hands before preparing food	22.1%	53.1%	<b>0.00</b>	to 19.2%	42.6%	<b>0.00</b>
% of respondents who said they washed their hands before feeding their child	20.2%	44.6%	<b>0.02</b>	19.2%	34.0%	<b>0.02</b>
% of respondents who said they washed their hands after anal cleansing of their child	28.8%	42.1%	<b>0.03</b>	25.5%	21.4%	0.26
<b>Handwashing</b>						
% of households with functional handwashing device	13.6%	35.5%	<b>0.00</b>	16.0%	35.9%	<b>0.00</b>
<b>Nutrition</b>						
	n = 435	n = 207		n = 428	n = 222	
% of children 6–23 months who received a minimum acceptable diet	6.2%	32.9%	<b>0.00</b>	9.3%	27.3%	<b>0.00</b>
% of children under 6 months who were exclusively breastfed	26.4%	63.3%	<b>0.00</b>	30.9%	61.3%	<b>0.00</b>

**Table 5. Comparison of Indicators at Endline Survey between Intervention and Control Cells**

A comparison of the results at the endline between the intervention and control zones shows significantly (95% or higher) better results for the intervention zone for six of the indicators, including incidence of mothers effectively disposing of their children’s feces, incidence of households defecating in the open, incidence of households using liquid chlorine to treat drinking water at home, and incidence of mothers reporting they washed their hands after anally cleansing their child.

INDICATOR	ENDLINE		P VALUE (KOLMOGOROV)
	INTERVENTION	CONTROL	
	N = 800	N = 800	
<b>Sanitation</b>			
% of households who defecated in the open	5.9%	26.9%	<b>0.00</b>
% of households with improved sanitation	57.5%	31.8%	<b>0.01</b>
% of mothers who effectively disposed of their children’s feces	83.5%	53.5%	<b>0.00</b>
% of mothers who used potty to collect child’s feces	84.6%	67.0%	<b>0.01</b>
<b>Water</b>			
% of households who used liquid chlorine to treat drinking water at home	36.4%	15.1%	<b>0.02</b>
<b>Hygiene</b>			
% of respondents who said they washed their hands after anal cleansing of their child	42.1%	21.4%	<b>0.02</b>

### Spreading the Word

WASHplus was fortunate to be able to share the activities, results, and lessons learned in a wide variety of forums including international publications and workshops. These ranged from water and health focused conferences such as the Global Water Association in Philadelphia (April 2016), the Water Engineering and Development Centre’s conference in the UK (2015), and in Ghana (July 2016), AfricaSAN 4 (Dakar, 2015), and the WASHplus Conference: What We Did. Why It Matters (Washington, DC, April 2016). WASHplus also shared its experiences as the sole Malian participant in the 2015 UNICEF-sponsored Sahel WASH/nutrition workshop in Niamey, Niger, and also during the Nutrition Integration Forum organized by Catholic Relief Services in Nairobi, Kenya (September 2015).

In addition, the team developed a case study that was published in *Field Notes* (Winter 2016), a publication of the Emergency Nutrition Network, and supported the World Health Organization and USAID in featuring this activity in the 2015 launch of the publication *Enhancing Nutrition Outcomes through Better Water, Sanitation and Hygiene*.

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## CHALLENGES

- Insecurity in certain communes in Mopti District delayed the start of the project and slowed implementation and post-triggering activities in those villages.
- Urban WASH-marketing activities were not completed due to the inability to recruit private sector suppliers to provide latrine products based on their perceptions that this would not be a profitable investment.
- Some villages, especially in Bandiagara, are basically nomadic. This resulted in lower levels of ODF certification in these villages as well as a higher rate of death to trees planted by the project to offset use of wood in latrine-building in nomadic ODF villages.
- Adoption of exclusive breastfeeding and treatment of drinking water was difficult due to socio-cultural barriers.
- Implementation of a development project like WASHplus was difficult given the project had to compete for field workers who were simultaneously receiving higher pay to work on relief activities.
- Coordination of work for an integrated project involves collaboration among several different ministries, which is often complicated due to their varying schedules.

## LESSONS LEARNED

**Local stakeholders are critical to success.** WASHplus/Mali engaged local stakeholders at different levels throughout the process of implementing the WASH-nutrition interventions. Community leaders and local government officials were all involved in making decisions and monitoring implementation and thus had a stake in seeing progress and success. Facilitating community discussions using the participatory decision-making approach helped to develop sustainable local systems to finance operation and maintenance costs of water points and triggered income-generating activities that also improve health behaviors. Involving masons from the community in producing new designs of cheaper, traditional latrines adapted to the environment was embraced by communities. Monitoring visits revealed that masons trained to construct low-cost latrines continued to innovate to adapt their products to the local context. These masons are being viewed as change agents in the villages. They take great pride in their work and are dedicated to achieving universal latrine coverage in the villages they serve.

**Demonstrations expose problems and help define solutions.** The project found that demonstrating water treatment with PUR powder visibly showed that water is not safe, which increased community understanding about the need to treat drinking water. Showing men and women in the community how to prepare nutritious recipes using local products encouraged families to accept and adopt such improved practices. Engaging community champions to convey new ideas during radio programs increased understanding and encouraged healthy competition among communities in implementing good WASH practices.

### **Competition spurs action and innovation.**

WASHplus found that inciting competition among communities was effective in changing behavior and achieving results in a short timeframe. It also helps maintain a community's momentum to move toward the desired change. Further, providing incentives to benefit the community such as rehabilitating a broken water point encouraged them to move quickly. One community used village funds to purchase chlorine products and then established a sanitation shop in the village to enable families to have regular access to these products. Another village created a sanitation store to provide durable latrine covers. Households that did not purchase a cover or had a damaged cover were fined. Finally, the villagers of Yarou Plateau emulated its neighbors from nearby Gouna by building latrines, sweeping the whole village every Thursday, and treating drinking water that resulted in reduced incidences of diarrhea and a clean community.



*Malian woman washes her hands with a tippy tap she made in her home after attending a session on building tippy taps.*

**WASH-nutrition integration offers challenges but promise.** Anecdotal evidence and comparative survey results from this project indicates that integrated programming has positively influenced behaviors and health. Village women see changes in their children's health; households are purchasing water treatment; communities are building latrines in fields and at bus stations to prevent open defecation; other communities are cleaning their villages of plastic and animal waste and becoming entrepreneurs by creating businesses to support nutrition and hygiene.

Attributing reductions in undernutrition to WASH-focused activities is difficult. Even if WASH programs collect anthropometric indicators such as stunting or wasting, which most do not, it is difficult to determine to what extent the inclusion of WASH interventions has influenced changes in nutritional status and growth. Measuring such changes requires much more sophisticated evaluation design and analysis. In addition, detecting changes in growth patterns often requires timeframes longer than typical WASH programs and funding cycles. While evidence exists to support WASH and nutrition integration, more data is needed to demonstrate how and in which ways specific WASH mechanisms affect nutrition outcomes and lead to strong and sustained impact.

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## CONCLUSION: LOOKING TO THE FUTURE

### **WASHplus Mali Results and Dissemination Workshop**

To celebrate accomplishments of its integrated WASH and nutrition project in Mali and to mark the activity's conclusion, WASHplus held a two-day results and dissemination workshop March 23–24, in Bamako. Attracting 80 participants from several ministries, regional and local technical services, elected officials, intervention-village representatives, USAID, and other donors, projects and NGOs, the workshop provided a platform to share project strategies, innovations, and lessons learned. Participants actively debated how these strategies and innovations should be adopted elsewhere in Mali. The feeling of celebration generated by the project's open defecation free village certification ceremonies was recreated by performances of musicians from the region and a theatre troupe, and project results were summarized in the project video. WASHplus developed an infographic poster, "What's the Recipe for a Healthy Child in Mali?" to visually display the project's significant results: decreased open defecation, improved minimum acceptable diet, increased water treatment and handwashing among caregivers, and decreased diarrhea for under twos—and to summarize project outputs and keys to success.

### ***Feedback on WASHplus Workshop, Innovations, and Achievements***

Two television stations, ORTM and the international Africa-station AFRICABLE, and three local newspapers covered the workshop. Based on the newspaper reports, the Voice of America conducted a five-minute interview with the project manager, Sahada Traoré, broadcast on Radio Klédu.

Participants were impressed, not only with the results, but with the product documents (two results documents, latrine construction posters and guide, success stories, and the video), and many requests were received for additional copies. All WASHplus Mali documents have been uploaded onto the CARE International website.

Most importantly, the impact of WASHplus in this region has been manifold and its legacy has been recognized officially by colleagues, regional and local officials, and the community.

- Each of the women from the different villages attending the workshop testified to the importance of WASHplus in improving her family's and community's well-being.
- Other programs/projects have started using the latrine models developed by WASHplus and/or adapting new models using the same process.
- Other CARE WASH programs have had success training masons prior to CLTS triggering to ensure that demand for latrine construction will be met in a timely and responsive manner. Save the Children came from Sikasso to see how this worked, and Protos and other programs/ organizations have asked for the training manuals.

- *Every time I go to the field, I am greeted with shouts of "WASHplus."* —Regional water laboratory manager
- *I want to again congratulate the WASHplus project, which has definitively influenced WASH in Mopti and beyond.* —Kalifa Keita, UNICEF water, sanitation and hygiene specialist
- *I sincerely thank you for WASHplus's good collaboration. We have learned good lessons from this first partnership to improve CLTS approaches and this was really a plus for the Mopti region. When a project is built on past experiences and collaboration of all stakeholders, the result can only be successful. WASHplus has experienced this success...We have always been eager for innovation in the CLTS approach to address specific problems...and the WASHplus team has produced good tools on CLTS innovation that have been given to all stakeholders. On behalf of all WASH actors in the Mopti region, I thank the entire team of WASHplus and hope that activities will continue and benefit of people in the Mopti region in particular.* —Soma Konaré, WASH officer, UNICEF-Mali, Mopti Field Office and Mopti WASH sector group.
- *Our [commune council's] sincere thanks for your development projects in our commune, notably in hygiene, sanitation in villages and schools, village water and nutrition...All these activities have without a doubt offered an agreeable state of living to our population, allowing them to improve their health, economic, and social conditions.* —Mayor Soumailu Guindo, Kani-Bonzon Commune, Bankass District.
- *Following the good results achieved by the WASHplus project in Mopti region, I have been contacted by an experienced field worker who wants to develop a three-year project...in the WASHplus project villages that have received rehabilitated water points, sanitation, and nutrition...to sustain the functionality of WASHplus achievements by reducing the rate of water pump breakdowns.* —Emmanuel Tototegue Dembele, division chief, Inventory and Resource Management, Mopti Regional Water Department

## ANNEXES

### Annex 1. Cumulative Data for Entire Project (Source: Project Monitoring)

**Table 1: Number of Triggered Villages per District**

DISTRICTS	NUMBER OF VILLAGES TRIGGERED	NUMBER OF INDIVIDUALS PUBLICLY DECLARING THEIR COMMITMENT TO BUILD A LATRINE
Bandiagara	60	1,637
Bankass	60	2,223
Mopti	60	1,316
<b>Grand Total</b>	<b>180</b>	<b>5,176</b>

**Table 2: Number of Villages Certified as ODF per District Since Project Started**

DISTRICT	ODF VILLAGES CUMULATIVE SINCE PROJECT STARTED
Bandiagara	54
Bankass	52
Mopti	40
<b>Total</b>	<b>146</b>

**Table 3: Number of Latrines Built—Cumulative Since Project Started**

DISTRICT	NEWLY CONSTRUCTED LATRINES	LATRINES REHABILITATED	TOTAL LATRINES	LATRINES WITH HANDWASHING STATION
Bandiagara	3,169	606	3,775	3,173
Bankass	2,942	680	3,622	3,600
Mopti	1,960	873	2,833	4,664
<b>Total</b>	<b>8,071</b>	<b>2,159</b>	<b>10,230</b>	<b>11,437</b>

**Table 4: Number of Trees Planted since Project Started**

DISTRICT	NUMBER OF TREES PLANTED	NUMBER OF TREES ALIVE	NUMBER OF DEAD TREES	RATE OF SURVIVAL
Bandiagara	2,849	2,106	743	74%
Bankass	2,749	1,488	1,261	54%
Mopti	1,671	1,099	572	66%
<b>Total</b>	<b>7,269</b>	<b>4,693</b>	<b>2,576</b>	<b>65%</b>

**Table 5: Number of Aquatabs Sold Per District Since Project Started**

DISTRICT	RELAIS/ COMMUNITY HEALTH WORKER	COMMUNITY HEALTH CENTER	SHOPS	OTHER	TOTAL
Bandiagara	62,824	3,075	6,427	0	72,326
Bankass	14,479	6,212	2,600	11,734	35,025
Mopti	10,483	55,323	681	370	66,857
<b>Total</b>	<b>87,786</b>	<b>64,610</b>	<b>9,708</b>	<b>12,104</b>	<b>174,208</b>

**Table 6: Number of Demonstrations on Water Treatment since Project Started**

DISTRICT	WATER TREATMENT
Bandiagara	928
Bankass	665
Mopti	282
<b>Total</b>	<b>1,875</b>

**Table 7: Distribution of Children Screened by District<sup>4</sup>**

DISTRICT	REFERRALS TO URENAM		REFERRALS TO URENAS		REFERRALS TO URENI	
	Sep-14	Sep-15	Sep-14	Sep-15	Sep-14	Sep-15
Bandiagara	452	302	14	56	0	0
Bankass	318	221	3	22	0	0
Mopti	353	209	43	44	2	0
<b>Total</b>	<b>1,123</b>	<b>732</b>	<b>60</b>	<b>122</b>	<b>2</b>	<b>0</b>

Note: Comprehensive screening of all children in villages ended September 2015. Therefore, no data for 2016.

**Table 8: Distribution of Caretakers of Severely Malnourished Children with Complications Supported at URENI by WASHplus and Origin of Children at URENI, by District**

DISTRICT	NUMBER OF CARETAKERS SUPPORTED	ORIGIN OF CHILDREN IN THE URENI	
		WASHplus Area	Outside WASHplus Area
Bandiagara	104	18	204
Bankass	87	8	131
<b>Total</b>	<b>191</b>	<b>26</b>	<b>335</b>

**Table 9: Status of Admissions to URENI**

DISTRICT	ADMISSIONS		RECOVERED		DEATH		ABANDONED	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Bandiagara	114	108	99	84	11	18	2	3
Bankass	60	79	51	67	5	4	2	6
<b>Total</b>	<b>174</b>	<b>187</b>	<b>150</b>	<b>151</b>	<b>16</b>	<b>22</b>	<b>4</b>	<b>9</b>

<sup>4</sup> The number of children with severe malnutrition (URENAS) increased from the same quarter of the previous year for the following reasons:

- This year, the health service did not conduct malaria prevention chemoprophylaxis for pregnant women or children. There were very serious cases of malaria in the country, especially with the heavy rainy season
- Testing and referral was being conducted more regularly in all the health districts
- The Food and Agriculture Organization's suspension of distribution of Plumpy'Nut® and Plumpy'Sup™ for severely and moderately malnourished children (respectively) at certain CSCComs.

**Table 10: Number of Tippy Taps Produced**

DISTRICT	NUMBER OF TIPPY TAPS PRODUCED
Bandiagara	1,177
Bankass	2,614
Mopti	142
<b>Total</b>	<b>3,933</b>

**Table 11: Number of Radio Programs Broadcast, Produced, and Rebroadcast since Project Started**

RADIO BROADCASTS	OCT 2013- SEPT 2014	OCT 2014 – SEPT 2015	OCT - DEC 2015	JAN - MARCH 2016	TOTAL
Produced	39	15	2	0	56
Rebroadcast	98	73	11	24	206
<b>TOTAL</b>	<b>137</b>	<b>88</b>	<b>13</b>	<b>24</b>	<b>262</b>

**Table 12: Number of Nutrition Demonstration Sessions, since Project Started**

<b>NUTRITION DEMONSTRATION SESSIONS</b>	<b>1,670</b>
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**Table 13: Approximate Number of People Exposed to the WASH-Nutrition Messages, on a Quarterly Basis**

<b>APPROXIMATE NUMBER OF PEOPLE EXPOSED TO WASH-NUTRITION MESSAGES USING WASHPLUS TOOLS QUARTERLY</b>	<b>7,000</b>
Approximate number of women exposed to WASH-nutrition messages using WASHplus tools quarterly	5,000
Approximate number of women of reproductive age exposed to WASH-nutrition messages using WASHplus tools quarterly	4,000

## Annex 2. Environmental Mitigation and Monitoring Plan (EMMP)

**Table 14: An Environmental Mitigation Report with Key Environmental Mitigation Activities Carried Out During the Project (for Partners who Submitted an EMMP) – CUMULATIVE**

<b>Activity 1. <u>Water Supply</u>: Rehabilitate boreholes with hand pumps to provide access to an improved water source in target communities</b>			
<b>IEE or EA condition</b>	<b>Specific measure number 1</b>	<b>Report of the indicator</b>	<b>Action plan</b>
All water supply activities will be conducted in a manner consistent with the design, establishment, and implementation practices of Chapter 16: Water supply and sanitation of USAID’s environmental guidelines for small-scale activities in Africa	<ul style="list-style-type: none"> <li>Control of the quality of monitoring during rehabilitation/ protection</li> <li>Control of compliance with the state standards during the rehabilitation of water points</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>The project hired a consultant firm to continuously monitor the quality of the work at the level of the selected modern water points</li> <li>A partnership memorandum was signed with the district water technical service. Monitoring visits were carried out in partnership with the WASHplus team.</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>A permanent supervisor monitors the work in each district</li> <li>Number of supervisions performed with the water technical service</li> </ul>	<p><b>Managers: CARE</b></p> <p><b>Action:</b> Technical approval of modern wells and boreholes</p>
Microbiological and chemical contamination of improved wells can often be avoided by protective measures for the aquifer and the design and maintenance of the wells	<ul style="list-style-type: none"> <li>Construct platform with sloping apron and sump to avoid standing water around the borehole</li> <li>Fence areas around the water point</li> <li>Consider installing a water trough away from water points</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Wells and boreholes were protected against pollution</li> <li>All rehabilitated water points will include a fence</li> <li>Water troughs are located at a distance of about 30 m away from the water point to prevent the pollution of water by animal feces and urine</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of wells and boreholes protected against pollution</li> <li>Number of water points with fence</li> </ul>	<p><b>Managers: CARE</b></p> <p><b>Action:</b> Technical approval of modern wells and boreholes</p> <p><b>Observation:</b> All wells verified and provisionally accepted have met the three indicators (protection against pollution, fencing, and 30 meters between the drinking troughs and the water point)</p>

	that cattle and animals can use	<ul style="list-style-type: none"> <li>Number of drinking troughs that meet the standards of 30 meters</li> </ul>	<p><b>Comments:</b> A total of 98 water points were built or rehabilitated</p>
Water quality control is essential to determine that water is safe to drink and to determine a reference level so that any future degradation can be detected	<ul style="list-style-type: none"> <li>Sign a partnership agreement with the regional water laboratory to monitor the water quality of rehabilitated water points</li> <li>Analysis of water will be done by the regional laboratory in Mopti</li> </ul> <p>Note: Testing for arsenic can be performed according to the specifications of the state guidance cable 98 108651 of 2003.</p>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Protocol signed to monitor quality water points</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of protocols signed</li> </ul>	<p><b>Manager: CARE and local NGOs</b></p> <p><b>Actions:</b> WASHplus, in collaboration with the regional water laboratory in Mopti, continued the collection of water samples on each rehabilitated well or drilling for physicochemical, bacteriological, and arsenic analysis before delivery to the population</p>
Establish and train community water committees to manage, repair, and maintain all water points and watersheds immediately surrounding the water points, and promote better hygiene in participating communities	<ul style="list-style-type: none"> <li>Inform and educate communities to pay for the water fund and maintenance of boreholes in a microfinance institution account</li> <li>Hold village meetings around the sustainable management of water points</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>During supervision missions of the project in partnership with the water technical service, WASHplus invited the community to make their contribution to the water fund</li> <li>Hold village meetings in certified villages around the sustainable management of water points</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of villages informed during supervisory missions</li> <li>Number of village meetings held around the sustainable management of water points</li> </ul>	<p><b>Managers: CARE and local NGOs</b></p> <p><b>Actions:</b> Monitored the recommendations from general meetings for the sustainable management of water points</p> <p><b>Comments:</b> General meetings were held in certified villages around the sustainable management of water points</p>

<b>Activity 2: Sanitation: Promote construction of latrines at household level</b>			
<b>IEE condition</b>	<b>Mitigation measures</b>	<b>Report of the indicator</b>	<b>Action plan</b>
All sanitation activities are conducted in a consistent manner with the best design and implementation practices described in EGSSAA Chapter 16: Water supply and sanitation	<ul style="list-style-type: none"> <li>Conduct practical test of improved latrine construction in order to finalize the latrine design</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Implement a practical test of improved latrines in districts</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of practical tests performed in the districts</li> </ul>	<p><b>Managers: CARE</b></p> <p><b>Actions:</b> Promoted improved latrines to the general public</p>
Ensure that latrines are built far from shallow wells, tanks, springs, and boreholes	<ul style="list-style-type: none"> <li>Monitor compliance with latrine construction standards by households so that latrines are built far from water points</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Teams of local NGOs monitored the construction of latrines</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of latrines built that meet the standards of distance from water points</li> </ul>	<p><b>Managers: CARE and local NGOs</b></p> <p><b>Actions:</b> Monitoring the construction of latrines by households</p> <p><b>Comments:</b> In total 10,230 latrines were built and/or rehabilitated</p>
Training in sanitation and hygiene for households to increase public awareness about risks to human health associated with defecation, poor hygiene behaviors, and misuse and inadequate	<ul style="list-style-type: none"> <li>Organize certification ceremonies in villages to encourage ODF villages and create healthy competition among villages in the construction and use of latrines.</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Certification of villages in the districts</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of certification ceremonies organized</li> </ul>	<p><b>Managers: Local NGOs</b></p> <p><b>Actions:</b></p> <ul style="list-style-type: none"> <li>Continue the evaluation of villages to be certified and organize certification in villages</li> <li>Continue with certification ceremonies in villages</li> </ul>

maintenance of latrines			<p><b>Comments:</b> 146 villages were certified in the three health districts</p>
	<ul style="list-style-type: none"> <li>Relais educate households on WASH-nutrition tools</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Organize awareness-raising sessions on WASH-nutrition tools</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of people having participated in the awareness-raising sessions on WASH-nutrition tools</li> </ul>	<p><b>Managers: Local NGOs</b> <b>Action:</b> Held ongoing awareness-raising sessions on WASH-nutrition tools</p> <p><b>Comments:</b> Approximately 7,000 people quarterly participated in awareness-raising sessions using WASH-nutrition tools</p>
	<ul style="list-style-type: none"> <li>Promote production of tippy taps</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Monitor production of tippy taps in villages</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>Number of tippy taps produced in the three health districts</li> </ul>	<p><b>Managers: Local NGOs</b> <b>Action:</b> Continued production of tippy taps to encourage handwashing with soap</p> <p><b>Comments:</b> Facilitation sessions held on how and why to produce tippy taps. Communities produced 3,933 tippy-taps.</p>
Offset the use of trees by communities in the construction of latrines	<ul style="list-style-type: none"> <li>Track trees planted as part of compensation for the use of wood in latrine construction</li> </ul>	<p><b>Indicator mitigation action</b></p> <ul style="list-style-type: none"> <li>Monitor the success rate of trees planted</li> </ul> <p><b>Indicator of effectiveness</b></p> <ul style="list-style-type: none"> <li>At least 75% of planted trees were successful</li> </ul>	<p><b>Managers: Local NGOs</b> <b>Action:</b> Continue tracking the success of planted trees</p> <p><b>Comments:</b> Monitoring of planted trees revealed 7,269 trees planted with a 65% success rate</p>