

FINAL REPORT

**IMPACT EVALUATION OF WATER,
SANITATION, AND HYGIENE (WASH)
WITHIN THE UNICEF COUNTRY
PROGRAMME OF COOPERATION,
GOVERNMENT OF NIGERIA AND
UNICEF, 2009-2013**

29th August 2014

UNICEF NIGERIA
COUNTRY OFFICE



FINAL REPORT

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This report was written by Jurrien Toonen, Ngozi Akwataghibe, Liezel Wolmarans and Madeleen Wegelin from the Royal Tropical Institute. The report represents the views of the consultants and should not be attributed to the UNICEF or to any other organisation.

29TH August 2014

UNICEF NIGERIA
COUNTRY OFFICE



Evaluation of Water, Sanitation, and Hygiene (WASH) within the UNICEF Country Programme of Cooperation

Final Report

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United Nations Children's Fund
Plot 617/618, UN House,
Diplomatic Zone, Central Area District
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UNICEF Nigeria Country Office
United Nations Children's Fund
Plot 617/618, UN House,
Diplomatic Zone, Central Area District
Abuja, Nigeria
djobin@unicef.org

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Foreword

This Impact Evaluation of the WASH Program covering the period between 2009 -2013 was commissioned by UNICEF to the Royal Tropical Institute (Netherlands) in order to learn from the achievements and limitations of our efforts to fulfill the right to water and sanitation of all children in Nigeria. The Impact evaluation was carried out in states with comprehensive WASH interventions and largely funded by EU (Cross River & Osun) and UKAid (Bauchi, Benue, Jigawa and Katsina). We are committed to constantly improving what we do and ensuring our efforts and financial contributions lead to the best results for children and their families.

Several lessons stand out from this Impact evaluation. They will help us and our government partners effectively scale up interventions and secure their sustainability in the future. Innovative financing will be needed as it has been documented that free of charge water improves access among the poorest families.

The study found that UNICEF support contributed significantly to changes in terms of access to water supply, reducing the time spent (in particular by children, mostly girls) on fetching water. This has had a positive effect on the time used to attend school and study.

Also, significant changes were observed and recorded in terms of improved latrines for communities where UNICEF has intervened. Although this has resulted in more (as well as better kept and functioning) latrines, there were still too many people facing financial constraints to improve their latrines. Under-five children in intervention areas had two times less diarrhoea.

Latrines were also present in schools. Schools also had access to water and teachers were relaying hygiene information to children and their families. However, the program only covered few schools in the interventions areas.

It was also found that the strategy of setting the Open Defecation Free (ODF) status as a condition for obtaining an improved water supply has proven to be very effective and appreciated by communities. The social dynamic of competition among communities to get the ODF status is becoming a key driver of change in Nigeria.

From the methodological view point, the Theory Based Approach and Real Time Household Survey allowed to assess and highlight the contribution by UNICEF to improved water and sanitation outcomes. The evaluation team was able to engage with partners in spite of a challenging context and should be commended.

I wish to express my personal thanks to the Water and Sanitation and Monitoring and Evaluation teams of UNICEF Nigeria, the government partners, and last but not least, Community Leaders for their efforts in participating and contributing to this evaluation. Every day they strive to expand the access and proper utilization of water and sanitation which are paramount to the hygiene, survival and healthy development of children. The financial support by UKAid and the European Union (EU) is highly appreciated.

The results of this Impact Evaluation show we are on the right path. It also shows us how, together, we can more efficiently and quickly make a reality the dream of a Nigeria where all children drink safe water, are clean, can play in an uncontaminated environment, and are safe from water-borne diseases at home and at school.



Jean Gough
Country Representative

Abbreviations

CI	Confidence Interval
CLTS	Community Led Total Sanitation
DHS	Demographic Health Survey
DOC	Drivers of Change
EA	Enumerated area
EC	European Commission
EHC	Environmental Health Club
EU	European Union
FCT	Federal Capital Territory
FGD	Focus Group Discussions
FMWR	Federal Ministry of Water Resources
HHS	Household Survey
HIF	Hygiene Improvement Framework
IDI	In-Depth Interviews
IE	Impact evaluation
IMSC	Inter-ministerial Steering Committee
KAP	Knowledge Attitude and Practice
KIT	Koninklijk Instituut voor de Tropen (Royal Tropical Institute)
LG	Local Government
LGA	Local government area
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MICS	Multiple Indicator Cluster Survey
MPO	Master Plan of Operations
MSC	Most Significant Change
NBS	National Bureau of statistics
NGO	Non-governmental organization
NHREC	National Health Research Ethics Committee
NPC	National Population Commission
NTD	Neglected Tropical Diseases
NWRI	National Water Resources Institute
OD	Open Defecation
ODF	Open Defecation Free
ODK	OpenDataKit
OECD/DAC	Organization for Economic Cooperation and Development /Development Assistance Committee
O&M	Operation and Maintenance
OR	Odds Ratio
PADev	Participatory Assessment of Development
PPA	Project Plans of Action
PSM	Propensity Score Matching
RUWASSA	Rural Water Supply and Sanitation Agency)
SE	Socio Economic
SFH	Society for family Health
SHAWN	Sanitation, Hygiene and Water in Nigeria
SOP	Standard Operation Procedures

SPSS	Statistical Package for the Social Sciences
TOR	Terms of Reference
UN	United Nations
UNICEF	United Nations Children's Fund
VLOM	Village Level Operation and Maintenance
WASH	Water Sanitation and Hygiene
WASHCOM	Water, Sanitation & Hygiene Committee
WASHIMS	WASH information management system
WHO	World Health Organisation

Table of Contents

Table of Contents.....	7
List of Figures	8
List of Tables	9
Executive summary	10
A. Introduction.....	14
Background	14
Scope, objectives and research questions of the impact evaluation	15
METHODOLOGY.....	19
Sampling: Quantitative methodology	23
Sampling – Qualitative methodology	25
Data collection.....	27
Data Analysis.....	29
Ethical Considerations	32
B. Results.....	32
1. Effectiveness	32
In general, WASH:.....	32
Effects on Water	41
Effects on Sanitation	56
Effects on Hygiene	70
Conclusion on effectiveness	77
2. Outcome.....	79
3. Contributing and explaining factors	89
Contextual factors	89
Relevance and appropriateness of UNICEF support	93
4. Discussion, conclusions and recommendations	98
Discussion	98
Towards a “new” Theory of Change for the WASH program	107
Conclusions.....	109
Recommendations.....	112
References	114
Annexe	115

List of Figures

Figure 1: Conceptual model on organizations coming to results	16
Figure 2: <i>Distribution of Wealth (quintiles) by treatment group and area</i>	37
Figure 3: Increase in % of households with improved water source.	42
Figure 4: Changes in <i>distance to current water source for drinking water</i>	45
Figure 5: Maintenance of water point (by whom) by treatment group, area and wealth	48
Figure 6: <i>Treatment of water by treatment group, area and wealth</i>	52
Figure 7: Type of container used for the 94,7% of households who stored drinking water by treatment group, area and wealth	53
Figure 8: <i>Type of latrine used (including no latrine) - improved and unimproved</i>	57
Figure 9: <i>dissatisfaction with own sanitation practice</i>	58
Figure 10: <i>Type of latrines for school going girls by treatment group, area and wealth</i>	67
Figure 11: Number of hand washing places where household members most often wash their hands by treatment group, area and wealth	70
Figure 12: <i>Percentage of households mentioning critical hand washing moments</i>	72
Figure 13: <i>Number of households being aware of WASH activities</i>	73
Figure 14: Number of households listing WASH Committee activities in their community by treatment group, area and wealth	74
Figure 15: <i>Numbers of households and main source of WASH information</i>	75
Figure 16: Trends of children under five, who had diarrhoea in the two weeks preceding the survey – from 1990 till 2013	80

List of Tables

Table 1 Scoring of communities for selecting treatment and counterfactual areas	21
Table 2 Treatment intensity scores in communities of 4 States	21
Table 3 Sample distribution proportional to LGA population size across 6 states (N=1100)	23
Table 4 Characteristics of the households in the IE sample - 1	24
Table 5 Characteristics of the households in the IE sample - 2	24
Table 6 Communities in which FGDs were carried out using the PADev tool	25
Table 7 Details of primary quantitative and qualitative data collection carried out	28
Table 8 Outcome Measures from the WASH Household Survey data (2014)	30
Table 9 Trends in distribution of households with improved source of drinking water	41
Table 10 Access to improved drinking water – intervention vs. counterfactuals	43
Table 11 Households with access to improved drinking water - the North vs. South	43
Table 12 Households with access to improved drinking water by wealth index	44
Table 13 Distance to water source <i>less than 250m</i>	45
Table 14 Trends over time of the proportion of households using an appropriate treatment method for water	51
Table 15 Distribution of households with improved, not shared, toilet facility	56
Table 16 Communities interviewed using the PADev tool	59
Table 17 <i>Average money spent on building a latrine</i>	63
Table 18 Proportion of children under five who had diarrhoea in the two weeks preceding the survey ..	79
Table 19 Perceptions on outcome in the households (N=598)	82

Executive summary

The Impact of the Water, Sanitation, and Hygiene (WASH) Programme of the Government of Nigeria and UNICEF, 2009-2013

From January to June 2014, an impact evaluation was carried out by the Royal Tropical Institute (KIT) on the WASH programme that took place in six states in Nigeria by the Nigerian government, with support from UNICEF. The key objectives of the WASH programme (2009 to 2013) were to increase access to safe water sources, improve sanitation and promote hygiene practices — especially in the rural areas and among vulnerable populations. In each of the six states (Bauchi, Benue, Katsina, Jigawa, Cross-River and Osun), one Local Government Area (LGA) was selected for primary data collection. A “before-after” analysis was carried out to analyse trends and changes over time, based on secondary data (mainly DHS 2008 and 2013, and the 2011 MICS) to overcome the lack of a baseline study in some LGAs. This secondary data analysis appeared to be of limited value; therefore, most of the conclusions from this evaluation come from primary data collection derived from a theory-based, quasi-experimental, “with and without” (the intervention and the counterfactual) design, and using a “mixed-method” approach, which combined quantitative and qualitative data collection and analysis. “Treatment” and “counterfactuals” communities were (randomly) selected in the same LGA from communities with respectively “high” and “low” interventions. This was applied to evaluate if the WASH program created significant differences between intervention and counterfactual areas (through statistical analysis of quantitative data), and if so, then why, how, where, and for whom it worked (through analysis of qualitative data). In 10 randomly selected intervention communities and in 10 counterfactual communities (per LGA), structured interviews were held in 1,105 households for quantitative data analysis, while for qualitative data analysis 22 in-depth interviews and 56 focus-group discussions were conducted. This study evaluates impact, rather than evaluating whether or not the programme attained its objectives: it assesses if there were effects (e.g. distance to the water source) that could be attributed to the programme and if these effects led to outcomes (e.g. behaviour change).

The main approach of the programme is community based, be it for the water supply or the sanitation and hygiene component of the WASH programme. For sanitation, the Community-Led Total Sanitation (CLTS) approach has been adopted: communities are triggered to sensitize them on their current sanitation situation and the consequent effect on their health & environment, and behaviour; once triggered the communities subsequently undertake activities to become Open Defecation Free (ODF). The communities understand that ODF status in turn will lead to water supply interventions as it is a condition to be eligible for water supply hardware and services. In each community, WASH committees (WASHCOM) are established to manage WASH facilities within their communities, support continued hygiene behaviour and promote proper sanitation practices including attaining/ sustaining ODF status. Schools are part of the programme: water supply services and sanitation facilities are provided and hygiene education is given as part of the curriculum & through the Environmental Health Clubs (EHCs). To reach the objectives, capacity-building activities are carried out at all levels including state, LGA and community level and with relevant stakeholders & NGOs/ CSOs. The program uses an LGA-wide approach; all communities within the LGA are to be covered by the intervention.

Results

There are important differences between the Northern and the Southern study sites; in general, this can be explained by differences in wealth status — communities in the South being better off than those in the North. The poorest quintile is often worse off; their access to improved water sources is lower, they live farther away from those sources, their children spend more time in fetching water, and they are less likely to (be able to) treat water. But when they do have access, the poorest tend to use relatively more water from improved sources, as they are often exempted from payments for water or repairs. Free-of-charge water increases access for the poorest, but user fees would increase sustainability as funds deriving from these fees could be used for maintenance and repair. Also for sanitation, geographic differences are significant: in the South more latrines are constructed by households, they are of better quality, are better maintained, and more cash is spent than in the North.

Effects on Water: Access to improved water increased significantly (almost doubled), in areas with high and with low intervention – be it more in the ‘high’ intervention areas. Many, however, already had access before the programme started. Three-quarters of the study population now have access - 80% use water from improved sources. In the intervention areas, 45% less households than counterfactual areas drank water from rivers and a higher (though not significant) proportion of people changed to an improved water source. No differences were found for the following: change in waiting time (people coming from outside the intervention areas caused longer queues in those areas), frequency of water fetched from the main water source on a daily basis, or the collector of water — two-thirds of children fetched water, but spent two hours less on this than before.

Median time for major repairs (managed by LGAs) took around six days; minor repairs (managed within the communities) took an average of three days in intervention areas — two days quicker than in counterfactuals. Faster repair of major breakdowns was hampered by lack of funding. Out of the six focal LGAs, only one had installed a revolving fund to save money for future repairs. It should be noted, however, that most hand pumps were relatively new and hence major repairs were not yet needed. Only a quarter of households treated their water but three-quarters of households indicated that the main source of drinking water was always safe.

Access to water was extremely important to all interviewed — it appeared to be the most important driver of change: In most instances, ODF certificate was a condition for obtaining an improved water supply. Besides this, people aimed for improved water sources for reasons of shorter distances (so saving time), increased quantity (so using more water), improved quality and lower health risks — many people related diseases like diarrhoea to poor water quality. Having closer access to higher quantities of water also resulted in use of more water for other purposes like bathing, cleaning houses, and laundry.

Effects on Sanitation: From secondary data analysis, it appears that overall over 100% increase in improved sanitation figures compared with DHS 2008. **Almost two-thirds of all households had an improved latrine;** these were mostly constructed by the household, half of them were three or less years old, virtually all were functional. Most households planned to upgrade their current latrine, but had no funds to do so. The qualitative research indicated that most latrines were at best improved traditional latrines, for which the risk for collapse was deemed high. Compared to counterfactual areas, households in intervention areas had (slightly) more improved latrines, more latrines had a cleanable slab and cleaning materials, more schools had a latrine(s), and spending on latrines was higher. Only a few (richer) households had been informed on options and costs of different types of latrines. Significantly more households in the intervention areas with girls and boys had latrines compared to those in the counterfactual areas.

Interest in an improved water supply, social action like blaming and shaming or fines for non-hygienic practices, and awareness of health risks were key motivators to obtain ODF status. The active involvement of children in the triggering process resulted in more active engagement of their parents and the community in general. The “triggering” approach has been highly successful, but in order to sustain the effects attained, a systematic post-triggering approach may well be required.

Effects on Hygiene Behaviour: There was hardly any significant difference in hygiene behaviour between intervention and counterfactual areas; in both areas “triggering” took place as part of the LGA-wide approach and WASHCOMs were already established. However, in the intervention areas people could better explain what ODF is, were more aware that the community had a WASHCOM, and could mention more critical hand-washing moments; they also used relatively more modern cleansing materials. Yet, only one in five households had a specific hand-washing station in or near the latrine and less than half of households had water for hand washing available nearby.

In both intervention and counterfactual areas, WASHCOMs were functional — raising awareness, promoting latrine use, organising the community (for water repair and support for latrine construction), and monitoring hygiene behaviour and environmental cleanliness. Hygiene behaviour has become a social norm — besides the influence of WASHCOMs — through the raising of awareness by health workers and through teachers in schools (in this case, children taking the WASH message home to their families).

School latrines were present in 69% of schools for both boys and girls, but there was a strong association between wealth and latrine presence. Also, qualitative research revealed that most schools had access to water supply and latrines. However, the programme only covered a small part of the total number of schools in the intervention areas. Although not all schools had an environmental health club, teachers were giving hygiene education and this knowledge was subsequently relayed to the households.

Outcomes

Though the incidence of diarrhoea in households in the last two weeks preceding the survey did not differ between intervention and counterfactual areas, it did so significantly for the most important target group for diarrhoeal interventions: **under-five children in intervention areas had two times less diarrhoea.** Overall, people in communities perceived less diarrhoea, less guinea worm, malaria, filariasis, and skin diseases in their households due to WASH — and this is a major driver of behaviour change.

Behaviour change was evidenced by a reported reduction in open defecation (66 % and 34 %, respectively, in intervention and counterfactual areas, while hand washing, water handling, bathing, and laundry behaviour changed both in households and in schools. A major outcome was also seen in environmental cleanliness — no more smell of faeces, less flies, and less mosquitoes around the water points.

Children in intervention areas attended school 1,7 times more than in counterfactual areas, as they spent less time on fetching water and other household chores. People perceived that their children could now enjoy more schooling because of the WASH programme. The children's participation and role in the programme increased their household's involvement in community development. **Women, as well, are more empowered through their active participation in WASHCOMs, giving them credibility and voice in decision making relating to WASH.**

The establishment of WASHCOMs has had an impact on community organisation through establishment and enforcement of by-laws pertaining to outside defecation, water supply organisation, and hygiene practices. **Apart from increased uptake of immunization, it has not resulted in other development efforts in the communities visited.**

Sustainability

Social norms pertaining to hygienic WASH behaviour seem to have become the norm, and can be sustainable **if:** the environment is conducive in terms of technical and financial support provided by sustainable institutions and structures, with both policy and legal conditions in place at central, state and LGA levels. At present, technical capacities for construction, maintenance and repair are available at state, LGA and community level (latrines and water maintenance and minor repairs). However, financial sustainability is an issue because no funding for major repairs is available at community level: there is no system for regular cost recovery and preparedness. There is ad-hoc collection for repairs which is unlikely to work for major repairs, while LGA WASH teams don't have funding available to fulfil major repair needs. There is, moreover, insufficient clarity about respective roles and responsibilities of WASHCOM and LGA. Sustainability of WASHCOM activities will require more systematic capacity building and improved networking as a form of motivation, effectiveness, and learning.

In Conclusion

The most important "Drivers of Changes" leading to the positive results were (i) being ODF as a precondition for a water intervention; (ii) community understanding and evidence that WASH behaviour may avoid health risks; (iii) education on water, sanitation, and hygiene behaviour, as well as evidence of benefits of WASH interventions; (iv) informed choice in obtaining (technically and financially) feasible WASH solutions; (v) private resources and funds to implement WASH interventions; (vi) community pressure in adopting WASH-supportive behaviour; and (vii) using the WASHCOM as a motor for social action in WASH.

Recommendations

1. Build an evidence base: establish a baseline study, including indicators in the M&E system that measure effects and outcomes. A functioning M&E plan, with regular monitoring of effects and outcomes is highly recommended.
2. Develop a more systematic approach to monitoring done by WASHCOMs, including training on analysis and consequent actions — so they know why they are monitoring and what happens with the results.
3. As the triggering approach seems to work well, put more emphasis on a “post-triggering approach” to sustain ODF and hygiene behaviour, while at the same time clarifying roles and responsibilities between community representatives, WASHCOM, and LGA.
4. Develop strategies to target the poor and prioritize the poor areas more.
5. Develop and promote different types of sanitation technologies that are suitable for different local conditions and in reach of different social-economical classes, so everyone — including the poor — can climb the sanitation ladder within their own possibilities.
6. Ensure co-payment and/or a revolving-fund system to sustain the existing WASH infrastructure. Explore possibility of a loan facility in WASHCOM (from e.g. water fees) so people have access to funds for latrine improvement and/or income-generating activities (e.g. soap making).
7. Develop a strategy to involve the private sector more in maintenance and repair of WASH infrastructure, next to the LGA teams. Private sector actors can intervene at various levels: in the CATS implementation itself at local level – masons, latrine builders, actors of the supply chain providing materials or hygiene-related items. There should be a specific component in the CATS intervention aiming at strengthening “what” private operators role would be.
8. Include Neglected Tropical Diseases (NTD) in WASH education as people are seeing an impact from WASH particularly also in NTD. For UNICEF to broaden its coordination to include health sector and especially those involved in NTD more (www.washntds.org)

Additional information to underpin our recommendations:

An impact study, carried out by Ministry of Foreign Affairs of The Netherlands showed a large increase in the ownership and use of latrines, particularly for wealthier households. However, so far, only a few latrines satisfy all conditions of adequate and safe sanitation. The sanitation intervention is responsible for a 3% decline in the prevalence of diarrhoeal diseases. Good progress has been made towards sustainable benefits but Government and NGOs do not yet have the capacity to provide and sustain the required services in the long term and institutional accountability mechanisms at the local level are not yet strong. The policy assumption that communities will be able to meet the costs of major repairs and replacement of water infrastructure is not realistic in the short to medium term. (Evaluation insights, Ministry of Foreign Affairs, The Netherlands, (2012) Rural water and sanitation – assessing impacts).

UNICEF has recently (2011-2013) intensified its thinking around the sanitation marketing approach (SanMark) and how it could complement CATS. UNICEF believes both approaches could mutually reinforce each other. Several SanMark training sessions have been organized in 2013 and specific SanMark programs are currently being designed and ready for implementation. Not much can be analyzed yet regarding this last development of CATS; however, it seems that reconciling SanMark (which is basically a supply-side, technology-oriented approach) with CATS (which is essentially a demand-driven approach) has a great potential, especially in terms of addressing the limitations of CATS with regard to sustainability

A. Introduction

Background

Achieving an equitable and sustainable water supply, sanitation and hygiene (WASH) services is a long-standing global goal spurred only Millennium Development Goal (MDG) 7 which targets halving the proportion of people without sustainable access to safe drinking water and basic sanitation (from the year 2000) by 2015. A sustainable access to clean water and proper sanitation is unquestionably linked to a healthy and productive life of any population as well as environmental sustainability. The World Health Organization (WHO) estimates that about 2.2 million people, most of whom are children in developing countries die annually from diarrhoea.¹ Furthermore, approximately 88% of diarrhoeal diseases are caused by unsafe water supply as well as poor sanitation and hygiene¹. Additionally, anaemia, which is caused by iron deficiency and infections relating to WASH affects about 2 billion people globally 90% of who live in developing countries.¹

Nevertheless, progress has been made by international cooperation between governments and other development actors. According to the 2011 United Nations MDG report² there has been good progress globally towards increasing access to clean drinking water. The target is likely to be achieved if not surpassed by 2015; however, rural areas are still disadvantaged compared to urban areas with more than 10% of inhabitants not having access to clean water. Regarding regions, progress differs, for instance while South East Asia has already surpassed the target, Sub-Saharan Africa still lags far behind with coverage of only 60% by 2008. In the area of basic sanitation there is much slower global progress noted by the 2011 report²: About 1.1 billion people still practice open defecation and only approximately 50% of the population in developing countries have access to sanitary facilities. The situation is also worse in Sub-Saharan Africa, where only about 24% of rural inhabitants have access to adequate sanitary facilities.

The Nigerian situation mirrors the Sub Saharan African situation where out of an estimated population of 160 million³, approximately 63 million still lack access to safe water supply and 113 million people lack access to basic sanitation facilities.⁴ Considering that Nigeria is the most populous African nation with one in every four African being Nigerian, this represents a sizable population of people in Sub Saharan Africa without access to WASH. Wide disparities between the six geopolitical zones and within states also worsen the situation, with the poor and more vulnerable populations at greater risk of WASH related health and non-health (such as time saving, productivity, school enrolment and attendance, gender inequality) human development problems.⁵

The WASH programme within the UNICEF Country Programme (2009-2013) has increasing access to safe water sources, hygienic practices and improved sanitation especially in the rural areas and among vulnerable populations as its key objective. According to the Terms of Reference (TOR),⁵ the main results planned include an increase of 5% of proportion of population in focus States with access and use of improved water sources (2007 baseline); an increase of 3.5% of proportion of population in focus States with access to and use of improved sanitary and hygiene facilities (2007 baseline); an additional 800 schools have safe water sources and sanitation facilities; adoption of sustained behaviours for water, hygiene and sanitation adopted in 2000 communities; and Nigeria certified dracunculiasis-free. The programme has been funded with UNICEF regular resources and donor funds from the European Commission (EC), United Kingdom Agency for International Development, and a few others. The programme has provided services in the 36 states and the Federal Capital Territory (FCT), Abuja. To date, four million people have been documented as having gained access to improved water supply and three million people to sanitation. More than four hundred schools and twenty-five health centres had been provided with water supply while about one thousand schools and more than two hundred and seventy health centres have functional sanitation facilities.

Indeed it is clear that despite the health and non-health human development issues relating to WASH, ensuring sustained access to, and utilization of, clean water and improved sanitation is still significantly challenging to many developing countries especially among the poorest.⁶ One reason that has been given for this is the lack of an ample knowledge and evidence base relating to WASH necessary to inform better policies and improve advocacy.^{7,8,9,10}

Scope, objectives and research questions of the impact evaluation

This WASH impact evaluation (IE) is part of a commitment made to the Nigerian government within the context of the UNICEF Country Program 2009-2013. It aims at adding to the meager evidence base on the effects of WASH programs both in Nigeria and internationally. The findings of the evaluation will inform policy on the implementation of the next country programme 2014-2017. A key element is the intended purpose of identifying lessons learned for scaling up. Furthermore, evidence of the benefits of the WASH will be valuable for advocacy efforts directed at the states and federal government.

There are two **main objectives**:

- To determine the **effectiveness of the WASH intervention** and to identify what worked well and mechanisms that made it work, in order to learn and improve effectiveness for scaling up.
- To **assess the impact of the WASH interventions** in order to identify opportunities to improve impact.

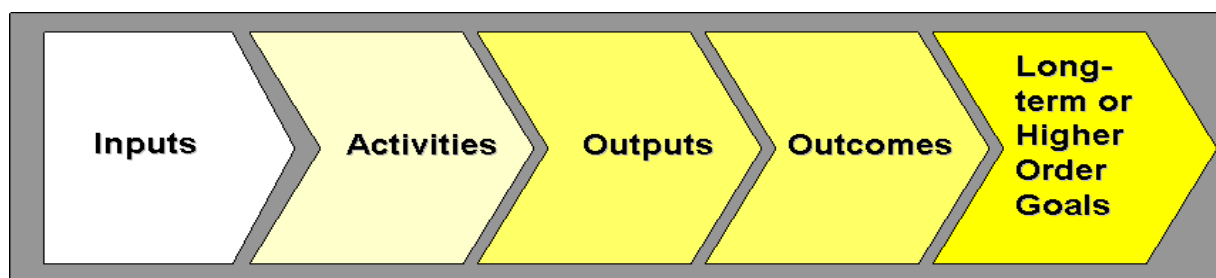
The scope of the study

This section details the evaluation questions –“what” to be evaluated - and presents the general as well as the specific approach to the study:

Criteria
Relevance
Appropriateness of design
Effectiveness
Efficiency
Outcome/ Impact
Sustainability

All - Equity focused (vulnerable groups)

This comes down to a classical result chain:



This study is different from a programme evaluation.

The focus of this study is on impact evaluation - so on *effects and outcome* generated by outputs. In order to analyse these kinds of results (effects, outcome), relevance and appropriateness of the programme's design as well as activities/ outputs of the programme will be used to explain the effects and outcome we found. As such, the study's primary data collection in intervention- and counterfactual areas will focus on effects and outcome; secondary data collection (mainly programme documents) will provide information on relevance/ appropriateness/ outputs of the program. This will provide the lessons learned from this IE study.

Also it is very well known that obtaining the envisaged results and outcome in the design and implementation of the programme is very much determined by the context (including equity determinants,

social-cultural factors, etc.) within which the programme is carried out. These contextual factors at different levels (National, State, local government (LG), community) will be appreciated in the primary data collection where information on effects and outcome will be searched for.

These contextual factors can be divided into “internal” and “external” factors to the “organisation”. Here the organisation refers to *direct* beneficiaries, like local government areas (LGAs) (but could also be private providers etc.) that should implement the programme, to induce effects and outcome in the communities (the ultimate beneficiaries):

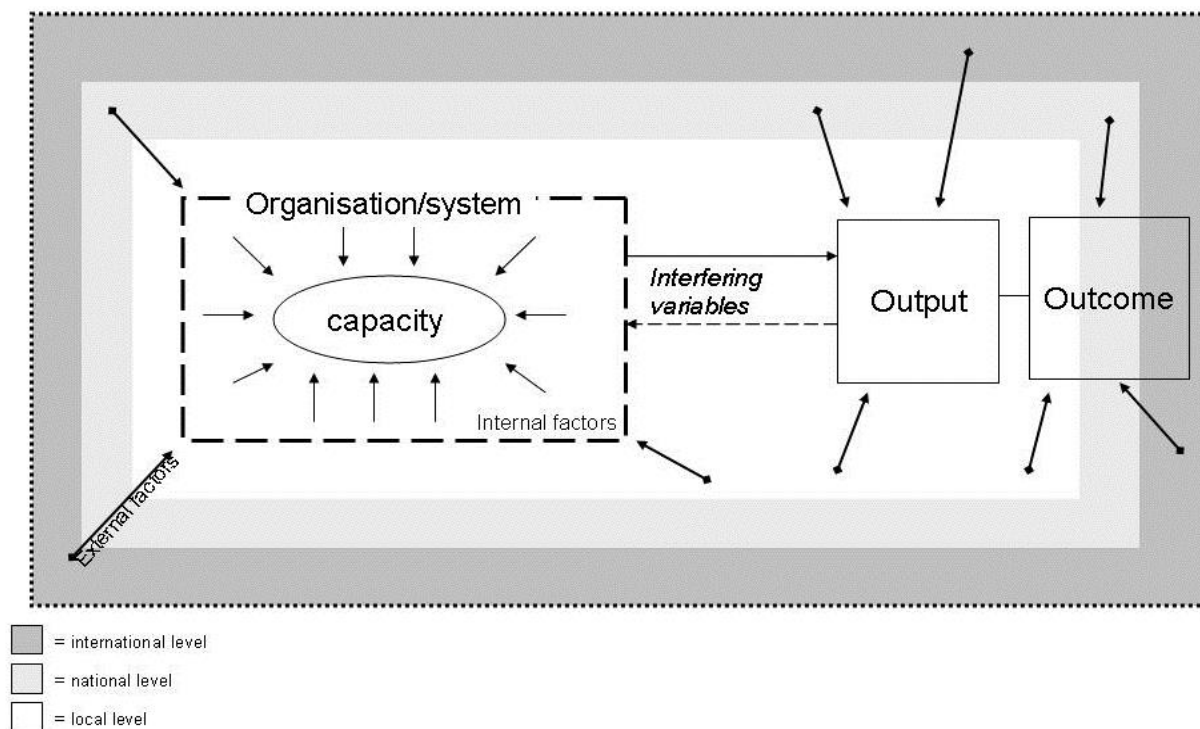


Figure 1: Conceptual model on organizations coming to results

These all lead us to the following Theory of Change:

The theory of change follows the following **logic**:

The WASH programme was relevant and appropriately designed: it addressed the most important bottlenecks in the local culture, geographic and social-economic context of the intervention zone – with a strong link to national and local WASH policies and plans. The programme then chooses the right strategies, it provided the right (human, financial and logistical) resources, it managed the programme well and it used the right channels for the WASH interventions. **As an example**, it had designed a sound monitoring and evaluation (M&E) system; M&E was carried out as planned, with beneficiaries included in the M&E activities that received enough support of the program.

Context and programme design & implementation then influence if “impact” will take place – to the extent internal and external factors allow. Internal factors here mean internal to the organization that implements the intervention (including LGA, private providers, etc.). Context represents the external factors, such as a ‘conducive environment’ provided by national policies and strategic frameworks; and the ‘level of knowledge’, which is the aggregate of these types of programmes in the past, people’s experiences personally, and the resultant sensitivity to this type of information.

If the programme performs well, within its context, this will lead to the programme's outputs. In our above *M&E example*: M&E activities carried out, M&E reports produced, M&E results analysed by different stakeholders and translated in relevant plans of action.

This all should lead to "impact".

If indeed the programme produces outputs, this will have **effects** in the community. E.g. the project trained facilitators to trigger communities (output), and these facilitators will go into the community to trigger the population to embark on Community Led Total Sanitation (CLTS). If the population indeed does respond and constructs latrines at home, in schools etc, we would call this the effect. If this indeed takes place in a proper way, as an **outcome**, diarrhoea incidence would drop, but also WASH related behaviour may have changed – it may even happen that committees that were set-up for WASH would also organize other types of community activities, like agricultural interventions -" empowerment of the community".

Passing from one level of results to the next level needs "**Drivers of Change (DOC)**". It is important to identify these DOC, to be able to draw lessons on "what works, why, for whom, and where" – if it worked.

"Impact" in terms of (e.g.) child mortality rates as a consequence of decreased incidence of diarrhoea, will not be addressed, as this may be attributed to many other factors than WASH alone and requires much larger sample sizes etc.

The reconstructed (by the team) **specific theory of change** per WASH intervention of the program is presented in the diagram below. WASH activities per intervention comprise of e.g.:

⇒ **Water Intervention:**

- Community mobilization / Hygiene Education
- Drinking water quality
- Rain water harvesting
- Construction of water points – hand pump, equipped boreholes, dug wells, spring
- Maintenance of water points particularly hand pumps
- Training on preventive maintenance, of WASHCOMs, etc.

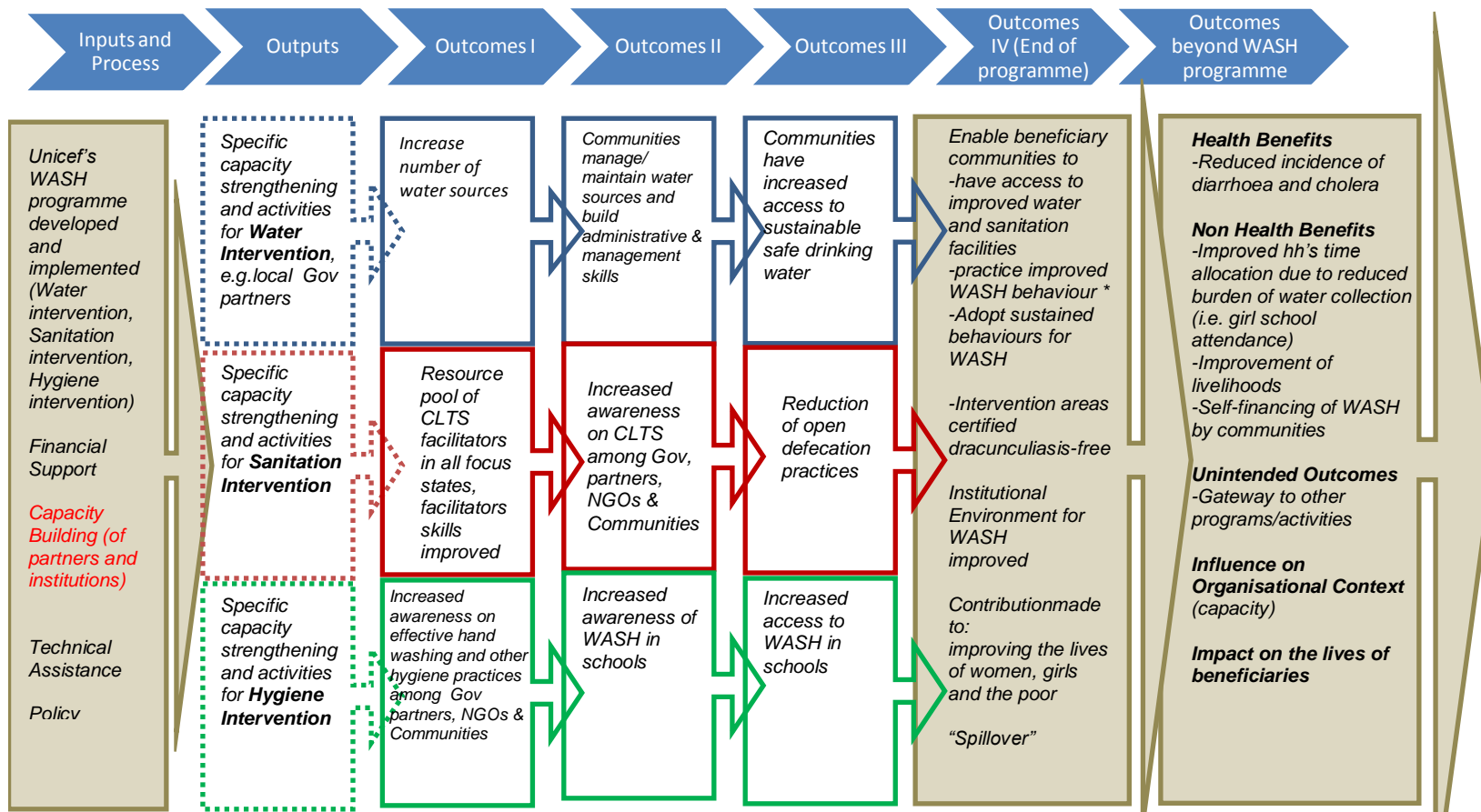
⇒ **Sanitation:**

- Sensitization and mobilization on CLTS
- Train and develop capacity of implementers on CLTS
- Develop project guidelines, tools and manuals
- Conduct baseline/ assessment of CLTS
- Establish monitoring and reporting system for CLTS

⇒ **Hygiene:**

- Sensitization and mobilization on effective hand washing and other hygiene practices
- Develop Hygiene Promotion materials and manuals
- Train and develop capacity of implementers on hygiene promotion

Capacity building and -strengthening is an overarching theme in the theory of change, for example building institutional capacity development involves support towards development and implementation of relevant policies, investment plans, legislation, and training – based e.g. on experiences gained while implementing the WASH program.



*such as improved collection and storage of safe drinking water, hand washing and use of improved sanitation facilities.

Influence of internal and external Contextual Factors:

Internal: Organizational factors influencing program implementation

External: Drivers of change, enabling environment: national policy frame strategies related to socio-economic status, education and "modern lifestyle", Social-cultural and social-financial aspects

Assumptions and risks: Stable government partners. Peaceful election, Secure environment

Tracers (providing trend analysis) in support of the Theory of Change:

Process indicators from M&E data: (i.e. number of communities certified ODF free, evidence of school sanitation and hygiene, trained WASH community members, number of HPBHs, % of population without water compared to national average)

Indicators from DHS and MICS data: % of households reporting diarrhea in under-fives in last 2 weeks, % of households without access to hygienic sanitation facilities and affordable and safe drinking water

The type of information for the “Impact Evaluation”

The evaluation looked specifically at the following:

A. Effectiveness/ Effects

- WASH results: In general for water, sanitation and hygiene interventions...
- Satisfaction level of the communities with the WASH services/practices
- Attaining most significant changes according to stakeholders
- Different results from different approaches? E.g. results of demand vs. supply driven approaches
- The relative effectiveness of different WASH programme components (different approaches, for vulnerable – the poor and women) in households and schools; knowledge scores
- ⇒ Water component:
 - Increase in the number of water sources
 - Improved access to water (geographical, financial and cultural), enough water for all domestic needs
 - Institutional maintenance, Village Level Operation and Maintenance (VLOM)/Operation and Maintenance (O&M) of water supply - every day maintenance and major repairs
 - Availability of reliable data on installation of water supply facilities
 - Financing of water supply fee collection method at community level
- Water quality (acceptability for users,), including safe transport, storage
- ⇒ Sanitation component:
 - Increase of households with sustainable access to sanitary means of excreta disposal, coverage levels
 - Claimed Open Defecation Free (ODF) status in villages,
 - CLTS – hardware, score toilet hygiene
- Schools have reliable sanitation and hand-washing facilities, and functioning school health clubs
- ⇒ Hygiene component:
 - Increased access to hygiene promotion, awareness and practicing of hygienic practices
 - Increase in WASH partners' performance?

B. Outcome:

- What is the impact of the WASH program, at individual and community level with respect to all the programme components (Water, Hygiene and Sanitation)?
- Is the impact sustainable?
- Is the current strategy replicable or scalable?

C. Contributing and Explanatory factors

- Contextual factors for an enabling environment
- Relevance and appropriateness of UNICEF programme Design
- Programme implementation

METHODOLOGY

This section is focused on the evaluation design, the sampling strategies, data collection techniques and implementation; data analysis as well as quality assurance.

Evaluability Assessment

During the inception phase, an evaluability assessment was carried out by the IE team to determine the extent to which the FG/ UNICEF Country WASH programme (2009 -2013) could be evaluated in a reliable and credible fashion. The main findings of the assessment include:

There was *not* a clear description of the situation before the intervention due to the lack of a baseline study. However information from the 2008 DHS and 2011 MICS could provide some limited description of the

situation at the states levels and contained data that gave some useful impression of the situation at baseline and mid-term. However, (i) only a few of the DHS/MICS indicators were comparable with the ones of the primary data collection by this impact evaluation; (ii) the geographical areas of data collection for the DHS was at State level, for the MICS at LGA level – not completely congruent with the samples of this Impact Evaluation; and (iii) not all types of information needed from the DHS and MICS (such as confidence intervals, etc.) were accessible for the team. Then there was the possibility of reconstructing some data from the M&E data base to provide a baseline using a theory based approach – but the availability of M&E data appeared to be quite limited in practice.

However, the programme documents showed clearly defined objectives and the log frame was flexible and responsive and there was a defined time frame within which results were expected to occur and there was some monitoring data collected on a regular basis. The project was also at a stage that would benefit from an evaluation since it was at the end of its 4-year cycle with most of the funds expended and a critical mass of activities had been implemented.

The details of the evaluability assessment are in Annex 1.

The Evaluation Design

The goal of the evaluation is not only to appreciate *if* the intervention worked, but also *how* it worked: *why, where and for whom*. The best way to respond to this is to use a “mixed methods approach”: combining quantitative and qualitative methods.

A. Quantitative methodology

As there was no information from a baseline study available, the evaluation necessarily needed to be retrospective in nature – still it was asked by the TOR to identify trends in time, place and person. A quasi-experimental design was developed to simulate a ‘before and after’ approach.

To create the ‘before’ component, baseline data from the project intervening years up to 2012 could not be accessed. The absence of baseline data is a methodological issue that challenged the evaluation model in the sense that it reduced the likelihood of findings that are valid and reliable as well as significant differences which could be ascribed to the impact of the project rather than to chance¹. Therefore, a two pronged approach was taken to “construct” a theoretical baseline through secondary data. Firstly, based on an analysis of project / programme monitoring data deriving from the M&E systems, and from what does exist as ‘baseline’ (though this kind of information was quite limited). Secondly, secondary data analysis on the Demographic Health Survey (DHS) 2008 was used to establish at State level “tracers indicators” for the 6 Evaluation States; then the Multiple Indicator Cluster Survey (MICS) of 2011 was utilised to identify similar tracer indicators, also at State level. The values of these tracer indicators were appreciated in trends over time, during the period of the intervention.

To create the ‘after’ component, a survey was carried out at Household level of the ultimate and indirect beneficiaries. Additionally secondary analysis on project / programme data, to identify effects and (health) outcomes was also carried out.

A real ‘with/ without’ comparison, through the household survey and qualitative interviews, of intervention communities with counterfactual communities, per each of the 6 purposively selected LGAs was carried out using a theory based approach.

A key concern with impact evaluations, also in WASH interventions, is confounding. There are many economic, developmental and sociological factors that are related to both WASH service levels and disease burdens, producing a strong spurious association between the two that is not entirely attributable to WASH effects. The problem is that adoption of and compliance with water, sanitation and hygiene improvements is highly related to socio-economic status, education and “modern lifestyle”¹¹ factors which are difficult to measure accurately but which are themselves highly related to e.g. the risk of diarrhoea. As with conventional multivariate analysis, the biggest problem with propensity scores is that they can only account for known and observed confounders, not for unknown confounding,¹² so propensity score matching (PSM) was deemed to be of limited practical value.

¹Survey Meter, 2010; Sijbesma, 2010

Therefore, **atheory based** approach was followed to identify counterfactual communities within each of the 6 purposively selected LGAs – to distribute them between communities with and without the intervention. The level of intensity of the intervention per community was determined from existing monitoring data (latest updated figures of July 2013), based on a summed intensity score (maximum of 5 indicating high intensity and minimum 0 indicating no intensity/no intervention) based on existing monitoring data, of each of the following criteria carrying an equal weight of 0.2 (or 20%):

- ⇒ ODF Certification took place
- ⇒ Evidence of School Sanitation and Hygiene (Total number of school latrines ≥ 1)
- ⇒ Number of functioning Hand pumps or Boreholes ≥ 1
- ⇒ Percentage of the Population without water is lower than the national average of $< 58.1\%$
- ⇒ Hygiene status is at low risk

The distribution of the intensity score per LGA was used to classify communities as low or no intervention communities (intensity score = 0, 1) or high intervention communities (intensity score = 3, 4, and 5). For instance, this yielded the following distribution of intervention intensity for 363 communities in **Dass LGA, Bauchi State**:

Table 1 Scoring of communities for selecting treatment and counterfactual areas

<i>Intensity Score of the Intervention</i>	<i>Number of Communities</i>	<i>% of Communities</i>
0	26	7%
1	153	42%
2	113	31%
3	55	15%
4	16	4%
Grand Total	363	100%

Almost fifty percent of communities within the Dass LGA (7% + 42%) were considered as low or no intervention communities, whereas 19% were ranked as high intervention communities. The appropriate number of households could thus be sampled, proportionately to size of the LGA (see section on sampling below). This approach was used for the focus LGAs in all four Sanitation, Hygiene and Water in Nigeria (SHAWN) project states (Bauchi, Benue, Jigawa and Katsina) but could not be replicated for those of the EU funded states (Cross-River and Osun) due to the difference in the structure and content of their monitoring data.

Table 2 Treatment intensity scores in communities of 4 States

State	LGA	Number of communities	% with 0 intensity	% with 4,5 intensity
Bauchi	Dass	351	7	3
Benue	Oju	460	29	4
Katsina	Bakori	427	44	9
Jigawa	Birnin Kudu	277	24	4

Nevertheless, we are aware that studies have shown that both the growing number of WASH projects and the decentralization process enables communities to undertake their own projects making it harder to find

control communities that remained without intervention over a longer period of time². With this consideration and also because the IE team was cognizant of the possibility that the situation on the ground may be different from the analysed monitoring data, steps were taken to verify this process:

1. The theory based approach used for the identification of the intervention and counterfactual communities was presented to the UNICEF, federal, state, local government and funding partners at a stakeholders' workshop before the commencement of data collection. The stakeholders expressed concern that the five criteria used may leave out some key intervention areas which did not have a school sanitation intervention. The IE team explained that the objective was to identify extremes of the intervention and counterfactual areas. In addition, the stakeholders felt that because of the LGA wide approach of the WASH interventions, it would have been more appropriate for the IE team to select controls from other LGAs that were not part of the intervention. The IE team explained that the propensity score matching of the LGAs earlier proposed could not be done because the DHS and MICS data were disaggregated only at state and not at LGA level. Furthermore the choice of the approach used was driven by the need to identify possible spillover effects of the interventions and to reduce confounding due to socio-cultural differences. An additional challenge to choosing other LGAs as controls was the fact that there are other interventions influencing the implementation of WASH in some other LGAs. On the other hand, it was apparent from the monitoring data that the interventions had not reached all the communities within the six focal LGAs in uniformity (though almost all had been triggered and most had WASH Committees (WASHCOMs) - functioning or non-functioning) as was demonstrated by the theory based approach; and the decision was made to continue with this approach.
2. At the stakeholders' workshop the local government stakeholders were presented with lists of at least ten intervention and ten counterfactual areas identified using the theory based approach for their ratification before the final selection of intervention and counterfactual communities for the with/without comparison.
3. The supervisors of the data collection teams were trained on the criteria for identification of intervention and counterfactual communities and were able to verify the situation on ground before commencement of data collection.

B. Qualitative methodology

A **desk study** was carried out during the inception period on existing studies at national and international level – on project documents, national documents from Ministries or from the LGAs - elements were identified that informed the theory of change, data collection tools, mixed methods results over time to be verified during the evaluation, internal and external determinants in the context and in the implementation of the intervention that might influence results, or eventually identify unintended effects.

Most Significant Change (MSC) tool with direct, indirect and ultimate beneficiaries- The MSC tool purpose to facilitate programme improvement by focusing on the directions and changes that aimed for and are valued by the various stakeholders. Stakeholders were involved in selecting the changes to be followed up, over time, changes which could be appreciated. It used the story telling of stakeholders answering the key question: "looking back over this period, in your perception, what do you think the most significant change was in water and sanitation?" Retrospective recall of key pre-intervention and past intervention information was also addressed during qualitative data collection.

The Participatory Assessment of Development (PADev) Tool was used for Focus Group Discussions (FGDs) with community men and women. The PAdDev tool uses a bottom-up assessment approach to development and change in a specific area over a defined period of time based on the value systems of the community. Typically it assesses a wide range of changes, projects and developmental agencies. In this evaluation, we focused on the wide range of changes associated with the different aspects of the WASH interventions. However, the FGDs with various participants was also used to assess whether other (similar)

²Methodological lessons and findings from an impact evaluation of a WASH project in Indonesia, Christine Sijbesma, Bondan Sikoki, Wayan Suriastini & Mike Ponsonby (the Netherlands/Indonesia/Australia). Paper presented at 35th WEDC International Conference, Loughborough, UK, 2011

interventions have been carried out that they felt were relevant, in whatever way and which could have influenced outcomes – according to the various groups within the community.

The qualitative **techniques** for data collection are essentially In-Depth Interviews (IDI) with purposively selected key persons and Focus Group Discussions (FGDs) with groups of different stakeholders.

Sampling

Sampling: Quantitative methodology

We followed a two-stage cluster design³ to select a representative sample of around 1100 households (refer to the Annex 2 for sampling considerations) across the six purposively selected LGAs.

Table 3 Sample distribution proportional to LGA population size across 6 states (N=1100)

State	State Population*	LGA	LGA Population*	Popu- lation propor- tional to LGA size	Sampling Distribution		
					No of HHper LGA (n=1100)	No of HHper community (Low Intervention)**	No of HH per community (High Interv.)***
Bauchi	4.653.066	Dass	90.114	9%	94**	5	5
Benue	4.253.641	Oju	168.491	16%	176	10	10
Cross River	2.892.988	Yakurr	196.271	19%	205	10	10
Jigawa	4.361.002	Birnin Kudu	314.108	30%	329	16	16
Katsina	5.801.584	Bakori	149.516	14%	156	8	8
Osun	3.416.959	Ejigbo	132.515	13%	139	7	7
Total	25.379.240		1.051.015	100%	1100		

*2006 Census

**We aimed at a minimum of 100 households per LGA. In Dass, although proportional to size, 94 households were calculated but we sampled 100.

***For 20 communities selected (10 low intervention and 10 high intervention communities)

As already described, counterfactual and intervention communities were identified using the theory based approach. In the first stage of sampling, 20-30 Enumerated Areas (EAs) (corresponding to 20-30 communities) were selected at random and within each community (stage two), households were selected through systematic sampling. Ten counterfactual and intervention communities were selected in total in each LGA.

The number of households per LGA was selected with proportional probability to the size of the LGA and the number of households per community ranged between 5-16 (calculation used based on 10 identified

3 Henderson RH and Sundaresan T. Cluster sampling to assess immunization coverage: a review of experience with a simplified sampling method. *Bulletin of the World Health Organization*, 60(2):253-260. Available at: [http://whqlibdoc.who.int/bulletin/1982/Vol60-No2/bulletin_1982_60\(2\)_253-260.pdf](http://whqlibdoc.who.int/bulletin/1982/Vol60-No2/bulletin_1982_60(2)_253-260.pdf)

communities with and 10 without the intervention) as presented in the table above. This ensured a representative distribution of households per LGA across communities with and without the intervention.

A complete listing of households was obtained from the Nigeria Bureau of Statistics to serve as the sampling frame within a particular community (EA) per LGA. One interview with the primary caretaker took place as the primary data source.

However, the team, in accordance with UNICEF, was aware that the total sample size has its limits. Sub analysis of the total sample of 1100 would only yield a subsample of around size 110 (10% of children under 5 with diarrhea in the past 2 weeks⁴) with the implication of analysis limited to descriptive statistics. This means that in most cases, at LGA level, we were only able to provide descriptive statistics of key variables. The statistical comparison comprised of comparing intervention and counterfactual (all communities across LGAs combined) on key variables.

The **result of the sampling process** is shown below:

Table 4 Characteristics of the households in the IE sample - 1

Characteristics	Counterfactual		Intervention	
	Count	Column N %	Count	Column N %
North	293 _a	52,9%	285 _a	51,7%
South	261 _a	47,1%	266 _a	48,3%
Christianity	207 _a	37,4%	243 _b	44,2%
Islam	337 _a	60,8%	304 _a	55,3%
Other	10 _a	1,8%	3 _a	,5%
Total	554	100,0%	551	100,0%

The sample was comparable for the differences between North and South: 52,9% of the counterfactual group lives in the North, 51,7% of the intervention group does. The proportion of Christians in the intervention (44,2%) is significantly higher than in the counterfactual (37,4%), $p=0,016$. Please refer to Tables 1 and 2 in Annex 9 for the complete descriptive statistics of the sample. Statistical significance tests are presented per table in the annex.

Table 5 Characteristics of the households in the IE sample - 2

Household characteristics	Counterfactuals	intervention
Total Number of people in hh	4,78 _a	4,66 _a
Total Number of Adults in hh	2,52 _a	2,50 _a
Total Number of Children age 6 to 17 in hh	1,25 _a	1,26 _a
Total Number of Children under 5 in hh	,80 _a	,78 _a
Total Number of males in hh	2,53 _a	2,44 _a
Total Number of females in hh	2,38 _a	2,35 _a
Total no of bedrooms	3 _a	3 _a
HH member currently in school	1,15 _a	1,28 _a

We may conclude from this table 5, that the characteristics of the households are almost the same between the intervention and the counterfactual areas, so this does not present a potential source of bias.

⁴ MICS 2011

Sampling – Qualitative methodology

For the qualitative side of the evaluation, purposive sampling was employed to select appropriate respondents for IDIs and FGDs. For the IDIs, a snowballing technique was used: One or two key informants from the implementing agencies were identified for interviews, and then, they guided the researcher to the other informants. The state and local government stakeholders played a key role in this process. A total of 22 key informant interviews were carried out.

A total of 20 FGDs were held in the study. Twelve PAdEv FGDs were carried out in the intervention and counterfactual communities in the 6 focal LGAs. Each FGD consisted of four sessions: older men, young men, older women and young women with about 6-8 participants per group. This was to ensure that all the perspectives are captured across the two dimensions of age and gender. Eight FGDs were carried out with CLTS facilitators, children in school health clubs, children in the communities and WASHCOM members; a total of two in each group were held in Dass and Bakori. Recruitment of children in the school environmental health clubs for FGDs were done through schools with WASH programmes.

Table 6 below shows the communities used for the PAdEv interviews

Table 6 Communities in which FGDs were carried out using the PAdEv tool

State	LGA	Intervention community	Counterfactual community
Bauchi	Dass	Bondi	Gwarlak
Benue	Oju	Ichakobe 2	Umueze Okoha
Cross River	Yakurr	Kekomkolo Ketabebe	Lebolkom Aduma
Jigawa	Birnin Kudu	Kura Sabuwa	Sambalisa
Katsina	Bakori	Ganjar	Gidan Bauche
Osun	Ejigbo	Ajebamidele	Aboyun Omu

Using the theory based approach, six high intervention and low counterfactual communities were identified for the PAdEv FGDs in the six LGAs. These communities were all ratified by the local government stakeholders. All four SHAWN LGAs (which had more structured monitoring data) were ranked using the theory based approach and the best (Bauchi) and lowest (Katsina) performing LGAs among the four were identified this way. The rest of the FGDs and all the IDIs were implemented in high intervention communities in those two LGAs.

IDIs with key informants took place in Bauchi state, Dass LGA and Bondi community; and Katsina state, Bakori LGA and Ganjar community. The interviews were held with:

1. WASH focal person at State level
2. WASH focal person at LGA level
3. Financial and/or planning officer State level
4. Trainer of CLTS facilitators
5. In charge of implementing Non-Governmental Organization (NGO)
6. Community leader
7. In charge of school WASH programme
8. In charge of health facility (diarrhoea and WASH service)
9. Hand pump Caretaker
10. Latrine builders
11. WASCHCOM chairperson

As already detailed, the FGDs for the community men and women were carried out in all 6 LGAs -in both intervention and counterfactual communities. The rest of the FGDs were carried out in the Bondi and Ganjar communities of Dass and Bakori LGAs respectively. In summary, all the groups involved in the FGDs are:

1. WASHCOMs at community level
2. CLTS facilitators (LGA level)
3. Children in school health club
4. Children in the community
5. Women from the community
6. Men from the community

Data collection

Data Collection Techniques

House hold survey (HHS) 'closed' questionnaires were administered to the sampled community members. In addition to socio-demographic questions, information on e.g. diarrhoea in the previous two weeks for children in the household under-five years were collected in the survey. Within each household, a 'main' or 'primary' respondent was identified who provided information on behalf of the family. Information collected included the extent to which the household has access to water supply and sanitation facilities, property issues (food, housing etc) to identify social status, mother's age, father's age, mother's years of schooling, father's years of schooling, number of young children in the household (less than five years old), fraction of boys among young children, average age of young children, total number of males in the household, total number of females in the household were included. The issue of validity and reliability was taken into consideration in the design of the questions. A number of general approaches were applied including triangulation of data and using multiple variables to create an index.

IDIs were carried out with the key informants to gain more insight into the progress made by the WASH programme and barriers to sustainability. The interviews of these key informants were conducted using a topic guide with open ended questions in order to probe and explore issues further.

FGDs were carried out with several groups in order to explore satisfaction with the WASH services more in depth as well as awareness and knowledge, attitudes and practices.

The quantitative and qualitative tools used are detailed in Annexes 3 and 4

Data Collection Process

A three day training workshop for the data collection team was carried out in Abuja. Thirty nine data collectors including six supervisors, in addition to two KIT supervisors were all trained during the workshop. Of the 39 data collectors trained, 27 were quantitative though only 26 went to the field. All 12 qualitative data collectors trained also participated in the field work.

Piloting of the quantitative and qualitative tools for the primary data collection was carried out with a view of obtaining information on:

- I. Time-cost of answering the HHS questionnaire and of the qualitative interviews
- II. Clarity of the questions in both the questionnaire and the topic guides for the respondents, in English and the local languages.
- III. Interview skills of the data collection team
- IV. Ability of the enumerators to use the handheld devices to administer the questionnaires effectively.
- V. The ability of the interviewers to administer the tools in a rural environment

For this purpose, we identified two rural areas on the outskirts of Abuja for the pilot: Karimo and Kabusa wards. The quantitative team piloted the household survey in Karimo using the handheld devices. Twenty six (26) enumerators participated in the pre-test. After the pilot and feedback, training continued the next day for the team while the qualitative team piloted selected IDIs and FGDs including the PADev FGDs for the community men and women in Kabusa ward. After the pilots, the teams had a full day of feedback sessions with the facilitators and the tools were also adjusted accordingly.

For the PADev FGDs we confirmed that it would be best to have the method applied with separate groups along two dimensions - gender and age. The need for verification through observations and pictures was noted. In general, the topic guides for the qualitative interviews were considered sufficient to capture the information needed. Issues identified during the training and piloting necessitated various changes to the quantitative tool mainly relating to change/update of skipping patterns, changing/adding of categories to questions as well as adding new questions; changing question type, adding hints (to HHS tool and Tablets); changing wording for improved understanding and/or adaptation to the local context and additions to the functionality of the tablet

Details of the pilot and changes made to the tools are in Annex 5

During the pilot, language difficulties were not experienced but at the start of the data collection exercise in the various communities within the focal LGAs, there were some language difficulties in explaining words like “outcome, impact, influence” due to some specific dialects of some areas. The teams had to discuss these difficulties with their supervisors and review the appropriate translation with the help of the locals where necessary. As the data collectors got used to applying their tools in context – usually within the first one or two days – that issue was resolved.

Data collection was carried out in the six focal states by six teams of data collectors headed by their supervisors. The HHS was carried out in intervention and counterfactual communities of the six focus LGAs - Dass, Oju, Birnin Kudu, Bakori, Ejigbo and Yakurr. FGDs for the community men and women were carried out using the PADev tool in all six LGAs –in the best performing intervention communities and the lowest performing counterfactuals according to the ranking of the local government stakeholders, usually the WASH coordinators. All the IDIs and other FGDs were carried out in two LGAs - Dass and Bakori. Data collection lasted three weeks. For most of the states, the first two days were spent observing the necessary protocols required for gaining entry into the communities.

In the course of the data collection, the KIT supervisors also probed the WASHCOM books available in at least one intervention and one counterfactual community in the six focal LGAs. Table 7 below shows the details of the primary data collection carried out.

Table 7 Details of primary quantitative and qualitative data collection carried out

STATE	HHS- Households covered	IDIs	FGDS (PADev)	Other FGDs
BAKORI	160	11	2	4
BIRNIN KUDU	318	NA	2	NA
OJU	177	NA	2	NA
DASS	100	11	2	4
EJIGBO	147	NA	2	NA
YAKURR	203	NA	2	NA
Total	1105	22	12 (total of 48 sessions)	8

Operational issues and bottlenecks encountered

Data collection in each of the states presented its own unique set of issues and challenges but on the whole progressed well and was completed within the allocated time frame. The process also benefited from the support of the M&E teams from UNICEF.

In general, some issues were identified in the course of data collection:

- Entry into the communities was a common challenge for many of the states. The protocol that was observed by the data collectors involved going from the State to the LG stakeholders upon arrival in the LGAs. This usually made entry into the communities easier; nevertheless there were sometimes some difficulties. The data collection took place in at least 20 communities in each LGA and the data collection as well as the LG WASH teams sometimes had some communication gaps with the relevant communities. In addition to ensuring that they had local guides to ease identification and entry into the communities, the data collectors were encouraged to plan their daily trips with the LG WASH coordinators and when this was effectively done as in Bakori for instance, the issues were minimal or non-existent. In this case, a common daily timetable was jointly held by the Bakori WASH coordinator and the data collection team; and the coordinator provided WASH focal persons to ensure proper entry into the communities. Nevertheless, all the teams experienced tremendous support from all the LG WASH coordinators in the six focus LGAs and the challenges of entry steadily decreased to a minimum as the data collection progressed.
- As mentioned earlier, in a few cases, at the start of the data collection exercise there was some language difficulty due to the specific dialects of some areas. However this was usually quickly resolved.
- Estimation of distance was a problem that was recognized both by the data collectors, their supervisors, the KIT Country Coordinator as well as some M&E specialists from UNICEF. Though training had

addressed the issue of distance, in practice this proved to be quite challenging both for the data collectors and the respondents. Even when proper descriptions and examples could be made by the data collectors (which were not always the case) the respondents sometimes still gave invalid answers due to the difficulty many people seem to have with estimating distance. Indeed an objective measurement is always the ideal. In this study, interpretation of the distance estimates from the survey has been carried out with caution.

Data Processing

Quantitative data was collected using hand held devices with the OpenDataKit (ODK) software and data entry automatically occurred in excel template within the device. At the end of the collection phase, data was migrated to SPSS for analysis. In-built consistency checks (pop-up flags) were used to minimize erroneous data entry. Data processing also included coding of open ended questions, checking for inconsistencies and analysis of data using appropriate analytical methods (frequencies, cross tabulations). Parametric tests were used to compare intervention groups and counterfactuals.

For qualitative data analysis, identifying emerging themes through coding and labelling qualitative data was followed. PAdEv reports and other qualitative transcripts were read; coded and common themes identified according to the research objectives.

Data Analysis

Quantitative and qualitative data were analysed together to generate a multi-dimensional view of the situation. KIT is vastly experienced in triangulation of data generated from mixed methods.

Treatment Groups

The evaluation used a quasi-experimental design which created artificially, comparison groups with similar socio-economic (SE) characteristics. In our case, we compared communities within the same LGAs to reduce SE and cultural differences between the intervention and counterfactual groups – and to appreciate if ‘spill-over’ to other communities took place. Treatment (intervention) and comparison (counterfactual) groups have been matched through observable characteristics for which data was available. We used a single difference method: comparing beneficiaries with non-beneficiaries (participation difference only). The FGDs with community men and women using the PAdEv tool examined specific impacts from different projects and especially in the counterfactual areas, the answers given relating to the domains and trends/changes demonstrated these effects in analyses.

This is a theory based evaluation and analyses of the various causal pathways and links in the theory of change have been evaluated to establish what worked, why, for whom and in what way. The links between effects and outcomes (the objective of this impact evaluation) were analysed against the activities/outputs of the program as part of the overall contexts within which the interventions took place (a realist approach) to explain effects and outcomes. The Most Significant Change Tool was used to capture the Drivers of Change. The FGDs, IDIs and HHS all have questions that catered to this. The hypotheses that were tested in the study are linked to the theory of change described above.

The treatment/outcome effect equation estimated:

We carried out a binary **logistic regression** analysis using SPSS statistical software to analyse the IE outcomes. Logistic regression may be thought of as an approach that is similar to that of multiple linear regression, but takes into account the fact that the dependent our outcome variable is categorical.

Multivariate logistic regressions were performed per outcome variable in order to compare odds ratios across models for each outcome ($p < 0.05$). Refer to Annex 6a for details. The outcomes (and definitions) considered for this analysis are presented in table 8 below.

Table 8 Outcome Measures from the WASH Household Survey data (2014)

Outcome Measures	Definition
Diarrhea (any member)	Any household member with Diarrhea in the 2 weeks preceding the survey
Severe Diarrhea (any member)	Any household member with Diarrhea in the 2 weeks preceding the survey and still had it at the time of the survey
Diarrhea (under 5)	Any household with children under 5 where a child under the age of 5 had Diarrhea in the 2 weeks preceding the survey
Not in School	Currently not in school (5-17 year olds)
Missed School	Missed school in last month (5-17 years olds)
Work	Engaged in work (paid or unpaid) in the week prior to the survey (5-17 year olds) for someone who is not a member of the family
Household Chores	Engaged in household chores* in the week prior to the survey for 5-17 year olds *shopping, cleaning, washing, clothes, cooking, or caring for children, old or sick people
Fetch water	Fetches water for household use in the week before the survey (5-17 year olds)

Independent or analytical variables were treatment group (intervention and counterfactual), socio-economic (household wealth index), area (North/South), household dependency ratio, sex of household head, level of adult education, and relevant domain variables per hypothesis as stated in the previous section. The data source is the household survey. The approach⁵ taken for the construction of the wealth index is detailed in Annex 7.

When we had a proportion as a dependent variable, we used a logistic or logit transformation to link the dependent variable to the set of explanatory variables. The logit link has the form:

$$\text{Logit}(P) = \text{Log} [P / (1-P)]$$

The term within the square brackets is the odds of an event occurring. For example, in our study, this was the odds of a household to have diarrhoea in the intervention or the counterfactual group. We can write the model in terms of odds as:

$$P_i / (1 - P_i) = \exp(\beta_0 + \beta_1 x_i)$$

Or in terms of the probability of the outcome (e.g. comparing proportion of households with diarrhoea in the intervention and counterfactual groups) occurring as:

$$P_i = \exp(\beta_0 + \beta_1 x_i) / (1 + \exp(\beta_0 + \beta_1 x_i))$$

In our case, P_i is the probability of having diarrhoea in households in the intervention group compared to the counterfactual group, and x_i is for example a background variable such as wealth status of the household. Therefore the parameter β_0 gives the log odds of a poor household to have had diarrhoea in the last 2 weeks before the survey (when $x_i = 0$) and β_1 shows how these odds differ for richer households (when $x_i = 1$) in intervention and counterfactual groups. This model, illustrated here for one explanatory variable, was expanded to include all explanatory deemed important for the hypothesis.

When an explanatory variable is categorical we used dummy variables to contrast the different categories. For each variable we chose a reference category and then contrasted all remaining categories with the reference.

⁵ Shea Oscar Rutstein, Kiersten Johnson, August 2004. DHS Comparative Reports No. 6, The DHS Wealth Index

Dependency between explanatory variables, also known as multi collinearity was checked before commencement of the logistic regression (by assessing for example associations through Chi-Square tests for categorical variables and Pearson correlations for continuous variables. This ensured no specification errors: all relevant explanatory variables are included and irrelevant ones are excluded.

In the logistic regression, using maximum likelihood estimation of parameters, we analysed the main effects models, the classification tables, the deviances, the model coefficients in order to present relative odds (adjusted odds ratios) and **adjusted confidence intervals** for the relative odds per independent (explanatory) variable. Outcome analyses are described in Annex 6a and outcome results, including confidence intervals are presented in Annex 9: tables 61 to 63.

Analysis of Effects:

For the analysis of effects (on water, sanitation and hygiene), Chi-square tests were employed for categorical data and t-test for continuous data. The comparison between treatment group, taken into account area and wealth were done in these analyses. Results are presented in tables 3 to 60 in Annex 9. The overall level of significance were kept at 5%, and adjusted according to Bonferroni, where relevant, as described in the section on dealing with multiple outcomes and multiple hypotheses.

Dealing with missing values:

Only cases where all dependent and explanatory variables are complete were included in the analysis.

Dealing with multiple outcomes and multiple hypothesis testing:

We investigated the channels of impact through subgroup heterogeneity analysis therefore it was necessary to cater to multiple outcomes and multiple hypothesis testing. We dealt with multiple outcomes by aggregating them into particular sub-domains to examine whether the overall impact of the intervention on a family of outcomes is different from zero^{13,14}. This enabled us assess whether the global impact of a particular intervention (water supply, sanitation, hygiene) is generally positive or negative. We have also aggregated different variables into sub-domains as is seen in the topic guides for the FGDs and the same sub-domains are reflected throughout the IDIs and the HHS questionnaires though in different structures. The information gathered through IDI and FGD supported the analysis of the quantitative data by explaining processes, context issues, drivers of change in the perception of implementers and beneficiaries. Also, quantitative data informed the importance and distribution of qualitative information.

In the **quantitative analyses** of the HHS, we tested the global hypotheses about each domain using a composite t-test approach. In this method, significance testing is performed on a single combination of domain outcomes. This technique deals with multiple comparisons by reducing the domain outcome to a single combination of measures and was used to assess whether the intervention has a statistically significant effect on a typical domain outcome or common domain latent factor.

However, we were also interested in individual outcomes because they show the discrete pathways of impact more clearly. For example, in looking at the impact of CLTS activities on the communities, we were interested in whether the WASHCOM and the CLTS facilitators' capacities have been built up or not by the interventions; whether there is gender related empowerment or not and whether the overall effect of the intervention (compared to the counterfactual) on the households in the community is positive or not. We used an approach that considers the significance of individual measurements when viewed as part of a family of n hypotheses. For instance, in examining all outcomes related to diarrhoea as a family, we used the Bonferroni method. The family-wise error rate was defined as the probability of at least one type I error in the family. Then, we could maintain the family-wise error rate at a chosen level α , 0.10, by adjusting the p-values used to test each individual null hypothesis in the family. We used α/n as the critical value. Thus, with 10 outcomes in a family, we could utilize a p-value of less than 0.01 as the cut-off when testing each individual outcome in order to maintain the family-wise error rate at 10 percent. More details of the outcome analysis are found in Annex 7a

We analysed three types of **qualitative data**: (1) In-depth interviews (2) standard FGDs (3) FGDs using the PADev tool. To analyse these data, we used an iterative process with a three pronged approach: "noticing, collecting, and thinking"¹⁵ For the first two types of qualitative data we used a case study approach to triangulate data from different sources and identify common themes or categories.¹⁶We triangulated to

compare data sources for reliability and to identify areas of agreement and disagreement across data sources and interview respondents. Theme identification enabled us manage the large volumes of data effectively by grouping them into manageable categories.¹⁷ Data was organized to develop a detailed understanding of each intervention component, its context, implementation and outcome. Secondly, MSC analysis was used to identify themes and patterns across all the components that showed trends, changes over time and reasons for them.

In essence, we conducted quantitative and qualitative analyses of water supply, sanitation and hygiene interventions both within and across domains. The analyses focused on systematically and clearly describing these domains and associations among domains.

Quality Assurance Plan

The use of hand held devices helped to improve the quality of data. The supervisors of the data collectors uploaded data from their devices to the ODK Platform on a daily or two daily basis depending on internet accessibility. Erroneous entries were identified early and allowed for clarifications and cleaning of data simultaneously at the collection phase. The supervisors checked entries daily before data was uploaded to the platform and a sample were checked on the platform by the core team. Consistency checks in terms of skipping patterns, out of range values, missing or incomplete or in accurate data were all catered for.

The research tools were pre-tested. Quality control addresses the design of tools in a participatory manner, the pre-testing of tools by a small sample of potential respondents as well as the translation and back-translation of tools. In addition all the research team members were trained in the use of the tools and interviewing skills. Clear guidelines were established. Supervision – Society for Family Health (SFH), experienced in conducting large scale surveys in the country were chosen for the data collection and a structure of supervision was put in place through that organization. KIT also has two highly qualified and experienced supervisors that over-saw the six states to further assure the quality of both the quantitative and qualitative data as well as the observations needed on the field. Interviews were audio taped after permission was granted by the respondents and only audio devices of good quality were used. Validity was also ensured by triangulation - using different methods to collect data and different sources of information. Steps taken to ensure study validity are in Annex 8.

Ethical Considerations

Informed consent was sought from all the respondents and data collection progressed only after consent was obtained. The objectives of the research and how the results would be used were explained in detail. Confidentiality and anonymity was assured. Privacy during the interviews was maintained and places were chosen where the respondents could talk freely and uninterrupted. Respondents were notified of their freedom to leave the research at any time, refuse to answer any questions they found difficult or were unwilling to answer. The database was accessible only to the key investigators and was de-linked from personal identifiers to ensure anonymity. The Evaluation followed UNICEF guidelines on the ethical participation of children.

Ethical approval for the study was obtained from the National Health Research Ethics Committee (NHREC), Nigeria.

B. Results

1. Effectiveness

In general, WASH:

In this section, we search answers to the following questions from our protocol:

- i. Q1 What were the Most Significant Changes according to stakeholders?

- ii. Q2. Are difficult or hard to reach areas are clearly identified with specific strategies/ resources?
- iii. Q3 Were the poorest and the marginalized groups reached?
- iv. Q4. Was the capacity of government partners to deliver WASH services strengthened?
- v. Q5. Are LGA/ WASHCOMS active partners?

Analysis of data pertaining to questions in this “effectiveness” chapter will be provided based on quantitative findings (“if” it significantly worked) and qualitative findings (if it worked – “why”, “how”, “where”, and for “whom”). To appreciate if quantitative findings were statistically significant, in all cases, at an overall level of significance of 5%, the following tests were used (unless specifically noted otherwise): for categorical data, the Chi-Squared test was used and for continuous data, the T-test was used. Please also refer to the ‘Analysis of effects’ in the data analysis section. Adjustment of p-values according to Bonferroni was employed where necessary.

Q1 The Most significant changes according to stakeholders

During the **stakeholders’ workshop** the most significant positive changes the stakeholders detailed that they would expect from the intervention were identified as :

In General:

- ⇒ Institutional Strengthening at LGA level (LGA WASH units functionality) and at community level (WASHCOMS)
- ⇒ CLTS: Reduction in diarrhoea, cholera. Communities taking initiative to attain ODF status by assisting less privileged people in the construction of latrines, reduction on open defecation (OD) in communities, achieving ODF status, communities engaging in their own sanitation (i.e. building public latrines), increased use of latrines, community members working together and improvement of community organization, engendered community collaboration for a common purpose/goal
- ⇒ Water Supply: Reduction in time (to collect water), reduction in waterborne diseases, increase in water coverage, improved water supply, improved drinking water, funding for water supply in non-program LGAs (as it is limited especially from the government)
- ⇒ WASHCOM: Improved community organization, ensuring functionality of systems put on place, generating wide acceptance (of WASH program)
- ⇒ Sanitation: Better school sanitation

The most significant **negative changes** according to the stakeholders were identified as:

- ⇒ CLTS: Lack of latrine options during triggering, compromised quality of latrine construction (due to fast scaling up), reduced emphasis on collecting data for input into global monitoring report, dependence on government for maintenance of facilities
- ⇒ Water supply: non-functioning boreholes, inadequate protection and maintenance of water sources, communities wait very long for repair of hand pumps
- ⇒ WASHCOMS: relapse to OD (due to weak or non-functioning WASHCOMs)

In the intervention communities of Dass, Birnin Kudu, Oju and Bakori, **reliability of water supply** was identified as the most significant change in the domain of water.

“Our former water source is a spring and it’s an hour’s trek to and from the community. We suffer shortage of supply from the spring during the dry season but we enjoy water from it in the rainy season. All this is over with the borehole as we get regular supply”Ganjar, Bakori, FGD, old women

Reliability of water supply was also reported by the respondents as having an effect on school attendance because the children no longer had to leave the school in the middle of the school period to come home and drink water. The older women in Kura Sabuwa (Birnin Kudu) mentioned that the children do not have to take water bottles to school unlike before the intervention when they used to take tin containers (used beverage cans) with water to school.

Reduced distance to the water source is another significant change that has had an effect on the context in the intervention communities. The men were usually responsible for fetching water in some communities,

the northern states especially but now that responsibility has shifted more to the children because of the nearness of the water sources, a situation that the women and the men find advantageous since the men no longer have to monitor water usage in the household. The implication of this on school attendance for the children was explored but the women in Kura Sabuwa stated that the borehole was so close that they could fetch water in the night or at any time of the day. Also since they have several boreholes, the water quantity is sufficient:

"Now the quantity is enough, but before only the strongest get water"

The respondents also mentioned that the reduced distance leads to increased water use for bathing and laundry because it does not have to be hauled over a long distance:

*"Before we had the borehole, we suffered before getting water. We go to the spring at night and don't sleep well because we fetch at night and wake up early in search of water. Then, we had clothes piled up but this is no longer the case because we wash our clothes daily. When we get back from the farm, we had to rush out of the house immediately in search of water. Now we wake up early to go to the farm and later get water when needed. Now our mind is at rest because we use water as we wish. We can take our bath at night and bathe thrice if we choose to do so."*Ajebamidele, Ejigbocommunity FGD

The community children in Ganjar, Bakori also mentioned reduced distance to water sources as a significant change stating that they used to trek for about one hour before the intervention to fetch water but that the situation had changed.

In the community FGDs, the respondents in especially the intervention but also some counterfactual communities mentioned that **female children enrolment in school** has increased and also in general, enrolment of children in school has increased. However, they described another intervention where people came to talk to them about sending their children to school - so this change may not be attributable to WASH. This is confirmed by the community children when they were asked about the most significant change:

*"We have had changes in the area of school, before it was just one block of class room but now we have three blocks. Before our parents did not like to send their children to school but now more children are enrolled in school."*FGD Community children Bondi, Dass

Intervention communities, where schools have boreholes and latrines, mentioned that the children are now able to stay in school instead of coming home in the middle of school activities to get water or to defecate. In Bondi and Bakori, they mentioned specifically that the children now go earlier to school than before the water intervention.

All the *counterfactual communities* with the exception of one (Sambalisa), mentioned no change in the category of water. They indicated that they are drinking the same water they always did, and still rarely treat it. In Gwarlak, they explained that they still had to dig to make holes in the stream in order to get water. They have well water but because it usually dried up during the dry season they still use the stream water.

*"We still have to make queue to fetch water even the stream water."*FGD Community young men, Gwarlak, Dass

Relating to the sanitation category, **increased latrine building and behaviour change in terms of latrine use** instead of OD practice are the most significant changes observed in the intervention communities. The intervention communities stated mostly that they use traditional latrines, because the cost of the improved latrines is beyond the paying capacity of majority of the people. Where communities already had the culture of traditional latrines before the intervention (Birnin Kudu and Dass), these type of latrines are still in use. The latrines have the disadvantage of collapsing during the rainy season, however the respondents mentioned that *the choice to build a traditional or sanplat latrine is determined mainly by affordability* and they find the traditional latrines more financially accessible. The building of more latrines and change in attitude regarding open defecation was also mentioned by the community children as an important change:

*"Before you can see shit in front of people houses, but now, there is not. Because there were no toilets in people houses but now there are toilets even on a street you can see toilets."*Community Children, Ganjar, Bakori

One of the most significant changes noted by all the respondents in the FGDs and IDIs is that of **hygiene behaviour change** especially related to hand washing. Indeed, the communities and the children show evidence of being well informed about the components of sanitation and hygiene education. When asked

about the most significant change in terms of the WASH interventions, the children in environmental health clubs (EHC) detail the hygiene behaviour change and reduction in diseases.

Decrease in water related diseases due to increased accessibility to safe water sources is acknowledged by all intervention communities as a significant change.

"Before now we drink water from the stream, the same place that cow and other animals drink from," FGD Community men, Bondi, Dass

The respondents in the various communities stated that they used to fall ill more frequently before the WASH interventions but now that is much less. The men in intervention communities also alluded to the savings made financially as a result of this:

"In previous time, we have rampant cases of diarrhoea outbreak in Ganjar and also guinea worm, para-typhoid, cholera, typhoid etc. All resulting from the poor sanitation and bad drinking water, but with the intervention of WASH programme which enlighten our people, the rate became very low and we no longer spend large amounts of money in the hospital." Ganjar, Bakori Community FGD

The community children in the intervention communities also mention this as a most significant change:

"Before now, we used to drink the water from the stream, during that time we used to experience lots of illnesses, after that we now start drinking water from a dug well and now we have been provided with borehole. Now that we have borehole, most of the diseases that we were faced with before have now reduced. You see this is not a small change." Community children, Bondi, Dass

The children in the EHCs also mention this (FGD Children in EHCs, Ganjar, Bakori):

"We feel better in our health... In those days, you will be attacked by headache, stomach upset, cholera, but now we are doing better."

Not only is reduction in diarrhoea, guinea worm and cholera frequently mentioned, also the reduction in skin diseases is signalled as significant.

The *counterfactual communities* although to a much lesser degree also allude to some decrease in water and sanitation related diseases due to the change in their sanitation behaviour. Nevertheless one counterfactual (Sambalisa) which incidentally had received borehole water six months before the IE, still acknowledged open defecation practices and had not noticed a decrease in water borne diseases and indeed did not relate diseases to water, sanitation or hygiene but attributed them to an act of God.

The *state focal persons* in the intervention areas see **behaviour change** as the most significant change demonstrated in reduction in open defecation practices.

"Before the intervention, we could hardly stay in the community but now we go and stay and chat with the community and go anywhere without fear of seeing anything (OD) here" State focal person Bauchi (Dass).

The same sentiment was voiced in the FGDs of the local government focal persons in Bakori.

Increase in the number of safe water sources and the **reduction in water borne disease** are also seen as most significant changes by both the state and LGA focal persons:

"A few years back in Katsina, we were having several cases of polio particularly and cholera outbreaks. By the time we started the CLTS the issue of polio and cholera outbreaks become history and government saw the results clearly." State focal person Katsina (Bakori)

"This community was created as far back as 1976 but the LGA could not boast of 30 boreholes for over 30 years of existence but with the intervention of UNICEF, they are able to have 300 standard boreholes within 3 years in the community".

"Before 2009 and 2010, I think almost on yearly basis you find out that Doctors with-out borders used to come to the LGA and provide a camp for gastroenteritis cases but you find out that from the intervention year up till this year we have not had any camp in this LGA". LGA focal persons, Dass

In-charge of *health facilities* in Bakori and Dass detailed the health education/promotion and increased access to safe water supply as the most significant changes. They stated that the health education has remarkably increased latrine construction and use and the health education has led to significant improvement in the hygiene behaviour of women. Also a reduction in water borne diseases was emphasized.

*“Before my transfer to our health facility, I was informed that there were series of cases of water related disease and also sanitation related disease, but since my coming here for about two years, I have never seen such incidence. I sometimes assume that I was misinformed (laugh) but people from this community confess to me that it is due to this improvement in sanitation ... and access to safe water in large quantity - even if there are these disease cases it is not as serious as in previous times, it is rapidly decreased”.*In charge of health facility Bakori

Q2. Difficult or hard to reach areas are clearly identified with specific strategies/ resources

A. Primary qualitative data

The programme is documented as having developed sanitation solutions for communities at risk from the **impacts of climate change** (pit collapses, flooding of pit) and some community interviews detailed that they were taught by the programme how to fortify their traditional pit latrines with old tires and blocks in order to prevent them from collapsing during the rainy season.

Rain water harvesting schemes are also in place to ensure additional water security.

From the FGDs of the communities it was *not possible to assess* specific strategies to reach **difficult and remote areas**. Because the current approach in all SHAWN States is to cover all LGAs in the State, it may be assumed that also the remote and more difficult areas would be covered. However, it is of note that *more of the counterfactual areas are in remote and hard to reach areas*, for instance, Umueze Okoha in Oju and Gwarlak in Dass.

Q3. Is the program reaching the poorest and the marginalized groups?

A. Primary quantitative data

The approach of the program is LGA wide – so we looked inside the LGAs in order to answer this question. The IE team has selected the best and the worst performing communities – from this way of sampling a proxy indicator comes to the fore that provides an image on how this question might be answered.

The household data showed a wealth distribution favouring richer households (and therefore richer communities) in the intervention areas. See figure 2 below as well as Table 1 in Annex 9. From the figure, we see that the “intervention sites” are relatively rich, while the “non/low-intervention” sites are relatively poor. This suggests that the interventions are not pro-poor, contrary to the UNICEF policy of targeting the poor.

In Table 1 detailed in Annex 9, we see some significant differences:

- 45,8% of households are very poor or poor in the counterfactual in comparison to 34,1% in the intervention areas (p=0.0001)
- 33,6% of households are rich or very rich in counterfactual areas ; the corresponding figure for the intervention areas is 46,4%.



Figure 2: Distribution of Wealth (quintiles) by treatment group and area

B. Primary qualitative data

Although no specific mention is made by men and women or even WASHCOMs of strategies to also include the poor and marginalized, the ODF status of the majority of the intervention communities indicates that also these groups have access to latrines. These may be traditional latrines on an individual household basis, or shared latrines. LGA staff and CLTS facilitators mention that they do pay attention to the inclusion of these groups, but how this is done is decided by the WASHCOMs. If a community wants to become ODF, *everyone needs to have access to a latrine* and the WASHCOM makes sure this happens. In the case of a collapsed latrine, the households are said to make use of their neighbours' toilets until their own are(re)constructed. The WASHCOMs assist in building the latrines including building public latrines to ensure that those who cannot afford to build latrines have a place to use. Public latrines indeed seem to be an approach used in some communities for the poor but the extent to which this has been implemented varies across the communities.

Regarding distance to the water points, most communities are not very large in area, so the accessibility appears similar for everyone. The LGA staff (Dass) mentioned that they ensure that the borehole is constructed in a place that is *easily accessible for the majority of the community* – including the poor and vulnerable. However, this is not always easy because

“Frequently community leaders will want to change where the boreholes are planned to be drilled because of their selfish interest”. IDI State focal person Dass

There are a few specific approaches for **women** in the WASH programme components. They include training done on hygienic menstrual behaviour mentioned by one of the local government stakeholders in Dass. He detailed menstrual hygiene training where six women from the LG WASH department attended in RUWASSA Bauchi and covered about 50 communities after that. He said that step down training has been done for the communities and the hygiene promoters in the WASHCOMs now carry out the training. He indicated that the menstrual hygiene training was of particular importance because men used to divorce their wives because they did not know how to take care of themselves during their menstrual period. Some female pupils also did not go to school during the menstrual period.

Female members of the WASHCOMs do the house to house visits to inspect hygiene behaviour and practices – this cannot be done by males. Similarly, training of female members is usually done by female facilitators from the LGA or an implementing NGO.

The State stakeholder in Katsina provided some details of the process of **selection of LGAs** for the intervention. According to him, information is accessed from the household data, population data and administrative data of all the LGAs and the LGAs are ranked based on these. The LGAs are categorized into progressive, moderately progressive and underserved LGAs and the first three in each of the categories were selected. Bakori was selected from the progressive category, Mai'adua from the moderately and Kaita from the underserved LGAs and all were from different Senatorial zones in the state so there were also consideration of equitable sharing of the programme. *The choice to pick progressive rather than underserved was made because they felt that more could be achieved with the progressive before the end of the first project.* The recommendation was made by the selection committee, driven by donor targets, and approved by the government.

Q4. Strengthening of the capacity of government partners to deliver WASH services

A. Primary qualitative data

An overview of the trainings that have been given to State, LGA, Community WASHCOM, latrine builders and CLTS facilitators was carried out using the programme documents which detailed the trainings carried out for the period July 2012 – August 2013. Within this period, a total number of 32,671 people (23,663 males and 9,008 females) were documented as having been trained from all these levels. They have been trained in a vast array of topics that are all relevant for WASH planning, implementation and monitoring. While these trainings are relevant and necessary, we have not been able to get much feedback on trainings conducted at the WASHCOM level from our interviews. Here, at most a two-day orientation training and a one day refresher were mentioned.

Training is provided at **LGA** level. The Dass state stakeholder detailed series of workshops on community management training, CLTS training, capacity building on procurement process and M&E which he said usually took place quarterly or as the needs arose. The specific workshop organized is determined by what component of the programme they want to implement at that time.

According to all the stakeholders, there are improved capabilities at LGA level to deliver the desired output. They all detailed workshops and trainings that have been carried out at states and LGA levels on the implementation of WASH. The local governments implement the activities at community level and the states facilitate the implementation and provide support.

The LG key informant also reiterated the increase in capacity stating that the presence of the UNICEF WASH consultant had helped them achieve this. He stated that they have the manpower to do the work and that all the staff had been trained in one aspect of WASH or the other. He indicated that Hygiene Improvement Framework (HIF) was covered in 20 primary schools in the LGA. He also detailed training done for the staff on Excel; and post implementation training on the project AID committee, patient monitoring survey. Thirteen VLOM members were trained in 2011 and 2012.

Also **NGOs** based in the different States or LGAs have been included in the training to increase the human resources (and especially females) capable to guide implementation at community level. Also included were trainings for NGOs that are involved in implementation and National Youth Service Corps (NYSC) Volunteers.

In the IDI's and FGDs with the **WASHCOM** it was said that training was received when the WASHCOM was established. They were taught on how to protect against diseases, on sanitation and hygiene, and *other things*. They were given many working tools (not specified) and training on construction of latrines was conducted for some of the men. One artisan training has been conducted on innovation to address latrine collapse.

However, IDIs and FGDs with WASHCOM members in Dass and Bakori give different images on the trainings that have been given to the WASHCOMs. In Bakori, training of pump caretakers is mentioned as well as training for health workers to become hygiene promoters in the village. In Dass, the WASHCOM is trained on the importance of OD and a second training on hand washing.

As she stated "I still need more training because the trainings are not regular and I may forget something. First training was for three days and the second training was just for one day."

This lack of training mentioned may be the result of understanding of the term training that is perceived only to be a formal training held somewhere else and not an 'on the job' training in a more informal manner during visits of the LGA WASH team.

The Rural Water Supply and Sanitation Agency (RUWASSA) at State and LGA level have engineers and repair crews that are described by the stakeholders as well trained and were there even before the programme started. At State and LGA level, staff have been trained on CLTS facilitation and triggering, as well as in monitoring implementation.

While skills to carry out the tasks at both levels are sufficient to result in a large number of ODF communities, the capacity in terms of numbers of staff, transport available as well as funds available to carry out repair and monitoring tasks as well as community level (refresher) training, seems to be seriously affecting the capacity of government partners to function as desired.

Q5. Performance of active LGA/ WASHCOMS

A. Primary qualitative data

State and LG stakeholders

According to the IDIs of the State and LG stakeholders, there are **monitoring and evaluation units** and teams at both *State and LGA levels* for the states – Bauchi and Katsina in which the interviews were conducted. However, the M&E frameworks for both states are still in draft form and have not been validated. Both states have MIS systems. They have specific software for recording data collected from their different facilities and coordinates. These data are usually forwarded to the UNICEF offices in Bauchi and Katsina. The analyses of the data are carried out by UNICEF and they send the feedback to the states. If there are issues for clarification or that need to be improved, the states then effect the necessary changes. The coordinators in the local governments collect and update data from the communities and send to the WASH units for action to be taken. For instance when boreholes are installed they give feedback to the state regarding the communities with boreholes and make the request regarding those that still need boreholes.

In Dass, the desk officer at community level is the local government officer on ground in the communities and gives feedback to the LGA about the situation in the communities. At LGA level, there are about twenty three staff and thirteen of them are desk officers in the various wards and remaining staff perform administrative functions at the LGA level. Some of these remaining staff are also the CLTS facilitators. WASHCOM members are supposed to have regular meetings and provide feedback to the LGA regarding what is happening in the community.

In Bakori a similar process was described by the key informant but in this case the ward officers monitor WASH activities at the community level and are detailed as having the responsibility of monitoring developments within their wards and providing feed back to the LG who then send the data to the state for forwarding to the national level. The stakeholder in Bakori stated that though they have available human resources, they need more staff especially female ones; they have only three technical staff and eight other staff. She stated a need for more female staff especially for the house to house inspections. The WASHCOMS through their sanitation and hygiene committees provide regular updates to the ward officers regarding their communities.

WASHCOMs are (s)electd in different ways (the village chairman together with a number of influential people selects or community election process); also the number of persons in the WASHCOM differs per community, although majority follows the guideline of 5 women and 10 men. The (s)elections are guided by the CLTS facilitators (LGA level) and include criteria such as: gender division, willingness and interest, leadership qualities, presence and respect in the community and ability to fulfil different functions such as chairman, secretary, treasurer, hygiene educator, technical person and advisers. Except in one counterfactual community (Umueze Okoha in Oju), all the communities have WASHCOMs that are active and recognized by the community. Review of the WASHCOM books indicated regular activities (hand pump maintenance, monitoring OD and household hygiene, environmental sanitation, community contributions – regular or incidental-, hygiene education) and training received, varying from one only to ten – subjects not specified.

WASHCOMs

In Dass, the WASHCOM chairperson related that the LG WASH Unit usually invites them for meetings to give reports on their activities. For WASHCOM members themselves, they tell their chairman verbally about home visits and activities and these are not put in writing. Review of the WASHCOM books only gave insight in records in three WASHCOMs (Osun, Yakurr and Birnin Kudu). The review showed that there is no uniform manner of recording, and not the same elements are recorded. For instance in Osun, no monitoring data are recorded, while in Yakurr and Birnin Kudu routine recording is done on sanitation defaulters. All three recorded financial contributions and expenses.

The local government is given feedback on the need for repairs of water facilities, the level of implementation of the WASHCOM activities, the tariffs within the particular communities and how judiciously they are being used. They use this information to assess the communities regarding how effectively they are performing and determine which ones they need to go back to for strengthening. The assessment of the community output and actions taken based on them are all done by the monitoring and evaluation WASH units in the LGAs. The key informant in Dass explained however that due to the very hilly terrain of the LGA, accessibility to the communities is sometimes a problem especially during the rainy season and impedes this process.

According to the RUWASSA stakeholder in Bauchi, monthly meetings are held with the WASH staff at LGA level in the RUWASSA office. All the LGA Coordinators / focal persons meet with RUWASSA to compile reports on a monthly basis; these reports are sent to UNICEF. They also plan activities for implementation during these meetings.

According to the LG stakeholder in Dass, *UNICEF designs the activities and contracts them* while they supervise and monitor. Their activities go beyond the UNICEF program, for instance, about 308 boreholes were constructed by the UNICEF SHAWN programme and apart from that there are other donor organization and politicians who also construct boreholes. As of the last month before the interview, they had a total of 414 boreholes in the local government. He stated that it was challenging to provide the total number of boreholes in the different areas because some other organizations do not come through the LG, they just see them constructing boreholes. He further mentioned that they recently had a meeting with some LGA representatives and their coordinators to talk about these issues and the need to sit together and plan before boreholes are sunk because some communities have 3 to 5 boreholes while others have none.

There is no period established for **WASHCOM membership** and members do not receive any incentive (payment or otherwise) for their activities, they are motivated by a sense of responsibility and possibly status in the community. Frequency of WASHCOM meetings is unclear, some mention twice a year, others do not mention official meetings but have regular activities in the community. Although the Standard Operating Procedures for WASHCOM show that there are many regulations, *in none of the FGDs or IDIs were these procedures mentioned*. Similarly, it is not yet clear what the legal status of the WASHCOMs is.

Effects on Water

In this section, information will be provided to answer the following questions:

- ⇒ Q1. Did the number of water sources increase?
- ⇒ Q2. Is there improved access to water (geographical, financial and cultural), enough water for all domestic needs?
- ⇒ Q3. How is institutional maintenance, VLOM/O&M of water supply - every day maintenance and major repairs – organized?
- ⇒ Q4. How is the financing of water supply organized- e.g. fee collection method at community level?
- ⇒ Q5. What is the perception of water quality – including e.g. acceptability for users, safe transport, safe storage?
- ⇒ Q6. Is the capacity of government partners to deliver WASH services strengthened?

Q1. Increase in the number of water sources

A. Secondary data

As there was no baseline study carried out, we use the DHS 2008-2013, as well as the MICS 2011 data to search for trends:

Table 9 Trends in distribution of households with improved source of drinking water

% Distribution of hhs with improved source of drinking water*	DHS 2008	MICS 2011	DHS 2013	IE WASH 2014	LGA of sample
Benue	47	49	37,3	58,2	Oju
Bauchi	35,8	44,6	37,4	77,8	Dass
Jigawa	79,4	64,9	73,9	81,1	Birnin Kud
Katsina	38	43,2	49,5	71,9	Bakori
Cross River	25,8	49,4	69,6	77,3	Yakurr
Osun	76,3	74,7	80	74,1	Ejigbo
Average % across the 6 States	50,38	54,30	57,95	74,2	

**piped source within the dwelling or plot, public tap, tube well or borehole, and protected well or spring*

Table 9 above shows that the proportion of households with improved source of drinking water increased overall in the 6 States from 50,38% in 2008 to 57.95% in 2013. It increased in Bauchi Katsina, Osun and considerably in Cross River. It decreased however in Benue, and in Jigawa. These figures provide an impression of what happened at the macro level. It should be noted, that these figures derive from secondary data analysis; in DHS it is not possible to obtain the raw primary data, hence analysis is limited:

- DHS provides a Confidence Interval(CI) on 1 variable of interest to this study, namely “% of children with diarrhoea in the preceding 2 weeks of the survey”. However, this is provided per sample area, i.e North central, North East, South South etc. The DHS does not provide any other variable and its CI of interest to our study. The MICS only provides this indicator for all states combined.
- The MICS provides CIs for 2 of other indicators of interest for this study, at state level, but not per LGA (what is needed for this study). These are:
 - % Distribution of hhs with improved*, not shared toilet facility,
 - % Distribution of hhs with improved source of drinking water

In summary, the MICS and DHS provide an interesting description of the overall situation, being a secondary data analysis it is not possible to present significance tests or CI, as we need the raw data at the relevant level to calculate these.

B. Primary quantitative data

Household heads were asked where households previously collected water and where they are currently collecting drinking water. Responses could therefore be ‘matched’ per household and a comparison could be made between the previous and current source of drinking water. Just over 6 out of 10 of the households in our survey (62,9%) reported that drinking water was collected somewhere else previously. A slightly higher proportion of households in the intervention areas (65,3%) reported a **change in water source** for drinking water than households in counterfactual areas (60,5%).

Significant improvements in the proportion of households **accessing improved sources** for water occurred across all households in the survey, an increase from 39% to 74,0%, and a relative increase from before to the current situation of 90%. Significant increases in Northern *and* Southern households as well as across wealth quintiles as presented in the table below (p=0.0001, McNemar Test).

- Additionally, we observed significant increases in access to improved water sources for drinking water in both the intervention and counterfactual areas.
- Households in the North benefitted more than households in the South, with a relative increase of 102,7%.
- Relative increases for the poorest households was 168,4%, for poor households 105,8% and average (or household on the 3rd quintile) was 105,4%. Relatively speaking, rich and richest households benefitted the least in improved access when compared to the poorest, poor and average households, with relative changes of 61,3% and 60,8% respectively.
- Details are presented graphically in Figure 3 below.

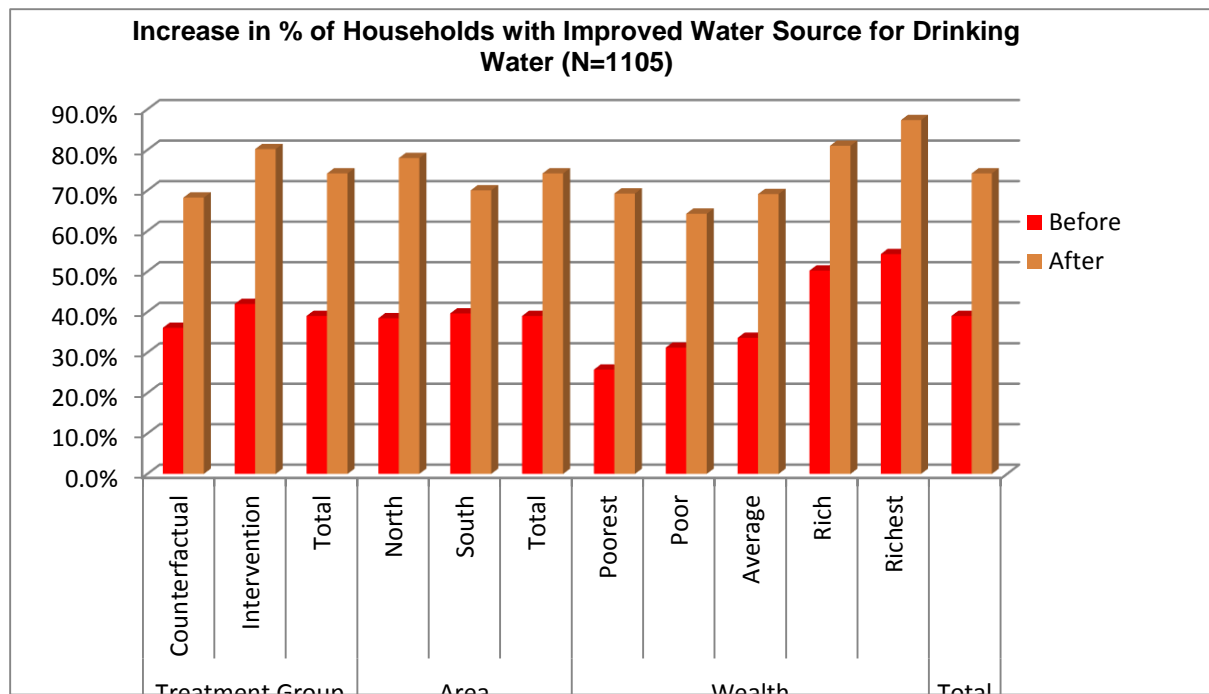


Figure 3: Increase in % of households with improved water source.

Q2. Improved access to water

A. Primary quantitative data

A total of 74,3% or 4308 of the total of 5365 household members included in this survey have their main source of **drinking water from an improved water source**⁶. See table 10 below:

Table 10 Access to improved drinking water – intervention vs. counterfactuals

		HHs with Improved Drinking Water
		%
Treatment Group	Counterfactual	68,2
	Intervention	80,4
	Total	74,3

Significantly more households use improved water sources for drinking in the intervention areas (80,4%), compared to the counterfactual areas (68,2%) ($p=0.0001$). The main sources of drinking water in the *intervention areas* are tube wells/boreholes (63,1%), followed by rivers/streams (7,5%). This is also the case in the counterfactual area: tube wells /boreholes (54%), followed by rivers/streams (19,3%).

Just under half of households use tube wells/boreholes (48,8%) for **other purposes** than drinking water, followed by rivers/streams (14,8%), open public wells (9,3%), public taps (4,6%), and protected public well (4,3%). This accounted for a cumulative frequency of 81,8%. Refer to Annex 9, table 3, for further details and significance tests.

Table 11 Households with access to improved drinking water - the North vs. South

		HHs with Improved Drinking Water
		%
Area	North	78
	South	70,2
	Total	74,3

The Northern parts had significantly more households with improved water sources (78%) for drinking water when compared to the Southern parts (70,2%) ($p=0,0001$) See Table 11 above. In the Northern part of the study area, water was predominantly supplied by tube wells/boreholes (66,9%), followed by open public wells (11,1%) whilst the Southern part used it mainly is tube wells/boreholes (49,3%), followed by rivers/streams (23,9%).

⁶Improved water sources for drinking water are households using any of the following types of water supply : piped water (into dwelling, yard or plot, to neighbour, public tap/standpipe), tube well/borehole, protected well, protected spring, rainwater collection and bottled/sachet water.

The Northern parts had significantly more households with improved water sources (72%) for other purposes when compared to the Southern parts (61%) ($p=0,0001$). In the Northern part of the study area, water was predominantly used from tube wells/boreholes (58,3%), followed by open public wells (14,9%) for other purposes besides drinking whilst the Southern part used mainly tube wells/boreholes (38,1%), followed by rivers/streams (26,6%).

Table 12 Households with access to improved drinking water by wealth index

		HHs with Improved Drinking Water
		%
Wealth	Poorest	69,2
	Poor	64,3
	Average	69,1
	Rich	81
	Richest	87,8
	Total	74,3

Wealth is associated with use of improved water sources (see Table 12 above); 87,8% of the richest household used improved water sources (52,5% tube wells/boreholes, 12,2% public taps, 7,3% piped into the dwelling/plot, and 6,4% with a protected well in dwelling/plot) in comparison with 69,2% of the poorest households – mainly tube wells/boreholes ($p=0.0001$)

Eleven percent of households used improved water sources for drinking water **but not for other purposes**; 12% in the intervention and 10,5% in counterfactual areas; in Northern households 8% compared to Southern households of 14,9%. In poorest households, it's 7,8% compared to 11,9% in the richest households.

One in 10 households (10.1%) has their main source of **drinking water on the household premises**; this is similar in counterfactual and intervention areas, and Northern and Southern areas. However, there is a significant increase in the proportion of households across wealth quintiles with main source of drinking water on their premises: poorest households (3 in 100) to richest households (1 in 5) ($p=0.001$).

Changes in distance to previous water sources

An important aspect of accessibility is the distance to a point where safe water can be obtained. Households reporting getting drinking water from a different water source previously (62,9%), indicated *a further distance* to the current water source in 39,4% of cases; in 11,6% of cases the distance was equal and in 49,1% of cases the current water source was closer than the previous source.

- More households in intervention areas reported similar or closer distances to the current water source than in counterfactual areas (63,5% and 53,7% respectively, $p=0,022$).
- In the South this was also the case when compared to the North (67,5% and 54,5%, $p=0.0001$).
- Richer households were also equal or closer distances to their current water source than poorer households (ranging from 54,9% for the poorest to 66,9% of richest households, $p=0,0001$) See Figure 4, below.

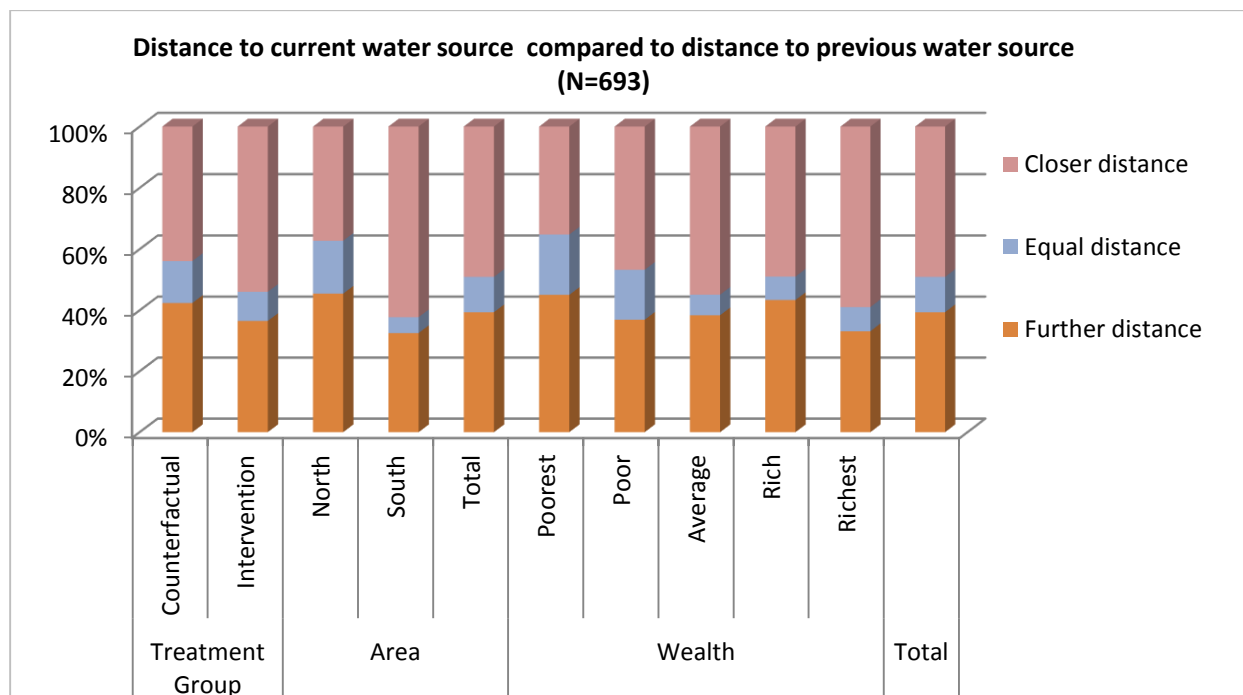


Figure 4: Changes in distance to current water source for drinking water

Sixty one percent of households explained that they lived was within 250m of an *improved* water source. This is considerably lower than the targeted 90%. Median distance to *improved* water sources/points for drinking water was around a 100m –

- This was similar in counterfactual and intervention areas. However, as already noted, these distance estimates are viewed with caution.
- This was similar between North-South areas
- Percentage of households within 250m of an improved water source increased significantly from poorest to richest households, i.e. from 43% (poorest), 53% (poor), 50%(average), 63,3% (rich) to 71,7% (richest) (p=0.0001). Details are in Table 13 below:

Table 13 Distance to water source less than 250m

	No	Yes
North	50,5%	49,5%
South	36,8%	63,2%
Counterfactual	47%	53%
Intervention	41%	59%
Poorest	57%	43%
Poor	47%	53%
Average	50%	50%
Rich	36,3%	63,3
Richest	28,3%	71,7%

Median **waiting times** in queues to get water from an improved source was around 10 minutes, and took about 10min to collect water and return. This was the same in the intervention and counterfactual areas, in Northern and Southern households and across wealth quintiles. It was much further to *unimproved* water

sources/points; around 500m and took around a median time of 30 minutes to collect water and return. Differences do exist, however:

- In Southern areas, significantly longer time to get to *unimproved* water sources and to return, as well as longer waiting times were experienced
- Richer households waited significantly longer though than average when collecting water from *improved* sources ($p=0.001$).

Availability of main water source (for drinking) was high (90,3%) irrespective of the type of water source (improved or unimproved) in both the intervention and counterfactual areas, both Northern and Southern parts and across wealth quintiles. But there are differences in the results:

- Households with access to improved drinking water in counterfactual areas (68,2%) reported higher daily availability (94,1%) than intervention areas (90,2%) ($p=0.039$),
- Households from the North (94,9%) higher than the South (88,5%) ($p=0.001$),
- And poorest households (98%) higher than richest households (87,4%) ($p=0.005$)

A high monthly availability of main water source (average of 19 days, std dev 4) was reported across treatment group, Northern and Southern areas and wealth quintiles. About a third of the sample reported **unavailability** of water for a day or more, two weeks preceding the survey, irrespective of the type of water source (improved or unimproved).

- No significant differences were observed between intervention and counterfactual areas
- Northern households reported unavailability of water more than Southern households for improved (42,9% versus 21,6%, $p=0.001$) and unimproved main water sources (39,7% versus 17,8%, $p=0.001$).
- Poorest and poor households with access to improved water reported unavailability of water more than rich and richest households with access to improved water. (ranging from 34,6% to 22,2%, $p=0.032$)

Improved sources of main drinking water were used on average for 6 years (standard deviation 7) in both counterfactual and intervention areas, and for much longer when it was unimproved (mean of 22 years (std dev=18)).

Frequency of water use: from our study it appeared that the majority of households used drinking water from the main water source *on a daily basis*(93,6%). However, there were differences in use of water on a daily basis:

- No differences between intervention and counterfactual areas were observed in frequency of water use – whether improved or unimproved water source.
- Between North and South: in the North, *less* households used *improved* water sources than in the South ($p=0.0001$) – but also in the North more households used *unimproved* water sources than in the South ($p=0.006$).
- The poor tend to use *improved* water source more than the rich ($p=0.024$). Seven percent of the richest households tend to use an *improved* water source on a weekly basis (See Table 7 in Annex 9).

Who collects the water?

Seventy seven percent of households indicated that an adult man or woman usually goes to the water point to collect the water – for the remainder, water is collected by children under 15 years old (22,6%): girls (11,3%) and boys (11,3%). There are differences:

- No differences however did exist between intervention and counterfactual areas on who collects water, close to 40% of times it is adult males and close to 40% it is adult females; the remainder is children under the age of 15.
- In the North, it's mostly the adult man (58,2%) followed by a under 15 boy (12,8%) and in the South, the adult women (59,2%) followed by the under 15 girl (13,5%) ($p=0.0001$).
- Among the poorer households it tended to be more adult men to usually collect water and amongst the richer households more adult women ($p=0.0001$). This can be explained by the fact that 82,4% of the poorest households are in the North and 85,5% of the richest households are in the South..

The interviewees were asked whether a **child** (aged 5-17 years) spent time in the 7 days preceding the survey to fetch water and the total number of hours spent. Just over two thirds of children aged 5-17 spent time in

fetching water according to the interviewees Average time spent in the 7 days preceding the survey to collect water was around 8 hours (standard deviation 6 hours); this was significantly longer for children collecting water from unimproved water sources (mean 9 hours, standard deviation 7 hours) than from improved water sources (mean 7 hours, std dev 6), ($p < 0.05$). Again, *no significant differences between counterfactual and intervention occurred*. Male children were more likely to collect water ($p = 0.015$) than girls,

- Just over two thirds of children aged 5-17 spent time in fetching water according to the interviewees; *this was similar across the intervention and counterfactual areas*.
- More children in the Southern areas collected water than in the Northern areas (82,6% and 64,5% respectively, $p = 0.0001$). In the Southern areas, children spent an average of 10 hours (standard deviation 7) compared to the Northern areas where on average 8 hours (standard deviation 6) was spent to fetch water from *unimproved* sources ($p < 0.05$).
- Children from wealthier families were more likely to collect water than children from poor families ($p = 0.001$). This can be explained by the fact that 82,4% of the poorest households are in the North and 85,5% of the richest households are in the South. Even so, children from poorer households spent significantly more time fetching water (mean 9 hours, std dev 6 compared to mean 6 hours, std dev 6 hours), especially collecting water from *improved* water sources.

B. Primary qualitative data

All intervention communities reported that they have had an increased number of water sources due to the installation of the boreholes. Availability of water at all times relieves people from fetching water at night or worrying about when to get the water. Although in larger communities (Yakurr), the **distance** to the borehole is still considerable for some, there are also private boreholes in these places where people can buy water.

There is improved access to water in terms of distance but the **quantity** of water is sometimes considered inadequate for all the domestic needs especially during the dry season. In such instances, the stream or well water available in the community is used for things like washing and bathing. In Kura Sabuwa, the people consider that the water is adequate but because of the influx of people into the community as a result of the water, the pumped borehole water finishes quicker than before. This is also mentioned in Oju where waiting times have increased as a result of population influx and increased use of water. The community children in Bondi describe having up to three boreholes in the community, a situation that has greatly improved accessibility to safe water sources in their estimate. However, they stated that when many people have fetched water from the borehole, then they would sometimes find no water when they go to fetch. The community children in Ganjar mentioned that the borehole had improved accessibility to water since they did not have to wait in long queues and get into fights as when they had only the well in the community.

In terms of **financial accessibility** for all intervention communities, except in Ganjar, Bakori, water is free.

In the *counterfactual communities*—in Dass, Yakurr, Oju, Bakori and Ejigbo (Sambalisa in Birnin Kudu had a water intervention six months before the IE), accessibility to safe water sources is a key issue. The main complaint by the communities is that they do not have boreholes (or it is more than 20 years old, not sufficient and with a bad taste, Bakori). In Gwarlak, the community has been using the same stream water as before in addition to a well dug for the community by the government. Problems cited by the communities are long distances and hence time consuming, burden to mainly women, injuries incurred such as back aches and snake bites as well as bad water quality in terms of colour, worms and dirt. Because of the burden of fetching water over a long distance, consumption is low, and bathing and washing clothes is minimized. Streams are also often seasonal, so that obtaining water in the dry season is a problem. In some places, there is access to private boreholes, but the cost is too high for many people.

Q3. Institutional maintenance of water supply

A. Primary quantitative data

Maintenance / cleaning of water points, making sure there is no standing water around the water point⁷, reported by 907 households, is mainly done by the community (48,5%), by the household / family (9,6%), a specific person - mentioned by name (8,7%), and WASHCOMS (8,2%). However, 13,3% didn't know who maintained the water point. A small proportion indicated that no one (0,2%) maintained the water point. The household / family and private operators were mentioned more in the richest households than in poorer households. Details are displayed in Annex 9 (Tables 19a and 19b) and Figure 5 below:

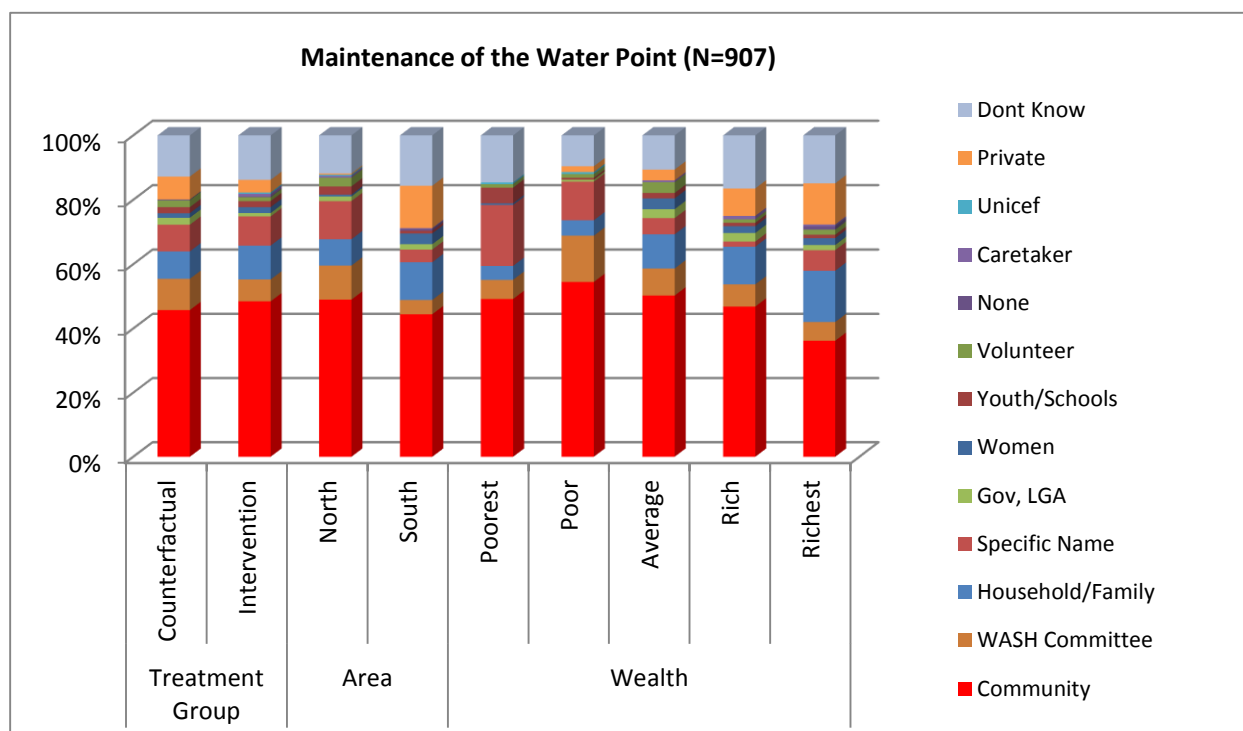


Figure 5: Maintenance of water point (by whom) by treatment group, area and wealth

Time taken for major repairs of faulty water points⁷

Time taken for **major repairs** of a faulty water point were *not significantly different between counterfactual and intervention areas*: 46,7% reported that it took days, 24,1% reported weeks, 7,8% reported months and 21,8% did not know.

- In the North, significantly more households reported that it took days (51,1%) than the South (39,7%). More households in the South, however, did not know how long major repairs took (33,9% and 13% respectively, $p=0.0001$).
- More of the richest households (14,6%) reported that it took months than the poorest households (3,5%). Poorest households were more inclined not to know how long it took for major repairs (25,7%) than other households in the other quintiles (between 16% and 24%, $p=0.03$).

⁷ Water points excluded are rivers/streams, springs, protected springs, dam, tanker, rain harvesting, water sachets reported as main water source for drinking. Water points included are piped water (into dwelling, yard or plot, to neighbour, public tap/standpipe), open and protected wells (in dwelling, yard/plot, public), and tubewells/boreholes. (N=907)

Major repairs took an average of 24 days, but a lot of variation existed (standard deviation 102 days), from a minimum of 1 day to a maximum of 1950 (or 65 months). Median time to major repairs took around 6 days. See Table 20a in Annex 9 for details.

Minor repairs (managed within the communities) took place within days as reported by the majority of households (72,8%). Some reported within weeks (7,4%) and even within months (1,2%). A sizeable number of households did not know how long minor repairs took (18,6%). Similar findings were reported in the counterfactual and intervention areas, and across wealth quintiles.

However, significant differences were found between households in the Northern compared to Southern parts. Almost 4 out of 5 Northern households reported minor repairs taking place within days; this was 64,1% for Southern households. Almost a third of Southern households did not know how long minor repairs took compared to 11,7% of Northern households ($p=0.0001$). Details are in Table 20b in Annex 9.

The actual number of days, weeks or months taken for repairs revealed significant *quicker turn around for minor repair time in intervention areas* (on average 3 days) compared to counterfactual areas with an average of almost 5 days ($p<0.05$).

B. Primary qualitative data

The communities stated that major repairs of the boreholes are referred to the local government but the minor repairs are carried out by the communities themselves.

Minor repairs are usually organized by the WASHCOMs, specifically the men and they usually hire the artisans that do this – or as in Dass and Bakori, two members of the WASHCOM have been trained as pump caretaker and they are in charge of daily operation and maintenance and minor repairs. The costs of the repairs are usually shared across the households in the communities. For most communities the minor repairs are carried out within 2-5 days. The men in the WASHCOM are responsible for the operation and maintenance and any maintenance needed is reported to be done in less than 24 hours.

According to the IDIs of the LG stakeholders, the LGAs train the WASHCOMs on what is expected from them in terms of maintenance. They also train some people in VLOM. In Bakori, the stakeholder stated that they have trained close to twenty people. She said that they sometimes get feedback from the communities that getting an outsider to carry out repairs costs twice as much as having the repairs done by the VLOM members.

Major repairs have not been carried out in many communities interviewed because the pumps are relatively new. In Bondi, Dass the community men and women agreed that the borehole which had been installed three years earlier had never broken down, though the WASHCOM stated otherwise (see below). The communities reported that it is beyond the capacity of the WASHCOMs to carry out major repairs and hence they rely on the LGA – but experiences differ. In Kura Sabuwa major repairs usually were accomplished in less than 2 weeks. In Ejigbo, the borehole was repaired after a month and a half; the pipes that needed replacing were partly supplied by the LGA and partly purchased by the community. In Oju, we got conflicting information on functionality, but after some time (1-3 months) the repair is done by the LGA. In Yakurr, the borehole has broken down, but collection of funds for repairs appeared to be a problem, so it had not been repaired. In Dass (Bondi), the WASHCOM told us that they had difficulty in getting the LGA to come for a repair, as the LGA said they had no funds for the repair and were sometimes not responsive as a result. In Bakori, the caretaker reported having been given the mobile number of the LGA responsible person and that so far they have responded quickly in case of need.

The IDIs of the local government stakeholders confirmed that the LGAs are involved in repairs if the communities do not have the capability to do them:

*“If the community have a problem of breaking a hand pump and so on, which they will not be able to repair within themselves, they (WASHCOM) send it to us and if we have the resources we do intervene and if not we send a message back to the state level for their intervention”.*IDI, Key informant Bakori LGA

In such cases, according to the stakeholder, the LG meets with the WASHCOM chairman and if the funds are available at the LG level, they send technicians to carry out the repairs at no labour cost to the communities but they (the communities) need to provide the items needed for the repair. However, this element does not come out clearly in the community FGDs; the impression is that the LG is fully responsible for major repairs.

Q4. Financing of water supply at community level

A. Primary data quantitative (LW),

Sixty percent of households claimed to make contributions for repairs **if the water point is broken**. Although this is slightly higher for the intervention areas (63,2%) than the counterfactual areas (56,5%), it was not statistically significant.

- In the North, 73,8% of households claimed to make contributions whilst this was the case for 41% of households in the South ($p=0.0001$).
- Poorest families (71,8%) were more likely to contribute than the other quintiles: i.e. 67,5% for the poor or 2nd quintile, 64,1% for the 3rd quintile, 54,1% for the rich or 4th quintile and 45,2% for the richest or 5th quintile ($p=0.0001$).

Regular payments are not made for water points in 75,5% of households. Again, the percentage of households making regular payments was slightly higher in the *intervention areas* (27,2%) than the counterfactual areas (20,7%); this was not statistically significant. Of those households making regular payments (24,1%), the majority (63,5%) indicated that payment for water is made every time it's used. Marked differences existed, though:

- In the North, 91% of households do not make regular payments, whereas Southern households don't make regular payments in 52,2% of cases – but do in 46,9% of households ($p=0.0001$). Payment for water is made every time it's used. This was especially the case for the 46,9% Southern Households who made regular payments : 77,8% of these households paid for water every time it's used. The 9% of Northern families who made regular payments, made mainly weekly or monthly payments.
- Poorest families (4,0%) were less likely to make regular contributions than the other quintiles for water points: i.e. 18,2% for the poor or 2nd quintile, 15% for the 3rd quintile, 30,8% for the rich or 4th quintile and 50,8% for the richest or 5th quintile ($p=0.0001$). Poorer families making contributions would do so on a weekly or monthly basis; richer families, every time the water point is used. Details are in Table 21b in Annex 9.

B. Primary qualitative data

Water from the public boreholes was reported by the communities to be free of charge – except in Ganjar, Bakori where the WASHCOM charges 5 naira per bucket and these funds are used for repairs and also to finance communal infrastructure such as public latrines and school latrines. The answer by all other communities and stakeholders is that funds are only collected when repairs are needed. Sometimes, collection is only received from those who live near the borehole, or from those who can afford it such as community leaders or other influential people. In Kura Sabuwa- Birnin Kudu, costs are distributed *according to the wealth* ranking in the community. Those who have up to ten cows pay more (250 Naira- young men; the older women indicated 100 Naira while the young women had no idea about the cost of repairs) and the others pay less. People who are considered very poor in the community are not taxed if they cannot afford it at that time. The rationale is that their situation could change by the time of the next repair and then they would be able to pay. This is the same practice in Sambalisa - Birnin Kudu, which is a counterfactual community – the borehole had been installed six months before and had spoilt twice since then; community contribution ranged from 10 to 100 naira per household with some of the rich among them contributing more than that (as much as 2000 Naira from the rich among the WASHCOM members). In general, collection is considered normal, but that this system may not be functional everywhere, as evidenced by the broken down pump in the intervention community in Yakurr, where the pump is still not in operation because of difficulty in collecting funds.

Q5. Water quality – including acceptability

Quality of water has not been tested through lab tests – instead it has been studied with a view of determining if water storage and transport have been carried out in a way that could maintain water quality – and by the perception of the quality from the users’standpoint.

A. Secondary quantitative data,

To obtain an indication on trends over time we used the DHS 2008 – 2013 and the MICS 2011 data. In table 14 below, information is provided on the distribution of households using an appropriate treatment method for the water, which should enhance water quality:

Table 14 Trends over time of the proportion of households using an appropriate treatment method for water

% Distribution of hhs using an appropriate treatment method*	DHS 2008	MICS 2011**	DHS 2013	IE WASH 2014	LGA of sample
Benue	30,4	5,6	6,3	10,8	Oju
Bauchi	8,7	0,9	2,6	36	Dass
Jigawa	3,1	0,3	2,2	3,3	Birnin Kud
Katsina	22,7	3,3	0,3	42,2	Bakori
Cross River	5,3	6,6	3,4	52,2	Yakurr
Osun	8,1	11,5	9,3	18,4	Ejigbo
Average % across the 6 States	13,05	4,70	4,02		

*Appropriate water treatment methods include boiling, bleaching, filtering, and solar disinfecting.

**% of household members using unimproved drinking water sources and using an appropriate water treatment method

This table displays that overall the proportion of households using an appropriate treatment has gone down from 13% to 4% from 2008 to 2013 with Osun state being the only exception to this pattern. Comparing this to the 2014 WASH impact evaluation (and using the LGAs as proxy for the states), paints a bit more optimistic picture: in Bauchi, Katsina, Jigawa, Cross River and Osun utilization of water treatment has gone up -with Benue being the only exception.

B. Primary quantitative data

Just over half of the households surveyed (53,6%) indicated that someone discussed with them how to keep water **safe** with them in both the intervention and counterfactual areas. Of the households who had discussions, the majority had it with WASHCOM members (58,2%), followed by Health Centre staff /workers (11,7%), UNICEF (3,6%), Community leaders or members (2,9%) and LGA staff (2,5%).

Twenty six percent (26,3%) of households reported that they treat their water to make it safe.

- This was similar in counterfactual and intervention areas. However:
- More in the South (33,3%) than households in the North (20,1%) ($p=0.001$).
- Wealthier households were more likely to treat water than poor households ($p=0.001$) (See Table 13 in Annex 9).

The **method** used in treating water to make it safe, was: straining it through a cloth (35,4%), adding alum (25,4%), boiling (21,9%), letting it stand (21,9%) and filtering the water (11,2%). Straining through a cloth was the most reported method of water treatment in both the counterfactual and intervention areas.

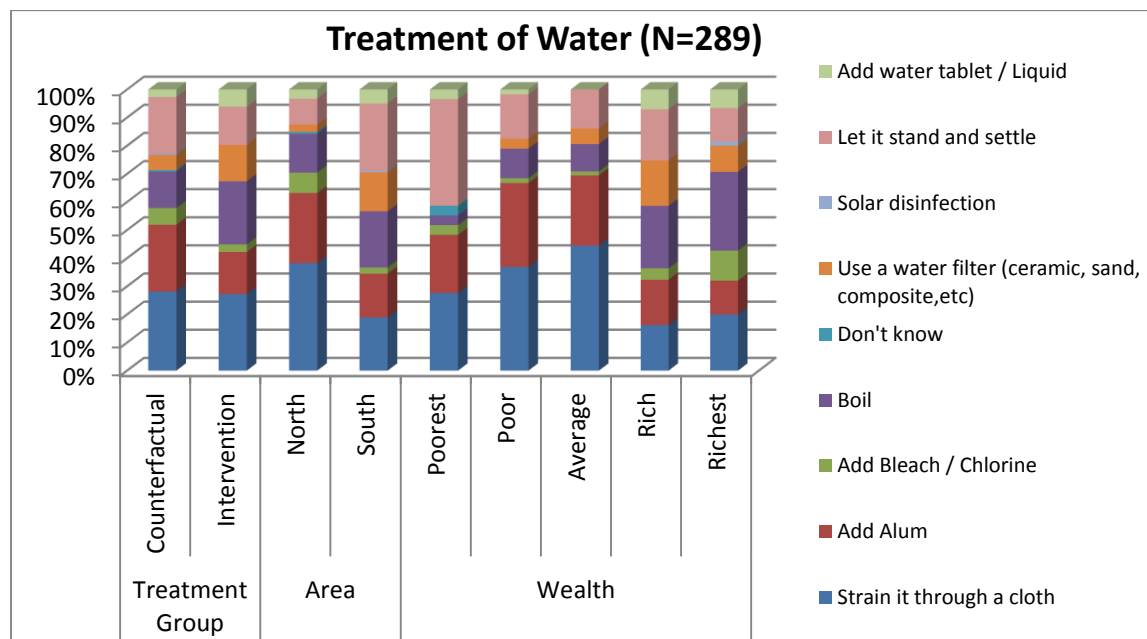


Figure 6: Treatment of water by treatment group, area and wealth

In Figure 6 above it may be observed that differences were reported:

- In the counterfactual areas, adding alum and letting water stand occurred more frequently, whilst in the intervention, boiling water and use of a water filter (ceramic, sand, composite, etc) was practiced more ($p=0.004$).
- In the Northern areas, straining through a cloth and adding alum was preferred ways of water treatment, whilst in the South water was left to stand and settle, boiled and strained through a cloth ($p=0.001$).
- The poor preferred straining through a cloth and adding alum, while the rich were more inclined to boil and make use of a water filter. ($p=0.001$)

Safe water storage and transport

The majority of households **stored** drinking water (94,7%): 95,5% in the intervention areas and 93,9% in the counterfactual areas. Storage of water was more prominent in the North (96,4%) than in the South (92,8%) ($p=0.008$). More poor families (96,8%) tend to store water than richer families (91,4%), although this is not statistically significant (See Table 15 in Annex 9).

Buckets/basins (53,2%) and Jerry Cans (43,1%) are the predominant containers for carrying water from the main source of drinking water. This was the case in both the intervention and counterfactual areas. In the North, however, Jerry cans are more prominent and in the South, buckets/basins.

Out of the 94,7% of households storing drinking water, the majority, namely 95,6% stored their drinking water **covered**: 83,4% accessed the water by dipping and 12,2% accessed the water by pouring or by tap (See Figure 7 below)

- Our analysis showed *no differences between counterfactual and intervention areas*.
- Proportionally more households in the North accessed covered water by pouring or a tap (18,9% compared to 4,5%) than Southern households ($p=0.001$), and less accessed covered water by dipping (77,7% compared to 89,9%, $p=0.001$).
- Poorer households corresponded to the findings in the North and wealthier households to that of the South ($p=0.0001$).

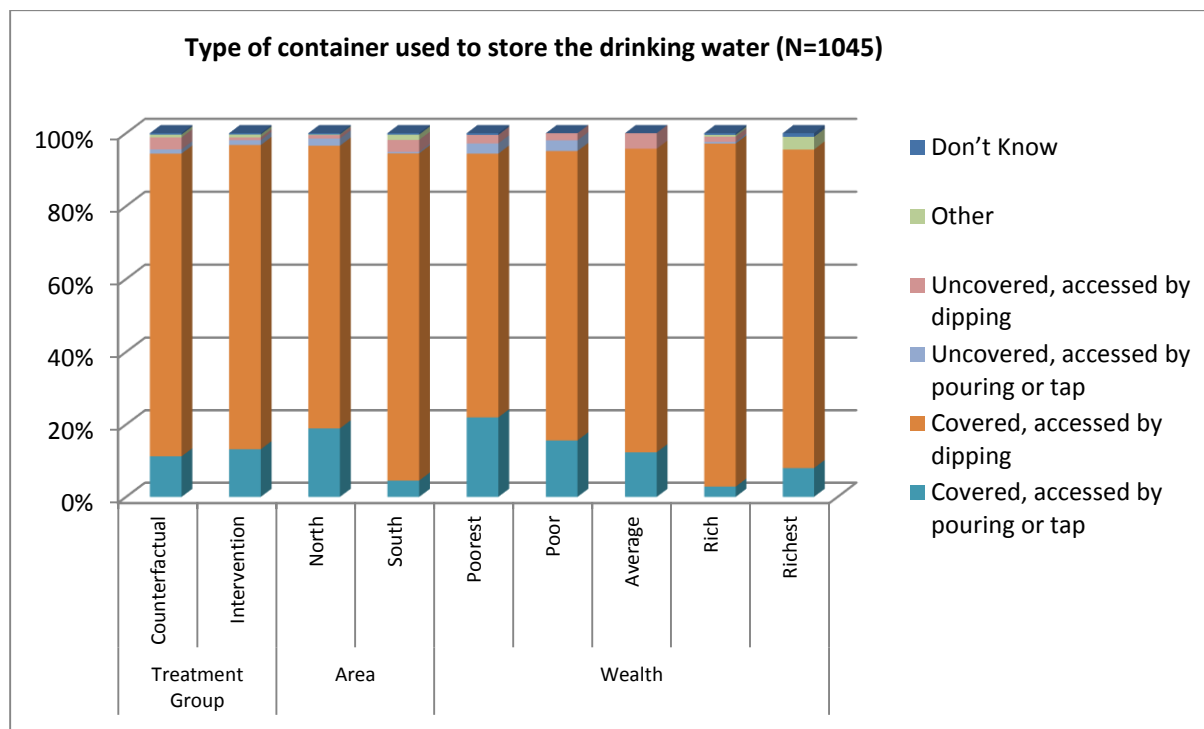


Figure 7: Type of container used for the 94,7% of households who stored drinking water by treatment group, area and wealth

Containers are **cleaned** every time it's used in 56,2% of cases, cleaned often in 25,6% of cases, cleaned sometimes in 17,2% of cases. Only in 0,9% of cases is it reported as rarely or never cleaned, or the interviewee didn't know. Cleaning of containers was significantly more frequent (i.e. every time it's used) in the South when compared to the North - 79,1% and 35,2% respectively ($p=0.0001$). Wealth is also significantly associated with cleaning of containers – the wealthier households are more likely to clean containers every time it is used ($p=0.0001$).

Perceptions on treatment of water

The interviewees were asked if they thought that their friends are taking action to make their water safe to drink. Opinions varied:

- Counterfactual as well as intervention communities expressed similar opinions
- In the North, almost 60% of households (totally or partially) disagreed, which was significantly higher than the 40,1% in the South. Households from the South did not express their opinion in a considerable number of cases (around 40%).
- Poorer households were also more inclined to disagree (totally and partially) with this statement than richer households.

Perceptions on quality of drinking water from the main water source

Appearance: The majority of households indicated that the main source of drinking water was always (78,6%) or mostly clear (17,6%). Only 3,8% of households said the water was always or mostly turbid. Proportionally more households in the intervention areas indicated always clear drinking water than counterfactual areas (82,3% and 75% respectively, $p=0.016$). Two thirds of poorest households stated that their main source of drinking water was always clear, with an increasing trend of up to 90% of richer households ($p=0.001$).

Free from visible particles: The majority of households indicated that the main source of drinking water was always (61,2%) or mostly free from visible particles (22,2%). A total of 12,4% of households said the water sometimes free and 4,4% said it was never free of visible particles. *No differences between counterfactual and intervention areas* were detected.

Although Northern and Southern households stated water was always and mostly free from visible particles (86,3% and 79,7% respectively), 17,3% of Southern households stated that the water sometimes had visible particles - significantly higher than the 8% reported by Northern households ($p=0.001$). Less of the poorer households felt that the water was always free from these particles than richer households. ($p=0.001$).

Of all households, 91,4% indicated that the **colour** of the main source of drinking water was clear, followed by 4,6% brownish, 3,4% yellowish, 0,5% reddish and 0,1% another colour. Significantly *more households in the intervention areas reported clear colour of water* (95,5%) than counterfactual areas (87,7%). Counterfactual households reported brownish (6,9% versus 2,4%) and yellowish (4,9% versus 2%) colour more than intervention areas ($p=0.001$). In the Northern and Southern areas the overall picture was mirrored and our analysis showed no differences with respect to colour for North and South. Wealth was associated with colour: richer households reported significantly clearer water (90%) than poorer households (67,9%; $p=0.001$).

Odour: Of all households 97% reported no smell from the drinking water from the main water source; only 3% reported foul smelling water. There were no statistically significant differences with regard to odour between the treatment groups, the areas and to wealth.

Of all households 94,8% rated the **taste** of their drinking water from the main water source as excellent (29,2%) and good (65,7%). There were no statistically significant differences with regard to taste between the treatment group, the areas and wealth.

Of all households, 85,9% reported no **salty taste** in their drinking water from the main water source; this was *similar in the intervention and counterfactual areas* as well as the Northern and Southern parts where the survey was undertaken. However, less of the poorer households indicated saltiness in the water (ranging from 10,1% in poor, 11,4% in average wealthy households, to 17,6% in rich and 18,2% in richest households, $p=0.04$) than more wealth off households.

Tables 17a- 17c in Annex 9 provide the details of perception of water quality

C. Primary qualitative data

In terms of water quality, in the *intervention communities* the borehole water is perceived as clean; however the description of smell, **taste** and hardness varied depending on the communities. In Kura Sabuwa, the borehole water was regarded as much better compared to the well water they used in the past which was described as dirty and coloured, with a bad smell. However, water from the solar borehole was perceived as not tasting as good as the hand pump boreholes. Nevertheless, the borehole water is not considered as “sweet” as the well water. In Sambalisa, the well water is also described as tasting better than the borehole though the respondents found the borehole water cleaner and of better quality.

“The borehole water smells like metal & tastes bad,” Community young men, Sambalisa, Birnin Kudu

Also in Oju and Yakurr, taste was often mentioned as not so good compared with sweet river water, but *the increased knowledge about the link between health and water*, drives people to drink the safe water. Also people stated that hardness of the water makes laundry washing difficult. In Yakurr, it was mentioned that the water in the public borehole is not so good in terms of taste, colour and smell, but that the water in private boreholes is good. The borehole water in Dass was described by the respondents as clean, odourless and tasteless.

The community children in Bondi indicated that sometimes the borehole water would not look so clean especially during the dry season and in some cases after many people had fetched from the borehole. When that happened, they would have to let the water settle before they used it. They also mentioned that the water from one of the boreholes had a mouldy smell but that this was not the case in the others. The community children in Ganjar described the borehole water as clean and stated that it tastes better than the well water.

In general, borehole water is not reported as being **treated** or boiled at home. WASHCOMs have given information on transport (use a clean covered container or jerry can) on water storage (put a lid on the container and clean it) and on using a cup with a handle to draw water from the container – and in communities, people said that they are following these guidelines though not perfectly. These guidelines were also reported by some communities as sometimes ordered in the bye-laws and enforced. Water quality monitoring was mentioned only by a CLTS facilitator in Bakori, who said that they give chemicals if the water is not up to standard. No-one among the WASHCOM members interviewed mentioned this; neither did the hand pump caretakers that were interviewed in Dass and Bakori.

All the intervention and counterfactual communities mentioned washing the water storage facilities and covering them.

In the *counterfactual communities*, quality of water is regarded as a very big issue. Many people related the high incidence of diarrhoea to the colour and smell of the water, as well as the worms (including guinea worms) and dirt in it. Ejigbo is the only place where the water of the stream was considered good in terms of taste and quality and only the distance was considered to be a problem.

Effects on Sanitation

In this section, the Impact Evaluation assesses if there was an effect on the sanitation situation in the study population and if there was an increase of households with sustainable access to sanitary means of excreta disposal. More specifically, it studies the following questions:

- Q1. Was there an increase of households with sustainable access to sanitary means of excreta disposal – did the intervention improve coverage levels?
- Q2. Was there an increase in claimed ODF status in villages?
- Q3. CLTS – hardware and score toilet hygiene
- Q4. School sanitation and hand-washing facilities,

Q1. Sustainable access to sanitary means of excreta disposal

A. Secondary data (MICS/ DHS/ M&E system),

We used the data deriving from the DHS 2008 and 2013, as well as the MICS of 2011⁸ to provide an indication on trends over time in the States where the WASH intervention was evaluated.

Table 15 Distribution of households with improved, not shared, toilet facility

% Distribution of hhs with improved*, not shared toilet facility	DHS 2008	MICS 2011	DHS 2013	IE WASH 2014	LGA in sample
Benue	14,5	18,8	12,8	40,7	Oju
Bauchi	22,2	8,2	15	49	Dass
Jigawa	21,8	38,4	49,4	64,5	Birin Kud
Katsina	47	34,7	42,2	31,9	Bakori
Cross River	10,1	10,6	10,4	33	Yakurr
Osun	13,3	28,3	16,1	36,7	Ejigbo
Average % across the 6 States	21,48	23,17	24,32	45,1	

*Flush toilet, ventilated improved pit latrine with a slab, or a composting toilet

From Table 15, we see that the use of “improved latrines” increased considerably in Jigawa and to some extent, in Osun and Cross River, and decreased in the others. Examining the impact evaluation of the WASH program in 2014 against the DHS and MICS data also presents an optimistic picture: overall there has been over 100% increase in improved sanitation figures compared with DHS 2008.

B. Primary quantitative data

Four out of five households have latrines. The most common type of latrine usually used by household members is a pit latrine with a slab covered (39,3%), followed by bush/field (17,6%), pit latrine with slab uncovered (15%), water seal latrine (10,9%), composting latrine (10,3%), and a ventilated improved pit latrine (4,4%). A few household members used a bucket or hanging latrine.

Improved latrines (i.e. water seal latrine, ventilated improved pit latrine, pit latrine with slab covered, composting latrine) comprised 64,4% of the sample. Private, improved latrines comprised 45,6% - the

⁸ Attention – this is about secondary data analysis; statistical information like confidence intervals NA

remainder (18,8%) represent shared toilets. Figure 8 below shows the types of latrines used by households in the sample.

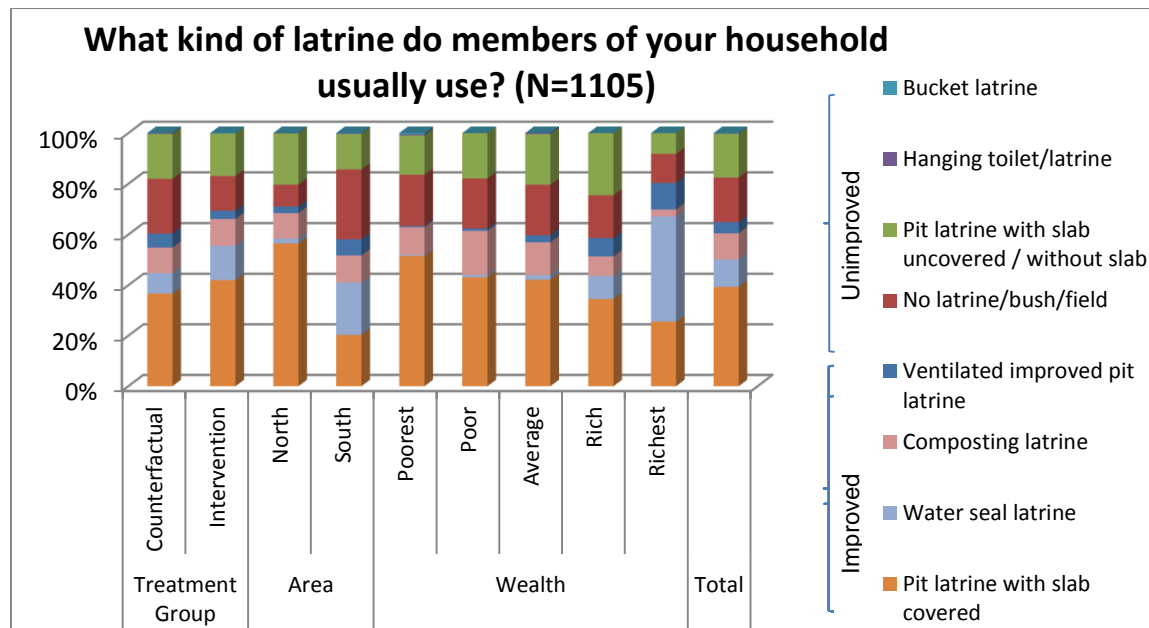


Figure 8: Type of latrine used (including no latrine) - improved and unimproved

Availability of *improved* latrines in households is significantly different

- Between counterfactual and intervention areas: intervention areas used more pit latrines with slab covered and water seal latrines ($p=0.026$) than counterfactuals: (55,6% versus 44,7%)
- Northern areas used more pit latrines with slab covered (56,5%) than Southern areas (20,3%) ($p=0.001$)
- Wealth quintiles: richest households used more water seal latrines (41,6%) than households in other wealth quintiles (ranged from 0,5% to 9,1%) ($p=0.0001$).

With regard to use of *unimproved latrines* (i.e. no latrine (bush/field), pit latrine with slab uncovered or without a slab, bucket latrine, hanging latrine) no differences were observed between counterfactual and intervention areas and across wealth quintiles. However, our analysis showed differences between Northern and Southern households in use of unimproved latrines. In the South, In the South, significant more households practice open defecation (bush/field) (27,6%) than Northern households (8,6%) ($p=0.0001$). See Table 23 in Annex 9 for more details.

Utilization of latrines

Even so, having access to sanitation does not guarantee use. Almost 9% of the 17,6% (so half) of households indicating open defecation, also reported having a latrine in the household. Our analysis highlights the significant higher proportion of households in the South that practices open defecation (27,6%) compared to 17,6% of the total number of households. Open defecation was significantly lower in the intervention areas (13,4%) compared to counterfactual areas (21,4%), and richest areas (11,4%) as compared to the poorest areas (19,8%) ($p=0.0001$).

Most members of the household used the latrine as mentioned, in order of frequency as mentioned: adult females most (28,9%), adult males (28,1%), boys (22,5%) and girls least (20,5%).

Sharing of *improved latrines* by household members is significantly different between Northern and Southern areas and between wealth quintiles. *No differences were observed between the intervention and counterfactual areas* even though slightly more households did not share (have private) latrines in the intervention area (49,7% and 41,5% respectively). Significantly more households in the Northern areas did not share improved latrines with other households compared to Southern areas ($p=0.001$). Details are in Table 24a in Annex 9

Level of Satisfaction with sanitation practice

Households were asked to indicate whether they were 1) Very satisfied 2) Satisfied 3) Dissatisfied or 4) Extremely dissatisfied with certain aspects of the sanitation practices in their households, i.e. quality of construction, the ease of access, privacy, cleanliness and cost. Categories 1 and 2 were combined into one category to measure satisfaction and categories 3 and 4 for dissatisfaction. Table 31 in Annex 9 details the satisfaction rating of sanitation practices by households while Figure 9 below focuses on the dissatisfaction component.

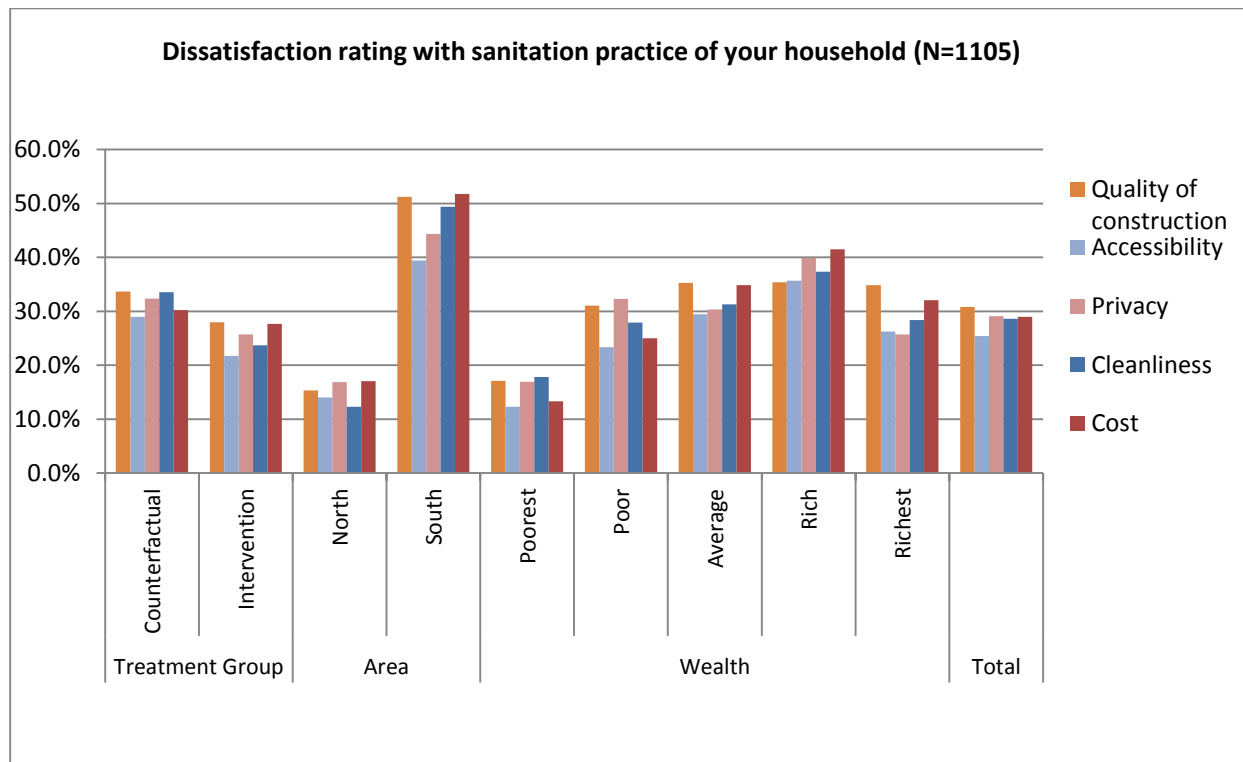


Figure 9: dissatisfaction with own sanitation practice

Dissatisfaction rated highest with regard to quality of construction (30,8%), followed by privacy (29,1%), cost (29,0%), cleanliness (28,6%) and ease of access (25,4%).

- Counterfactual households were more dissatisfied than intervention households, and especially so with regard to ease of access ($p=0.009$), privacy ($p=0.021$) and cleanliness ($p=0.001$).

- Up to half of Southern households were dissatisfied with certain sanitation practices, and significantly higher dissatisfaction on all aspects when compared to the North ($p < 0.05$ on all aspects).
- Richer households were consistently more dissatisfied than the poorest households on all sanitation practice aspects considered in this survey ($p < 0.05$).

Intention to improve existing sanitation arrangements,

Eighty two percent of households reported that they intend to improve their existing sanitation arrangements in the near future:

- Similar percentages were reported in the counterfactual and intervention areas,
- Similar percentages were reported in the North and the South.
- Poorest (and poor) households were more inclined to improve their sanitation in the near future (86,1% in poorest households compared to 80,4% in the richest households, $p=0.002$)

The households intending to improve their sanitation arrangements reported wanting to build a new latrine (56,9%), or to improve a current latrine (40,9%), or other improvement (1,9%) or challenges such as lack of time, lack of land, health challenges or didn't know (0,3%). In the South, more households want to build new latrines (71,4%) than in the North (43,4%), $p=0.0001$. Poorest households, more than richest households, want to improve an existing latrine (52,6% and 35,6%, $p=0.0001$).

Households listed multiple **challenges in order to improve sanitation**. The major challenge is lack of finance (96,4%), followed by lack of materials (26,1%), lack of a mason in the community (8,8%), lack of knowledge of how to do the improvement (8,6%), and lack of interest of other household members (8,2%). Just over 2% did not know.

- The poorest families multiple challenges: they listed, apart from the financial challenges, all the other challenges significantly more than richest families ($p=0.0001$).
- This was also the case for families in the North. ($p=0.0001$).

Details are in Tables 38 and 39 in Annex 9

C. Primary qualitative data

All intervention communities reported increased number of households with latrines. This also applied to a lesser extent for the counterfactual communities who were trying to gain ODF status *in order to get water* as in Aboyun Omu (Ejigbo).). As a reminder, the intervention and counterfactual communities are detailed in Table 16 below

Table 16 Communities interviewed using the PADev tool

LGA	Intervention communities	Counterfactual communities
Dass	Bondi	Gwarlak
Oju	Ichakobe 2	Umueze Okoha
Yakurr	Kekomkolo Ketabebe	Lebolkom Aduma
Birnin Kudu	Kura Sabuwa	Sambalisa
Bakori	Ganjar	Gidan Bauche
Ejigbo	Ajebamidele	Aboyun Omu

The community respondents in Kura Sabuwa (Birnin Kudu) reported that almost all the households own a latrine. *The community already had a culture of ownership* of traditional pit latrines in place and the intervention broadened the scope for them. The community has both traditional and sanplat latrines, depending on affordability for the various households. The young women mentioned that before the intervention more households shared toilets but due to the triggering, more individual households now own latrines – a situation which they found very appealing because it provided more privacy for them. The CLTS triggering has been quite effective in the community. They have been certified ODF.

In Sambalisa (Birnin Kudu), open defecation is still practiced but the respondents said that it has drastically reduced.

"We cannot sit here in the past (for the interview), the smell of shit will disturb," Older men, Sambalisa, Birnin Kudu

Most of the latrines in the community are the traditional type; only three households have an improved pit latrine. In the counterfactual communities in Oju and Yakurr, many people still practice outside defecation, while in Gidan Bauche, Bakori, most households do have a latrine.

In the intervention community in Oju, only elderly people may still not use latrines, but all others do. The same applies to Bakori where every household has a latrine. In Yakurr, most, but not all have access to latrines while the Osun intervention community is certified ODF.

In Bondi, Bakori, most of the young men in the FGD claimed that OD is completely stopped. Few of them said, not completely but they would rather say 95% stopped. The community was described by the older women as being almost totally ODF and that the community ensures that all houses in the community have latrines and if damaged or full, they are quickly repaired. They said that with the exception of children and a few miscreants no one defecates outside anymore. In addition to traditional and sanplat latrines, there are also ventilated improved pit latrines in the community.

For Gwarlak, open defecation is still practiced though to a lesser extent since the intervention.

"Before WASH latrines are very very few; now we can say households with latrine and those without is about 50-50," Older men, Gwarlak, Dass.

However, they have only traditional pit latrines in the community.

Q2. Claimed ODF status in villages

According to the program documents, as of December 2012, a total of 3,488 communities were triggered using CLTS approach in all the SHAWN states. 1,804 communities had reported ODF status. The process of certifying ODF communities was on-going. Benue had the highest number (842) of ODF reporting communities, Katsina (426) Bauchi (367) while Jigawa (169) had the least number. In the communities, the triggering process is rolled out to motivate the community to stop outside defecation – this is the first and foremost objective. Dass LG staff mentions that it takes between 2 weeks and 2 months for a community to become ODF.

A. Primary quantitative data

Households were asked to explain ODF to the interviewer. Almost 6 in 10 households could adequately explain what ODF is; significantly higher knowledge on ODF were observed in intervention compared to counterfactual areas (64,3% and 50,1% respectively, $p=0.0001$) and in Northern households (70,3%) compared to Southern households (42,8%), $p=0.0001$. Knowledge regarding ODF was slightly higher in poorest households, but not significantly so, compared to richest households (Table 57 in Annex 9).

Knowledgeable households (N=630) on ODF were asked whether their community is ODF; 77,7% of these households reported that their community is ODF. No significant differences were established between counterfactual and intervention areas. Wealthier households reported their communities as higher ODF than poor households, but this was not statistically significant. However, Southern households reported significantly higher proportions of ODF in their communities than Northern households (82,1% and 75,3%, $p=0.031$). (Table 58 in Annex 9)

B. Primary qualitative data

The CLTS facilitator in Dass reported that they usually visit the WASH Units to see the reports of their weekly monitoring in the communities. When the LGA WASH staff go to communities, they sit down with community members to discuss on how they are moving sanitation forward and whether there are challenges as far as latrine construction is concerned. They usually seek answers to questions like: Are there houses that have

not constructed their latrines? Why have they not constructed their toilets? Why are some houses still going to bush? The stakeholder detailed that all these are being monitored and that those that have constructed latrines are also monitored for use and hygiene around the latrine and hygiene practices. They (the CLTS facilitators) monitor the state level activities of the WASH Unit and the WASH Unit goes to the community to monitor what happens in the communities.

Once the community is triggered, they start constructing latrines according to the action plan.

*"We (have) acquired skills in triggering because I could remember of one community, the moment we triggered them, instantly, before we leave the town, people of that area went through their home and took shovel and digger without wasting much of their time, they started digging and constructing the pit-latrines. So you see, our work has been accepted and triggering is effective."*FGD CLTS facilitators, Bakori

The children in both Bondi and Ganjar stated that they were involved in the triggering process. If they saw a child defecating openly they would *either shout or beat the child* or chase him away. When asked what they would do if it was a young adult male, they said they would tell the person that the association (WASHCOM) had stopped everyone from disposing of faeces in the streets. They stated that they would allow the young man to finish and *then go and pack the faeces away*. They would depend on the WASHCOM to take action against the person if he refused to comply.

When asked how the LG ensures the quality of the latrines built as a result of the triggering, the LG respondent replied that they trained good artisans who are supposed to give weekly reports on the constructed latrines and notify the LG of any collapse. This process is not reflected in the interviews of the communities or the latrine builders.

The precondition of being ODF in order to obtain a borehole is not frequently mentioned by the people. However, it is by the CLTS trainers and facilitators. This they detail as one of the explaining factors of the effectiveness of the CLTS strategy. They also indicated that there needs to be a minimum of three visits before a community can be certified ODF.

One counterfactual community (in Ejigbo) raised the issue of having been promised a borehole, *once the community is ODF*. They claimed to have been commended by the local government on their cleanliness but due to the fact that they have not been visiting the local government as they were told to, they have not yet been given any certificate as evidence that they are ODF. They even had cleared the road for better accessibility for the borehole crew. Yet, this has not happened and they are alluding to the WASHCOM now being less motivated.

When asked about how they ensure the quality of the toilets built as a result of the triggering process, the LG respondent replied that they aim at increasing the knowledge of the communities in latrine options and latrine collapse since only a few communities are knowledgeable about the options – a situation that also comes out clearly in the FGDs with the communities.

During the FGD with CLTS facilitators in Dass, they mentioned the conditions under which communities become certified ODF as follows:

"1. The hot spots within the community must have their own latrine.

2. These latrines must be properly used.

3. The community must have public toilet.

4. Open defecation within the community must be eliminated.

5. The community will then have to write to us stating that they have toilets in their home and in public places and they are properly using it and practicing safe hygiene. At this point we can come in to inspect and verify. If the community scales through verification test, they are given ODF certification"

In addition, all stakeholders stated that a community cannot be declared ODF if the schools do not have latrines.

The certification is carried out by LG WASHteam and/or trained NGOs, but the certification process is delayed due to high demand from the communities and insufficient staff to do the certification.

Q3. CLTS – hardware, operation and maintenance and score toilet hygiene

A. Primary quantitative data

Construction of latrines

Age of latrines: Almost 50% of households with latrines built the latrines in the 3 years preceding the survey (i.e. from the year 2011 up to the survey in April 2104). According to our findings, 452 latrines were built in the 3 years specified. The remainder of latrines were built 4 or more years before the survey.

Just over a third of these latrines were constructed **as part of a community wide program**. Similar proportions - about one in every three households who built a latrine in the 3 years preceding the survey – built a latrine as part of a community program in the counterfactual and intervention areas. More so in the South (55,1%) than in the North (18,7%), $p=0.0001$. No clear pattern across wealth quintiles could be established.

Who built the latrines: Households indicated, irrespective of whether the construction of latrines was part of a community wide program or not, to build the latrines themselves in 84,1% of cases, or by a local mason (10,6%), or a combination of the household and a local mason (2,2%) or by others or they didn't know (3,1%).

In the intervention areas, significantly more latrines were built as part of a community wide program, were built by the households themselves than in counterfactual areas (93,5% and 74% respectively, $p=0.008$). However, local masons build proportionally more latrines in Northern households than Southern households (15,3% and 1,3% respectively, $p=0.001$). Across wealth quintiles, the household mostly indicated to build the latrines themselves. See details in Table 26b in Annex 9.

Contributions made towards constructing the latrines

Households indicated contributing cash (69%), labour (90,7%) or materials (83,1%) towards latrine construction.

- Percentages of households contributing cash, labour or materials to the construction of latrines were similar across counterfactual and intervention areas.
- Households in the South contributed proportionally more cash (77,1%) than Northern households (62,8%; $p=0.0001$). Northern households contributed more labour (93,8% compared to 86,1%, $p=0.016$). Contribution of materials were similar in North (82,4%) and South (84,2%).
- Wealth: 47% of poorest households, 65,1% of poor households, 74,7% of average households, 82,1% of rich and 85,9% of richest households contributed cash. ($p=0.0001$). However, poor households contributed proportionally more labour than rich households. Materials were contributed by poor and rich households alike. Table 27 in Annex 9 has the details.

One in five households (of the 452 households who built latrines in the 3 years preceding the survey) did not know how much money was spent, even though 69% knew that cash was contributed to the construction. On average, the 211 households who reported to have expended money spent 11.020 Naira (standard deviation 32.901 Naira).

- Average spending was higher in intervention areas than counterfactual areas, although not statistically significant due to large variations from household to household.
- Southern households spent significantly higher on building a latrine than Northern households (F-test, $p=0.0001$)
- Wealth: Richest households spend on average 47.650 Naira (standard deviation 81.216 Naira) compared to poorest households (2.102 Naira, standard deviation 1.843 Naira, $p=0.0001$) as set up in Table 17 below.

Table 17 Average money spent on building a latrine

		If your household spent money to build the latrine, how much did you spend at the time when it was built?					
		Valid N	Mean	Standard Deviation	Median	Minimum	Maximum
Treatment Group	Counterfactual	94	7512	18603	3000	25	150000
	Intervention	117	13839	40794	5000	10	250000
Area	North	140	4441	4626	2500	30	20000
	South	71	23994	54291	6000	10	250000
Wealth	Poorest	44	2102	1843	1500	30	10000
	Poor	42	3920	3776	2500	35	15000
	Average	48	7029	6848	5000	400	30000
	Rich	50	8884	14317	5000	98	100000
	Richest	27	47650	81216	9000	10	250000
	Total	211	11020	32901	4000	10	250000

Of the 452 latrines built in the 3 years preceding the survey, only 7,3% of households indicated that they **were given a list of choices** of latrine models before the latrine was built. Sixteen percent did not know or could not answer the question, and the remaining 76,4% did not have choices with regard to latrine models.

- More in the intervention (8.8%) compared to the counterfactual (5.6%) but this difference was not statistically significant.
- More households in the South (12,4%) compared to the 3,5% in the North ($p=0.0001$) were given a choice
- More of the wealthiest households (11,6%) compared to the 0,8% of the poorest ($p=0.014$) households reported having latrine model options.

Households reported that choices of latrine models were provided by LGA staff, Wash committees, an engineer, a mason, a surveyor, UNICEF, their landlady and an urban developer.

Households got latrine parts from the village or town, the community, from the bush/forest (especially for unimproved latrines), from the market, the latrine shop, local masons and builders.

Of the 452 latrines built in the 3 years preceding the survey, only 7,1% of households indicated that they **received a construction plan** at the time of building the latrine.

- No differences were detected between counterfactual and intervention areas,
- No differences were detected between Northern and Southern households, except that more of the Southern households didn't know whether a construction plan was received.
- Wealthiest households were more inclined to get a construction plan than poorest households (11,4% and 3,8% respectively, $p=0.0001$).

Typology of latrines

Three and a half percent (31 households) reported that the latrine usually used by household members did not function at the time of the survey. *These were mainly improved latrines* i.e. pit latrines with slab covered, composting latrines, but also water seal latrines, as well as unimproved latrines - pit latrines with slab uncovered.

Of the 96,5% functioning toilets in households surveyed, 88,5% were physically observed and the presence of the following items were recorded: water seal, cleanable slab, the material of the superstructure, roof, curtain, door or other materials that provide privacy, cleaning brush and anal cleansing materials. Interviewers still enquired and recorded the presence of the items listed for the 11,5% of functional latrines not observed.

- One in five latrines had a **water seal**. More households in intervention areas (22,6%) had a water seal than in counterfactual (17,7%), but the difference was not significant. This is significantly higher in Southern households (28,5%) compared to Northern households (14,9%; $p=0.0001$); and in richest households (51,3%) than in poorest households (3%; $p=0.0001$).
- Close to sixty percent of functioning latrines in households had a **cleanable slab**. The intervention area exhibit significant higher proportions (63,8% and 50,9% respectively, $p=0.0001$) than counterfactual areas. Similar proportions were observed for Northern and Southern households, namely almost six out of ten households. Four out of five of the richest households and declining to 45,2% of poorest households had a cleanable slab ($p=0.0001$).
- About a third of functional latrines **had no superstructure**. Proportionally more households in counterfactual areas had no latrine superstructure than intervention households (34,2% and 22,3% respectively, $p=0.0001$). Northern households were more likely to have no superstructure (33,4%) compared to Southern households (19,8%; $p=0.0001$), and the poorest (29,2%) less likely when compared to the latrines in richest households (4,8%) ($p=0.0001$).
- One in two households had brick or other permanent material as superstructure; similar proportions in counterfactual and intervention households, significantly more households with functioning latrines in the South had permanent superstructure (59,5%) compared to 43,3% of households in the North ($p=0.0001$). Progressively more of the richest households had superstructures than poorest households (86,7% and 24,4% respectively, $p=0.0001$).
- One in three functioning latrines had a **roof**. Functioning latrines with a roof occurred significantly more in intervention areas (37,5%) compared to counterfactual areas (27,9%) ($p=0.003$) significantly less in Northern (12,8%) than Southern (62,3%) ($p=0.0001$) areas and significantly less in poorest households (3%) than richest households (85,3%) ($p=0.0001$).
- **Privacy**: No curtain or door was observed in six out of ten households; with similar percentages in counterfactual and intervention areas. This escalated to eight out of ten in the Northern areas compared to three in ten in Southern households ($p=0.0001$). Latrine privacy (i.e. a curtain or door) was noticeably higher in richest households (in nine out of ten functioning latrines) compared to poorest households with less than one in ten, $p=0.0001$.
- **Cleansing material**. A *cleansing brush* was present in one in five functioning latrines, with intervention households (26,6%) faring better than counterfactual households (17,1%, $p=0.0001$). Southern households also demonstrated higher presence of cleansing brushes (36,6%) than Northern households (12,8%, $p=0.0001$). An increasing trend in the presence of cleansing brushes in functioning latrines occurred; from 3,6%, to 12%, to 15,1%, to 21,1% and 54,8% in poorest, poor, average, rich and richest households respectively ($p=0.0001$).
- *Anal cleansing materials*, interestingly, did not follow the same pattern as cleansing brushes. Functioning latrines in intervention households was present in 28% of cases, and 20% in counterfactual households ($p=0.005$). However, functioning latrines in Southern households had less anal cleansing materials than Northern households (19,2% and 27,9% respectively, $p=0.003$). Although the presence of anal cleansing materials positively correlated with wealth, it was not as profound as other items (i.e. cleansing brushes, curtain or door, roof). Tables 25a - 25c in Annex display the details of recorded observations of latrines

Of households with a latrine (81,1% of the sample), almost one in five (19,6%) reported the pit or septic tank **had filled up** since it was built.

- Significantly more households in the counterfactual, namely 22,6% reported this compared with 17,4% of households in the intervention ($p=0.042$).
- *84% all pits or septic tanks filling up took place in the North*. The Northern areas reported almost 27,7% compared to 7,6% in the Southern areas ($p=0.0001$).
- Poor and households of average wealth reported the second highest and highest occurrences of filled up pits or septic tanks (22,5% and 29,9% respectively). Poorest households reported the least that a pit or septic tank filled-up (12,2%) in comparison to the other wealth quintiles; richest households reported similar incidences (15,1%). Differences between wealth quintiles were significant ($p=0.006$). See Table 30a in Annex 9 for details

The following actions were mainly taken: the pit emptied and waste buried nearby (30,2%), the pit emptied and waste removed from the neighbourhood (25,6%), the pit covered and a new latrine dug (21,5%), and the pit emptied and waste dumped nearby (12,2%). See Table 30b in Annex 9

B. Primary qualitative data

Construction of Latrines

In all intervention communities covered in the evaluation, there are latrine builders available, some of whom are trained under the programme and others not. The CLTS team does not prescribe any specific technology, but people mention that traditional latrines are mostly constructed. They would prefer the improved latrine, but cannot afford its costs. Although none of the FGDs with men and women in the community mention support to people who cannot afford or are not capable of constructing a latrine, the IDIs with CLTS facilitators, NGOs and LGA staff mention *that the WASHCOMs ensure that also these people will be able to get a latrine*. One of the latrine builders interviewed mentioned that he constructs a traditional latrine free for those who cannot build it themselves.

In Kura Sabuwa (Birnin Kudu), the respondents said that the materials necessary for building traditional latrines are all obtained from the bush within the community. However for the sanplat latrines, it takes about 40minutes to go to Birnin Kudu the LG headquarters to get cement and rods, while sand and stones are obtained about one mile from the community. Some masons in the community have learned how to build modern (sanplat) latrines for those who can afford it. The cost of labour alone is about 6.000 Naira (5.000-8.000 Naira in Dass).

The respondents in Sambalisa (counterfactual in Birnin Kudu) are clear that there are no masons in the community but there are masons in their neighbouring community who would be available within 24hours if needed. The cost of labour for masons was reported to be between 5.000-7.000 Naira. Nevertheless they have individuals who have skills and experience for building traditional pit latrines within their community.

For Bondi (Dass), some of the sanitary hardware like iron, slabs, pipe, cement, digger, shovel etc can only be obtained at the local government headquarters (Dass) – about 30 -45 minutes away. Most of the time they have to go on a two hour journey to Bauchi (the capital) before they can get them. They rely on some of the local materials like sand, wood and stones to build their latrines. The older men in Bondi stated that it is the cost of the materials for building the latrines that is the determining factor in the decision to build latrines, not the distance to buy them.

There are trained masons available in Bondi. The masons build both local pit latrine and the ventilated improved pit (VIP) latrine. It costs 4.000 Naira for labour construction of the VIP latrine; the cost of blocks, labour and materials ranges from 20.000-25.000 Naira for the latrine. The masons were trained on how to build latrines by the local government and WASHCOM.

For Gwarlak (counterfactual in Dass) geographical accessibility is a major issue. Due to the rocky nature of their road and the hard to reach terrain of their community, they would need to spend 4 hours on bike to & from the market in Dass where it is possible to get materials for building latrines. The community older men reported that no one has ever constructed a modern latrine in their community. In terms of actual distance from Gwarlak to Dass the respondents state that it not far:

*“But you have seen the road from there, very very difficult to come especially when you carry something; cars cannot reach here, only motorcycles; the community was able to construct a local pathway for cars from behind not from where you came. Toyota Hilux reached here with WASHCOM from LGA sometime ago.”*FGD Community older men, Gwarlak, Dass

The community also has no masons.

*“There are no masons here; WASH never taught anyone on mason work”*FGD Community older men, Gwarlak, Dass

In Ejigbo, the hardware market is about 20 kilometres from the community and bricklayers, welders and carpenters were trained and they do the construction and even go outside the community to construct latrines for others.

In Yakurr also the market is not too far and can be reached by motorbikes (okada), while masons in the community have been trained in construction. The same applies to the intervention community in Bakori and in Oju. The situation is however different in the counterfactual community in Oju where the market is far so the transportation costs are high and there are no masons in the community. In the counterfactuals in Bakori (Gidan Bauche), Yakurr and Ejigbo, hardware is available not too far away and there are masons in the community although they have not been trained.

Support

Although the UNICEF documents mention the existence of quality **guidelines**, none of the respondents have mentioned these guidelines. Monitoring is done by the WASHCOMs and LGA staff, but this seems to be more on the presence and use of a latrine than on the quality of the construction. There are stories about collapsed latrines because of the rain or because of unstable soils suggesting that over the years, the lack of quality may lead to a reduction in sanitation coverage.

Typology of latrines

From the community interviews it is clear that the CLTS intervention has created an awareness of the value of owning latrines in the communities but due to affordability issues, the households still build mostly traditional latrines *both in the intervention and counterfactual areas* and relatively few improved latrines have resulted from the intervention.

There are mainly two types of latrines constructed: the traditional latrine made with wood, sand and mud cover and a little cement (so the materials are readily available around the communities), the labour cost is between 3000 – 5000 Naira. The improved latrine has a cemented slab made up of iron rod, cement and sand and sometimes cement block or stones for the lining, the labour cost are between 5000 to 8000 naira. However, these costs vary from community to community, from LGA to LGA. Very few people have mentioned a flush to pit latrine which has a pipe leading from the latrine to an offset pit and requires water. This would be a step up on the sanitation ladder.

The FGD with CLTS facilitators in Dass mentioned that:

“Some places have loose soils, so the people in such places are advised to build with tiles or drums to prevent the latrine from collapsing. There is a unique type of construction meant for aged and people with disability; the latrine is constructed with a seater”.

However, none of the latrine builders or other stakeholders discussed these special types of latrines with us, despite being asked.

Q4. Schools sanitation and hand-washing facilities

A. Primary quantitative data

Sixty nine percent (i.e. 414 households) of households with **school going girls** indicated the presence of latrines in the schools their girls attend, 11,2% indicated no latrines and 19,6% did not know.

- Significantly more households in the intervention area with school going girls had latrines in the schools than in the counterfactual area (74,3% and 63,3% respectively, $p=0.013$).
- Although slightly higher percentages were recorded in the North (70,8%) than in the South (67,4%), significant numbers, i.e. one in four in Southern households did not know if school going girls in their households had latrines in their schools.
- Wealth was strongly associated with presence of school latrines for households with school going girls, progressively more latrines from poorest (43,8%), poor (56,5%), average (73,5%), richer (77,4%) and richest (82,6%) ($p=0.001$). See Table 36.

Eighty percent of the 414 households reported to have latrines in the schools where their girls attend, were improved latrines, i.e. a pit latrine with slab covered (46,4%), water seal latrines (21,5%), ventilated improved

pit latrine (11,1%) or a composting latrine (1%), the remaining 6% was unimproved latrines (pit latrine with uncovered slab or a bucket latrine), 20% did not know (displayed in Figure 10 below).

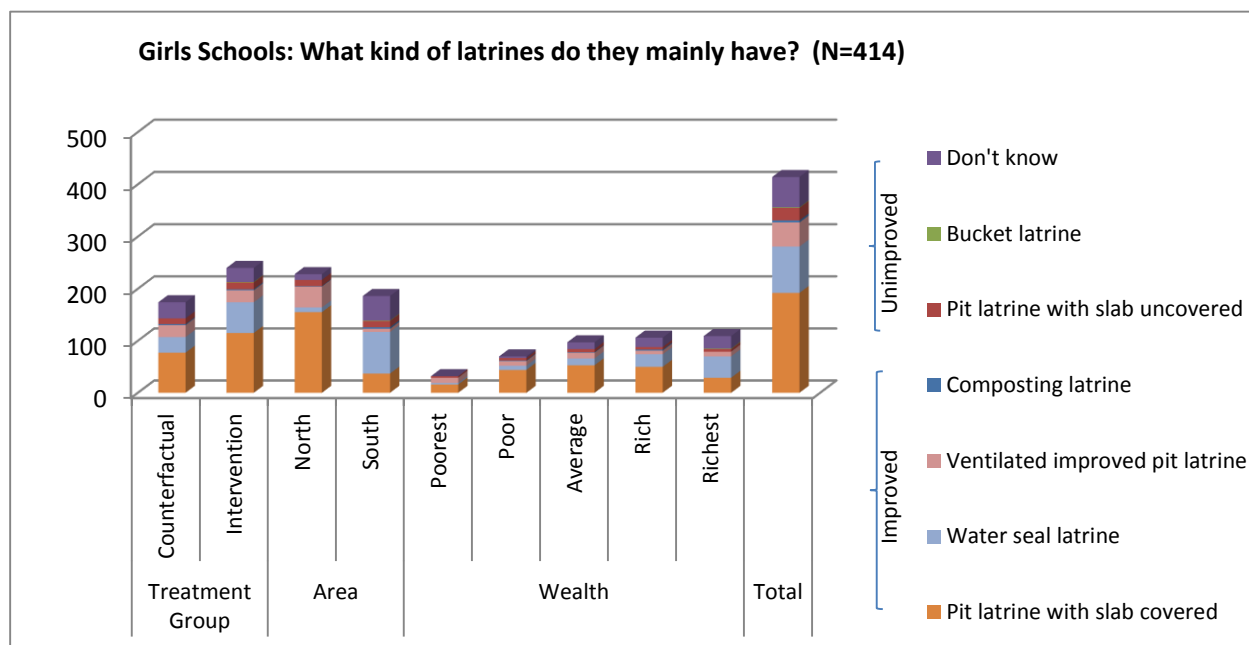


Figure 10: Type of latrines for school going girls by treatment group, area and wealth

Four out of five latrines was separate for boys and girls (80,9%), 9% was not separate, and 10% of households did not know whether it was separate. No differences were observed between counterfactual and intervention areas, or across wealth quintiles with regard to separate latrines for boys and girls as reported by households with school going girls. See Tables 32-34 in Annex 9 for details

Sixty nine percent (i.e. 431 households) of households with **school going boys** indicated the presence of latrines in the schools their boys attend, 11,1% indicated no latrines and 19,4% did not know.

- Significantly more households in the intervention area with school going boys had latrines in the schools than in the counterfactual area (73,8% and 64,7% respectively, $p=0.041$).
- Although slightly higher percentages were recorded in the North (73,2%) than in the South (65%), significant numbers, i.e. one in four in Southern households did not know if school going boys in their households had latrines in their schools.
- Wealth was strongly associated with presence of school latrines for households with school going boys, progressively more latrines from poorest (51,4%), poor (57,2%), average (72,3%), richer (77,9%) and richest (80,7%) ($p=0.001$). See Table 35 in Annex 9.
- Eighty four percent of the 431 households reported to have latrines in the schools where their boys attend, were improved latrines, i.e. a pit latrine with slab covered (46,2%), water seal latrines (20,4%), ventilated improved pit latrine (16%) or a composting latrine (1,4%), the remaining 5,3% was unimproved latrines (pit latrine with uncovered slab or a bucket latrine), 10,7% did not know (See Table 36 in Annex 9).

Four out of five latrines was separate for boys and girls (81,1%), 10,1% was not separate, and 8,9% of households did not know whether it was separate. No differences were observed between counterfactual and intervention areas, or across wealth quintiles with regard to separate latrines for boys and girls as reported by households with school going boys(See Table 37 in Annex 9).

B. Primary qualitative data

In the community FGDs in all the intervention communities it was mentioned that the majority of the schools have borehole water and latrines, although in Bakori this was reported as not separate for boys and girls. The parents related that latrines were not always functioning or kept clean (Yakurr). There are no environmental

health clubs (EHCs) in Oju, Yakurr and Ejigbo, but in all the communities, children are taught on hygiene in classes. In Bakori in the FGD with the CLTS facilitators, they mentioned that there are EHCs in schools and that every member of club has his own task in the division of labour. *CLTS teams go round the schools to check.*

Some counterfactual communities (in Oju, Birnin Kudu and Ejigbo) have no school or if they have it may have just one latrine. Only in Yakurr were the school latrines in the counterfactual community reported as being separate. Majority of these schools also do not have an EHC and there is still a lot of OD. In Gwarlak (Dass), the school was constructed two years ago and there are no latrines in the school so OD is practiced by the children.

“Children pass stool at the back of school; there is a small valley just behind the school building; Cows usually eat up the shit.” FGD Community older men, Gwarlak, Dass.

In principle, schools are part of the CLTS process and EHCs are meant to be established through facilitator assistance. This is done in some schools, but

“It is difficult to establish EHC if there is no hygiene/health education teacher” (IDI trainer Katsina)

Sometimes IEC materials are given to the schools, as are hardware such as kettle, soap, tools and other hygiene materials to promote sanitation in schools. The LG key informant in Dass stated that UNICEF built latrines in 30 schools and put water facilities in 20 schools in the LGA. In the Bondi school, brooms, buckets, kettles are supplied by the PTA, while the teachers and sometimes WOFAN (an NGO) or parents supply soap or izal antiseptic.

In all FGDs, it was mentioned that the **hygiene education lessons** that are given in the schools – whether through EHC or directly by teachers – *are being relayed to the parents by the children* and thus also are having an impact on the community as a whole – and thus are effective. This was confirmed by a school teacher in charge of hygiene education and EHC. She mentioned that the children were told specifically to relay hygiene messages at home and to motivate their parents to construct latrines (IDI school teacher, Bondi (Dass)). Also in Ganjar, the children bring the hygiene education messages home and the EHC members have to do outreach in the community to mobilize for latrines and hygiene practices. (IDI school teacher, Ganjar)

The **school health clubs** are functioning in both the Bondi (Dass) and Ganjar (Bakori) schools. Interviews with the children in the EHC in Bondi revealed that in addition to the latrines in the school, they have a segment for hand washing. The children stated that they use ash and soap for hand washing. There are separate latrines for boys and girls in the Bondi school. The responsibility of keeping the toilets clean according to the Bondi children lies on all the pupils but there is no roster. The pupils are delegated in groups to clean the toilet. Anybody that does not comply if delegated is flogged. Sometimes cleaning the toilet is used as a punishment for latecomers or those who have misbehaved in school. The boys wash the male toilets and girls wash the female toilets and that of the teachers is washed by the head girl and other prefects.

The labour prefect and the health prefect have the responsibility of supervising the cleaning of the toilets. In Ganjar the school has one toilet and it is cleaned by the school cleaner that according to the children comes early in the morning to do so. The children have the responsibility of keeping the school environment clean but there is no roster for this. Nevertheless the sole responsibility of cleaning latrines or keeping the surroundings clean, in both schools do not lie with the EHCs, the other pupils in the school also participate in those activities in which case the EHCs then play a supervisory role.

According to the respondents, their responsibilities and activities as members of EHC include taking care of the toilets and ensuring that it is clean, taking care of the school borehole, taking care of the classes and offices ensuring that they are kept clean, ensuring that no one defecates out within the school premises as well as ensuring that the school premises is clean.

In Bondi the children also detailed that they received training on various hygiene topics including hand washing and personal hygiene and the importance of not sleeping in poorly ventilated rooms or rooms congested by too many people. They were taught about contagious diseases including cholera and the importance of not walking around barefoot and covering of food. They are taught about how to take care of their food and water. They stated that the training consisted of practical sessions and were held every week on Mondays, Wednesdays and Fridays. The training is done by the head mistress and the health club mistress in Bondi. Materials used in the training include pamphlets, songs and swings given to the children. All this information was confirmed by the health club mistress in Bondi.

When asked about critical times for hand washing, the children were very knowledgeable about this. The children also mentioned that they contribute money to buy brooms to sweep the school surroundings, classrooms and offices but they are given detergents and disinfectants for cleaning the toilets.

The children in EHC in Ganjar (Bakori) said that they have been trained in environmental sanitation and personal hygiene; they have been taught where to pray – that they cannot pray in a dirty place; they have also been trained in water treatment and storage as well as how to keep the borehole and its surroundings clean. There is only one latrine in the school, but the school has its own borehole. The latrine was constructed by the WASHCOM, the borehole by UNICEF.

The teachers have not been trained outside the school in Ganjar, but the WASH team comes about three times a month to teach hygiene to the children and the teachers. In Bondi, the headmistress has been trained by UNICEF for three days and in turn has trained her teachers and also parents.

When asked in Bondi why they joined the school club, one of the respondents said it was to learn about hygiene and personal cleanliness but the other seven said they did not make the choice to join but were appointed by their class teacher to be a part of it.

When asked about their activities in their homes and their communities, the children in both Bondi and Ganjar detailed keeping the kitchen utensils, surroundings, inside the houses and the latrines clean. They also emphasized ensuring that their meals were covered, washing their hands at critical times and making sure that people do not defecate openly in the community.

The community children in Bondi commented that there were latrines in the school but they did not have access to them to see if they were clean. They did however mention that they would sometimes see the students fetching water to clean the toilets usually on Fridays. They did not know if the school had an EHC. The community children in Ganjar mentioned that there is a toilet in the school but that it looked dirty. They were aware that there was an EHC in the school.

The school in Kura Sabuwa (Birnin Kudu) is also reported as having separate latrines for the girls and boys and a functioning EHC. The security guard and the school children are reported by the community men and women to be responsible for the cleaning of the toilets three times a week and the process is supervised by the teachers. The presences of the latrines are mentioned as having improved children staying in school during school hours and safety.

*“The student now always stay in the school due to this (latrines). Before now, student go home or into the bush to defecate thereby making snake to bite some of them.”*FGD Community Young men, Bondi, Dass.

Effects on Hygiene

In order to determine the effects the program had on hygiene, we tried to answer the following questions:

- Was there an increased in access to hygiene promotion, awareness and practicing of hygienic practices?
- *What proportion of the people practice e.g. hand washing with soap at critical times, what is their knowledge on hygiene aspects in the community?*

A. Primary quantitative data

place where most households members most often washed their hands (67,1%).Households further indicated hands being washed most often elsewhere in the home or yard (18,6%), or inside/within 10 paces of the latrine facility (7,8%), or outside the yard (3,5%), or inside/within 10 paces of the kitchen/cooking place (2,9%) or another place (0,1%).

- No significant difference between intervention and counterfactual areas
- In homes in the North, hands are more often washed elsewhere in the home or yard (22%) and inside/within 10 paces of the latrine facility (12%) than homes in the South (14,7% and 3,2% respectively), $p=0.0001$.
- Richer households also exhibit higher proportions of hands being washed more often elsewhere in the home or yard than poorest households ($p=0.002$). See Table 41 in Annex 9 and Figure 11 below for details.

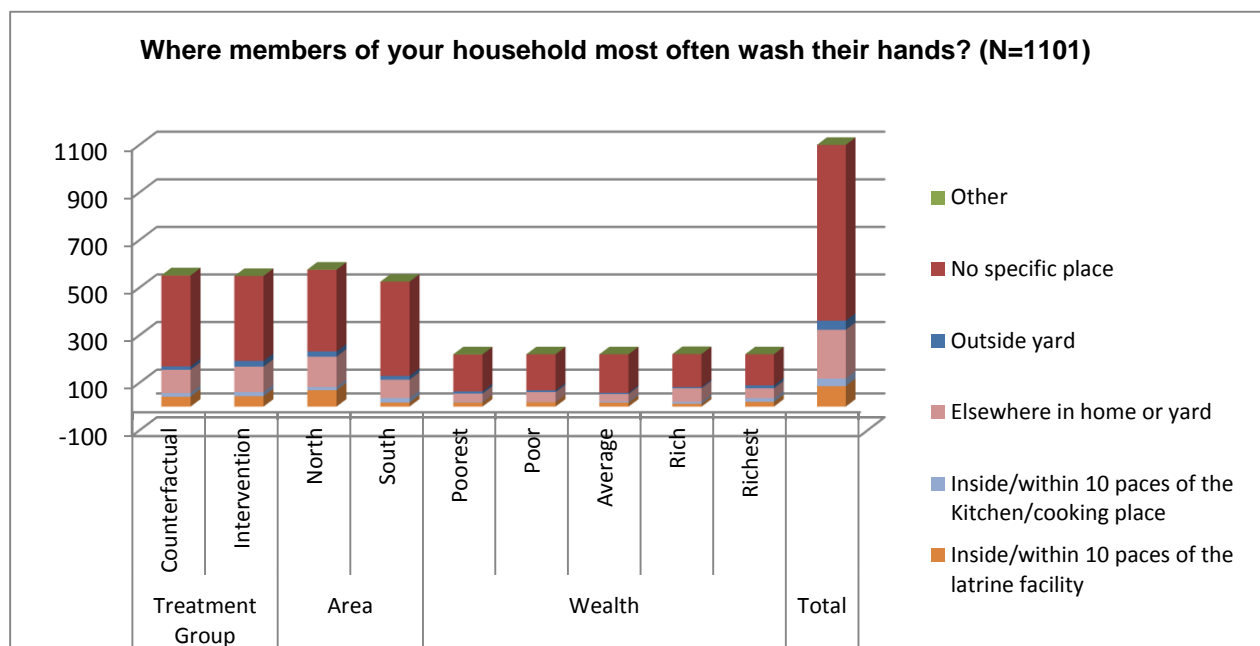


Figure 11: Number of hand washing places where household members most often wash their hands by treatment group, area and wealth

Observation of most used hand washing places

Only 35,4% of households could/was **willing to show** the place where household members most often wash their hands.

- More households in the intervention areas were willing to show their hand washing stations than in counterfactual areas (37,9% and 32,9% respectively), but no statistically significant difference could be illustrated.
- Almost one in two households in the North was willing compared to one in five in Southern households ($p=0.0001$).

- Approximately 35% of households was willing to show their hand washing places across all wealth quintiles.

The majority of households *who could not show* the place where household members most often wash their hands, had no specific hand washing place (88,3%), followed by hand washing place elsewhere in the home or yard (8,9%), or outside the yard (1,4%), or inside/within 10 paces of the latrine facility (0,7%) or inside/within 10 paces of the Kitchen/cooking place (0,6%).

Presence of water and cleansing agents

The presence of water was observed for households that indicated the most often used place for members to wash their hands as one of the following: inside/within 10 paces of the latrine facility, or inside/within 10 paces of the kitchen/cooking place, or elsewhere in the home or yard (N=156, 8,7%).

Water was present in just under half of the households (45,5%). No differences were observed between treatment groups, geographical area or wealth quintiles.

Cleansing agents (one or more) were present in 59,1% of these households: 32,9% had ash/mud/sand, 26,8% had soap, 10,1% had detergent/powder, and 3,4% liquid soap.

- Presence of cleansing agents was similar in counterfactual and intervention areas.
- More households in the North had cleansing agents present than Southern households (61,3% and 54,3% respectively, $p=0.0001$).
- Numbers per wealth quintiles were small and no definite conclusion on the presence of cleansing agents could be made.

Observation of washing station inside the household latrine

Interviewers were additionally asked to observe whether there is a hand washing station inside the household latrine or within 10 paces of the latrine since this wash station may not have been the most often used washing station. This was indeed the case - in one in five households (20,2%) of the total sample there **was a specific washing station** inside the household latrine or within 10 paces of the latrine even though we saw that only 8,7% or 156 households out of all households indicated this as the most often used place for hand washing

- 23,4% of households in intervention areas compared to 17% in counterfactual areas ($p=0.009$),
- 27,3% in the North and 12,3% in South ($p=0.0001$), and
- No significant differences between wealth quintiles.

Of these one in five households (or 220 households) *with a hand washing station* inside the household latrine or within 10 paces of the latrine, only a **third of households indicated** that it was the place most often use for hand washing, two-thirds had water:

- Similar in counterfactual and intervention areas,
- Higher in Southern households than in Northern households (77% and 59,9%, $p=0.017$).
- No significant differences between wealth quintiles. See Table 47 in Annex 9 for details.

Of the two thirds or 141 households who had water: One in two households use a kettle as the device for water. Kettles are mainly used in the North (77,7%) and buckets in the South (46,8%), $p=0.0001$. In half of these households ash/mud/sand was observed as cleansing materials, followed by a bar of soap (35,3%), detergent (Powder / Liquid / Paste) (7,4%), or liquid soap (5,3%). **Seventeen percent of these households did not want to show or did not have cleansing material.**

Knowledge concerning critical moments of hand washing

Households were asked to *mention* all of the occasions when is it important to wash your hands (unprompted). The most known critical moment for hand washing as mentioned by households were before eating (96,4%), followed by after defecation (83,9%), when your hands are dirty (65,1%), before food preparation (26,3%), after cleaning the latrine or potty (16,4%), and before breast feeding (14,9%).

- Counterfactual and intervention areas mentioned *all critical hand washing moments with similar frequency.*
- Households in the North more often mentioned hand washing before breast feeding than Southern households, whilst Southern households mentioned when hands are dirty more often than Northern households ($p=0.0001$).

- Poorest households mentioned hand washing after defecation less often than the richest households. ($p=0.0001$). Figure 12 below shows details of knowledge of critical moments for hand washing in the sample

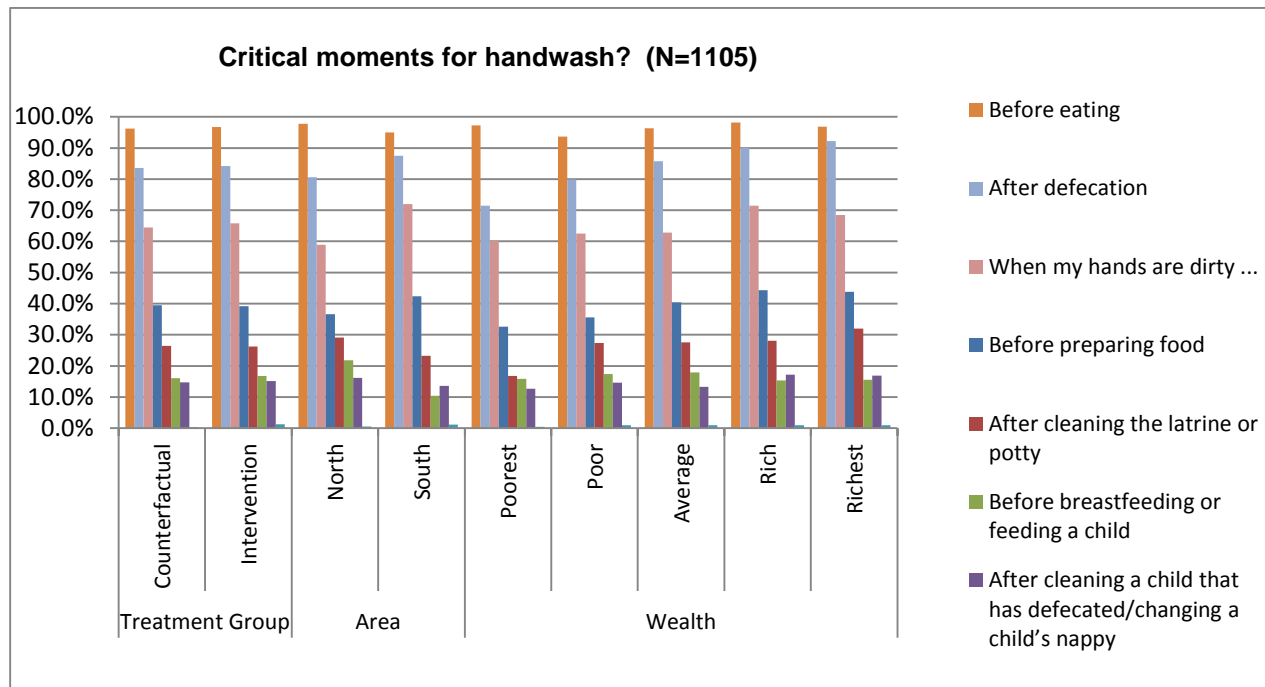


Figure 12: Percentage of households mentioning critical hand washing moments

Three quarters of households mentioned 3 or more critical hand washing moments. *Although more households in the intervention areas could mention 3 or more critical hand washing moments (78,8%) when compared to counterfactual areas (74,2%), it was not statistically significant.*

- North and South households (76% and 77% respectively) - not significant
- Wealthier households illustrated significantly higher levels of knowledge (80,5%) compared to poorest households (66%), $p=0.0001$.

Knowledge of hygiene practices

Households were asked which other hygiene practices have they learned about or knew off. Seventy seven percent mentioned cleanliness around the house, 74,7% the covering of food, 71,3% personal hygiene, 38,9% disposal of waste water and 14,5% menstrual hygiene.

- No statistical significant differences were detected between counterfactual and intervention areas, although more households in the intervention areas knew of the hygiene practices listed, except for disposal of waste water, which was mentioned more in the counterfactual areas.
- Northern households mostly mentioned the covering of food (83,9%), cleanliness around the house (73,1%), personal hygiene (66,7%), disposal of waste water (49,4%) and menstrual hygiene (18,7%). In Southern households, on the other hand, cleanliness around the house (83,1%) was most prominent, followed by personal hygiene (76,6%), the covering of food (64,3%), disposal of waste water (27,1) and menstrual hygiene (9,8%) ($p=0.0001$). See Table 49 in Annex 9 for details

Households were asked to explain **knowledge about ODF** to the interviewer. Almost 6 in 10 households could adequately explain what ODF is;

- Significantly higher knowledge on ODF were observed in intervention compared to counterfactual areas (64,3% and 50,1% respectively, $p=0.0001$)
- Significantly higher knowledge on ODF in Northern households (70,3%) compared to Southern households (42,8%), $p=0.0001$.

- Knowledge regarding ODF was slightly higher in the poorest households, but not significantly so, compared to the richest households(See Table 57 in Annex 9).

Knowledgeable households (N=630) on ODF were asked **whether their community is ODF**; 77,7% of these households reported that their community is ODF(See Table 58 in Annex 9).

- No significant differences were established between counterfactual and intervention areas.
- However, Southern households reported significantly higher proportions of ODF in their communities than Northern households (82,1% and 75,3%, p=0.031).
- Wealthier households reported their communities as higher ODF than poor households, but this was not statistically significant.

Awareness of WASH activities

It was asked from interviewees if they were aware of WASH activities in the 12 months preceding the survey. Fourteen percent of households were **not** aware of any WASH activities (saw, heard or participated) in this period – 12% of households in the intervention areas and 15,4% in counterfactual areas: *not significant*. The 86% (or 948 households) who saw, heard or participated in WASH activities, reported the following activities (unprompted, grouped):

- 63,2% hand washing campaigns,
- 62,9 % community environmental sanitation
- 41,8% personal and food hygiene promotion
- 35,1% keeping drinking water safe (Safe water chain)
- 32,6% promotion of safe excreta disposal,
- 28,9 Maintenance of sanitation facilities
- 28,8% Maintenance of water supply facilities
- 11,1% Construction of new WASH facilities

Significant differences on the awareness of WASH activities

- Not significant between intervention and counterfactual areas.
- Significant between Northern and Southern households (p=0.0001)
- Significant across wealth quintiles (p=0.0001) as illustrated in the graph below.

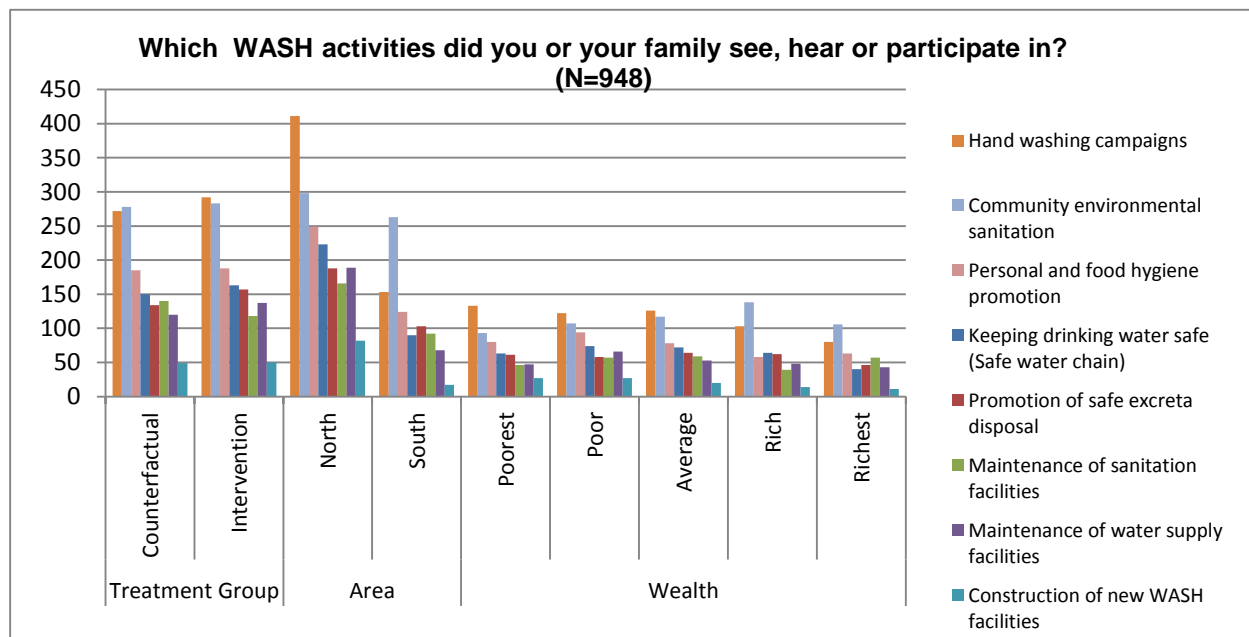


Figure 13: Number of households being aware of WASH activities

Awareness of WASH Committees,

Overall, 66,8% of all households (or 736 households) claimed to have a WASH committee in their community (Table 53 in Annex 9). This is significantly higher in:

- Intervention areas than in counterfactual areas (72,5% and 61,1% resp., $p=0.0001$),
- Northern areas compared to Southern areas (73,1% and 59,9%, $p=0.0001$) and in
- Wealthier quintiles than in poorer quintiles (69,2% and 57,7% respectively, $p=0.0001$)

Of the 736 households claiming to have WASH Committees in their communities, 84,9% reported to know its members. There was no significant differences in the proportion of households who knew the WASH Committee members between treatment groups, geographical areas or wealth quintiles.

Just over one quarter of the 736 households with WASH committees in their communities, did not know or did not answer on the number of years the committee have been in their community, **63% indicated between 1 and 5 years**, 5,8% less than 1 year and 4,8% longer than 5 years. No statistically significant differences exist between treatment group or wealth quintiles. However, in the Southern households, proportionally more households did not know (or did not answer) how many years the WASH committee has been in the community compared to Northern households (31,4% and 22,6% respectively) and proportionally more households indicated less than 1 year existence Of WASH committees in the Southern households (8,6% and 3,8% respectively, $p=0.001$) Table 55 in Annex 9 provides more details

Households were asked (unprompted) to list 3 activities of WASH committees in their community. The 1098 households responding to this question reported the following activities (Table 54 in Annex 9):

- 67% hygiene education
- 60% community mobilization
- 56,2% in charge of keeping water supply functional (O&M)
- 55,8% in charge of CLTS
- 49,7% supervision of the quality of latrine construction
- 17,5% collecting money for O&M of Water points

Frequency of WASH Committee activities as listed by households *did not differ significantly between counterfactual and intervention areas*, but did between geographical areas and wealth quintiles as illustrated in the graph below:

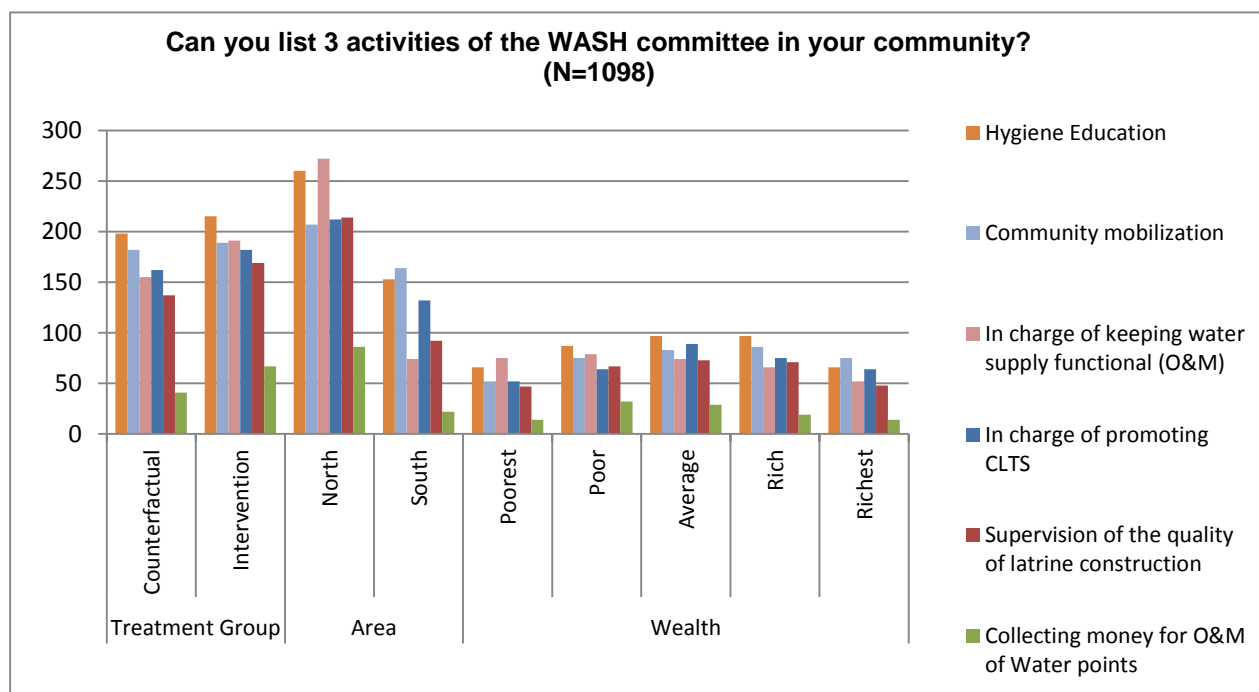


Figure 14: Number of households listing WASH Committee activities in their community by treatment group, area and wealth

Awareness of School Health Clubs

Only 1 in 10 households was aware of a school health club at the school in or closest to their community, 44,3% was not aware, 36% did not know and 10,2% did not answer.

- More households in the intervention area was aware of school health clubs than counterfactual areas (12,2% and 6,9% respectively, $p=0.027$);
- More households in the North when compared to households in the South (12,0% and 6,8% respectively, $p=0.0001$).
- Wealth was also associated with higher awareness: 3,6% of poorest households was aware compared to 14% of richest households, $p=0.0001$. See Table 59 in Annex 9

The 9,5% households ($n=105$) that was aware of school health clubs in the school in or closest to their community, listed, unprompted, the following school health club activities (See Table 60 in Annex 9):

- 86,8% participation in hand washing campaigns
- 75,8% Support and promotion of safe hygiene practices amongst peers
- 49,5% influencing parents to construct latrines in households
- 47,3% participation in CLTS activities

No statistically significant differences were found between treatment groups and wealth quintiles. Northern households listed proportionally more activities than Southern households.

Information on WASH

Households were asked **where they learned** or get information on WASH related issues. Community committees, health staff, radio and parents featured most prominently across the sample as the most important source (Table 50 in Annex 9 and Figure 15 below).

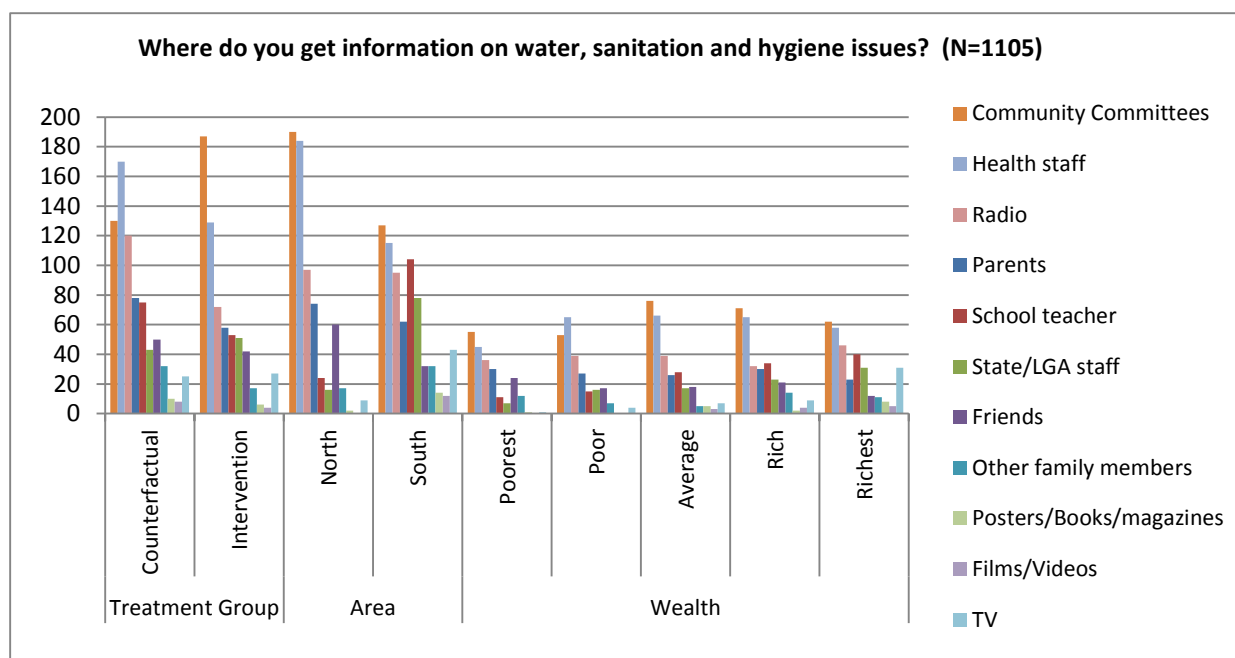


Figure 15: Numbers of households and main source of WASH information

Preferred source of information on WASH

Households' preferred source of information corresponds to where they are currently getting information on WASH related issues, namely from Community Committees (most often in intervention areas), Health Staff,

and Radio. However, State/LGA staff were preferred as one of the top 4, although it did not feature in the current top 4 sources of information. Table 51 in Annex 9 displays the details.

B. Primary qualitative data

In all FGD's – both intervention and counterfactual – people are aware of hygiene practices and especially handwashing at critical times; except for the counterfactual in Oju where no triggering has taken place, where there is no WASHCOM and no hygiene education messages are given. Consequently, according to the respondents, the population suffers from water and sanitation related diseases and has no information on approaches to improve their health and living conditions.

Generally the WASHCOMs teach people on washing hands at critical times, the necessity of using latrines for defecation, the need to wash clothes and cleanliness of the general environment, by for example advising people not to let their animals roam around. All people (men and women) are aware of the links between water and sanitation related diseases and their own behaviour. In some communities the WASHCOMs are mentioned to give out pamphlets (Bakori), but mostly messages are conveyed by talking. In some places there is a regular cleaning day (Yakurr, Ejigbo) and when people do not comply they are called to order or even given a fine (Yakurr). Also cleanliness around the market place is checked. The WASHCOMs that are established after the triggering are very effective in pursuing the hygienic conditions in the communities and organise regular cleaning days. Apart from the effective triggering done with the whole community, the institution of fines or public disapproval is such that people will comply. Many WASHCOMs visit households to check on their latrines and water availability near the latrines.

Water treatment does not seem to be a subject that is taught by the WASHCOM. Most intervention respondents do not treat their water because the water from the borehole is considered to be of sufficiently good quality, although this is only rarely checked. In the counterfactual communities some filter the water from streams to take out the worms. Boiling water is only mentioned once in all the community FGDs - by the older men in Gwarlak (Dass) who stated that the stream water is treated by boiling and filtering but they consider the well water clean. This however differed from the responses of the young and older women in the same community who said that they sieve the stream water and add alum to the well water before drinking. Regarding water handling, almost all the communities referred to the need to cover their water at home and the use of cups with handles.

Both intervention communities indicated that they have an increased awareness of hygiene practices due to the exposure they have had to hygiene promotion from the government WASH officials. They stated that they used to wash their hands with water only, but since the government officials came around to sensitize them on hand washing, now they use soap or ash. They said that they had been taught hand washing at critical times and during the interviews were able to clearly itemize the critical times. They stated that hand washing behaviour had changed in the communities. They know when to wash hands and why. This they believe has reduced infections and improved their health.

“Diseases have reduced ...like diarrhoea we don't know how they come about before but now we know. We are educated to wash our fruits like mango, cashew etc. Use of ash for hand washing is the most important change”. Community men, Bondi, Dass

The young women in Kura Sabuwa (Birnin Kudu) mentioned that they first learnt the importance of hand washing during ante natal classes and then the WASH program further sensitized them. In Bondi (Dass), the community members also added that the WASHCOM provides information on water; latrine and the need to keep the environment clean especially during home visits. Safe water storage was also clearly detailed by both communities as things they learnt from the intervention.

In Sambalisa (Birnin Kudu) – They stated that they now understand the essence of washing hands at critical times and they wash hands after using the toilets, except that some of them don't use soap. In Gwarlak (Dass) they said that since three years ago with the WASH intervention, they know the importance of hand washing before eating and after using the latrines but mentioned that hand washing is not always practiced especially during festivities. They stated that the water containers are closed especially now that most families are using plastic containers which already have a cover.

Increase in partners' WASH performance?

A. Primary data qualitative

The in-charge of the health facility in Dass detailed that during ANC visits, the women were educated both on sanitation and hygiene. They were told to prevent having diseases like diarrhoea, cholera, typhoid fever by practicing proper hygiene and sanitation behaviours.

The in-charge also detailed having monthly home visits within the community to give information on water, sanitation and hygiene. In addition to prevention behaviour they are taught to visit the nearest health facility as soon as possible in the event of diarrhoea, for proper action to be taken

The health facility and the Dass LGA WASH Team specifically the WASH Unit, have had meetings together and carried out home visits in the community together. Members of the WASHCOM also came along with them on those visits. The meetings have only been held twice – 2011 and 2012.

The in-charge has also been trained in WASH, in 2011 and 2012 but could not remember the months when these were held. The trainings were done in Dass and were organized by the local government WASH Unit. They lasted for a day each. One of the topics was diarrhoea - how to contact and how to prevent contacting diseases that led to diahorrea - but the in-charge said she could not remember most of things discussed in the training.

The health facility in Ganjar (Bakori) has a (UNICEF) borehole and sanplat pit latrine built by the WASHCOM two years ago. There was a hand washing facility available with water soap and ash.

Information is given to the women on hygiene and sanitation. According to the respondent, the women representation in the WASHCOM resulted in more women being involved in hygiene promotion as community hygiene promoters. Their activities include encouraging households to build toilets with hand washing facilities and the proper disposal of animal dung. And environmental sanitation events were held every two weeks. The in-charge indicated that the successful effort of the programme had empowered the WASHCOM and community leaders to move beyond household sanitation and hygiene promotion. Ganjar has now built a seven-compartment communal latrine and one latrine in the community health centre solely with community contribution and labour.

The health facility also works together with the LGA WASH team and the in-charge mentioned that they receive information from the LGA WASH team whenever there is an incidence of water or sanitation disease.

She however said that since she was transferred to the facility in 2012, no staff had been trained in WASH but she was aware that they had trained the previous officers.

In general, both the adults and the children in the communities that have borehole water expressed satisfaction with the intervention. Even when they complained that the taste is not as good as the other sources of water, they perceive the borehole water as healthier and therefore a welcome development. In contrast five of the counterfactual communities expressed deep dissatisfaction with their lack of water and are clear about the difficulties they experience as a result.

In terms of sanitation, both intervention and counterfactual communities in are generally pleased with CLTS approach; the knowledge of the value of sanitation and hygiene practices was clearly elucidated by most of the respondents in the communities and many professed to have embraced these practices. There is however some dissatisfaction with the sanitation services especially relating to the traditional latrines which are still the main type of latrine for the communities and tends to collapse during the rainy season.

Conclusion on effectiveness

An enabling environment is of crucial importance to reach effectiveness in the programme, in line with the UNICEF global evaluation of CATS sector strategy,¹⁸ we distinguish a number of elements: **Afocus on local authorities and partnerships** at the closest level to communities themselves is an important aspect to create such enabling environment – this is effectively done in Nigeria by having a well-functioning and well trained team at LG level, the establishment of WASHCOMs at community level and also the involvement and commitment to the CLTS process of natural leaders such as village heads. In addition, religious leaders have been involved in supporting hygiene messages that are given by the WASHCOMs. Another important factor is the relative social cohesion of the communities in the rural areas. **Cross-sectoral partnerships** between the WASH sector and the Health sector also seem to be well established with provision of hardware in the clinics and involvement of the clinic staff in WASH activities. This is less clear with respect to the education sector in terms of hardware, but teachers are in all communities with schools are reported to conduct lessons

on hygiene in classes. **Creation of necessary capacity** is done effectively in terms of technical and facilitation support from State to LGA and LGA to communities. The quality of facilitation of the triggering phase is clearly high, seen from the results in numbers of ODF communities. However, the capacity at LGA level to supervise and monitor at community level is constrained by manpower, resources and transport facilities. In the communities covered in the intervention, **the supply side** of hardware for latrine construction is adequately covered, only in some counterfactual communities, the hardware is difficult to obtain. For the traditional latrines, no hardware from elsewhere is needed. Similarly, masons are present in almost all communities (with the exception of some counterfactuals - Sambalisa and Gwarlak), whether they are trained or not under the programme. They even earn some income out of the programme when they are called in for construction – no other private partners are involved. However, there does not seem to be much variation in technology, basically two options are offered: the traditional and the san-plat latrine though in some instances like in Oju, there is mention of flush to pit latrines and in Dass, the Ventilated Improved Pit (VIP) latrines. No adapted technology options are mentioned anywhere. This is not a problem for the first phase of CLTS with the focus on just the construction of a latrine, but is likely to affect sustainability of latrines in the longer term. The fact that **no subsidy** is given at all for latrines is working remarkably well and is accepted by the communities that after triggering are motivated to construct latrines in a short period of time. The promise on getting a borehole once the community is ODF may also help in acceptance.

The effectiveness of **hygiene awareness** activities and promotion practices is remarkable as people in almost all intervention and counterfactual communities are able to discuss the importance of different hygiene practices and are also claiming they are actually doing these practices.

2. Outcome

This Impact Evaluation is looking into “impact” in terms of “effects” and “outcome”. The effects of the program’s intervention, presented in the chapter above, will probably have outcomes. These outcomes are presented in this chapter. Hereto, we aim to answer the following questions:

- Q1. What were the health benefits of the WASH program – at individual as well as at community level?
- Q2. What were the behaviour changes, induced by the WASH program?
- Q3. Changes in lives of community members
- Q4. Influence on community organization

These questions will be answered:

- With respect to all program components (Water, Hygiene and Sanitation)
- Is the impact sustainable?
- Is the current strategy replicable or scalable?

Q1. What were the health benefits of the WASH program

A. Secondary data,

As explained above, in the absence of a genuine baseline, we use the DHS 2008 and 2013 studies, as well as the 2011 MICS to generate an indication of trends over time of the WASH intervention. In the table below the proportions of children under five who had diarrhoea in the 2 weeks preceding the survey is provided:

Table 18 Proportion of children under five who had diarrhoea in the two weeks preceding the survey

% of children under 5 who had Diarrhoea in the 2 weeks preceding the survey	DHS 2008	MICS 2011	DHS 2013	IE WASH 2014	LGA of sample
Benue	7,3		9,5	7,4	Oju
Bauchi	32		25,7	5,5	Dass
Jigawa	8,2		14,8	20,1	Birnin Kud
Katsina	17,8		7,7	4,5	Bakori
Cross River	6,7		8,0	12,2	Yakurr
Osun	4,9		4,1	7,8	Ejigbo
Total	12,4	13,8	10	11,8	
Average % across the 6 States	12,82		11,63	9,58	

Table 18 above displays that overall the incidence of diarrhoea has decreased slightly – from 12,4% to 10% in the period 2008 – 2013. This decrease in incidence can be found in Bauchi, Katsina, and Osun; in Benue, Jigawa, Cross River, on the contrary, it has gone up.

In the table and figure below, we can observe the trend from the DHS in 1990 till the DHS in 2013:

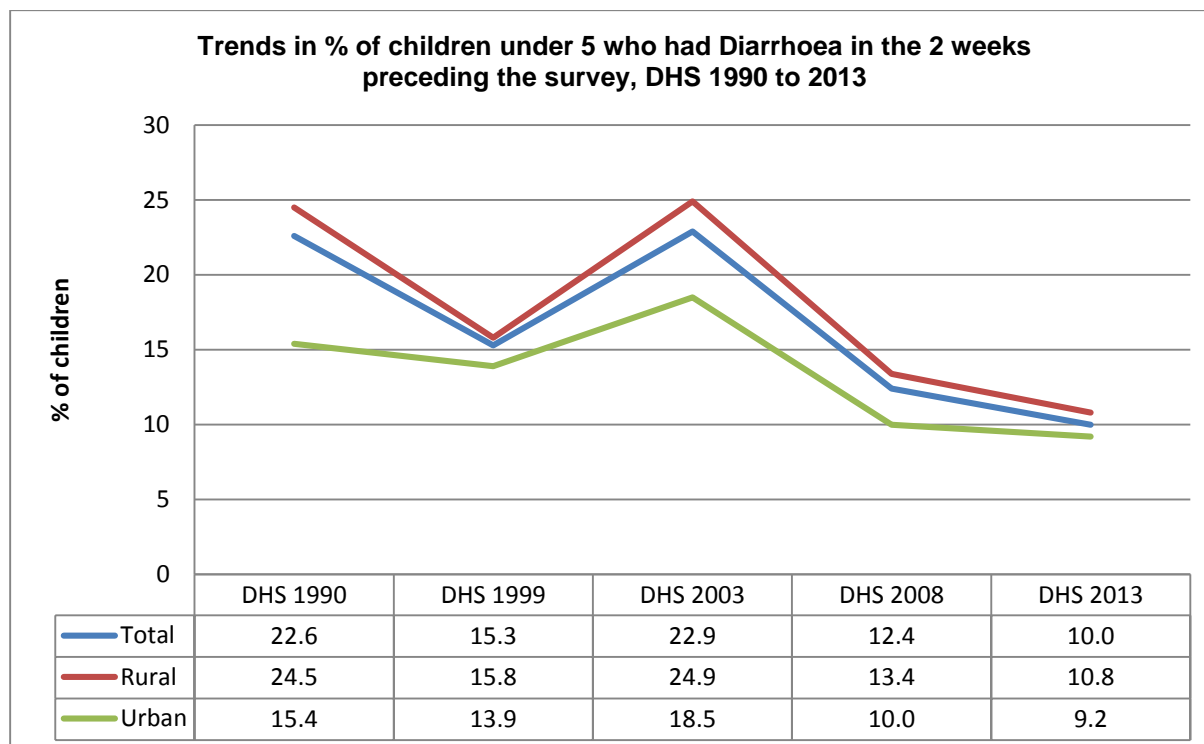


Figure 16: Trends of children under five, who had diarrhoea in the two weeks preceding the survey – from 1990 till 2013

This figure shows a decline in the trends from 1990 onwards with a peak in 2003 before another steady decline – a long time before the WASH program started – it has steadily declined (in general) from 22,9% in 2003 to 10 % in 2013.

B. Primary quantitative data

Diarrhoea - Any member of the household

The proportion of households reporting Diarrhoea in the 2 weeks preceding the survey of any member of the household were not significantly different between the counterfactual and intervention areas – even the proportions differed little: 14,7% in the intervention areas, compared 14.1% in the counterfactual areas.

- Households in the North, however, were 2,057 times more likely (Odds Ratio, OR) than households in the South to have diarrhoea (significance level (Sig) : $p < 0.01$, 95% Confidence Interval (CI) between 1,255 and 3,372)
- Female headed households were 2,35 times more likely (Odds Ratio, OR) than male headed households (significance level (Sig): $p < 0.01$, 95% Confidence Interval (CI) between 1,247 and 4,427).
- Households practicing open defecation also demonstrated a higher likelihood of 1,789 times (Odds Ratio, OR) of having diarrhoea in the 2 weeks preceding the survey than households not practicing open defecation (significance level (Sig): $p < 0.1$; 95% Confidence Interval (CI) between CI (0,967; 3,308)).

Severe Diarrhoea (Any member of the household) : there was no significant difference between intervention (4.5% had severe diarrhoea) and counterfactual areas (5.6%). The only analytical variable displaying a significant association with severe Diarrhoea was a female headed household.

- Female headed households were 2,6 times (OR) more likely to have had persistent, severe diarrhoea (Sig $p < 0.05$, 95% CI from 1,153 to 5,870) than male headed households.

Diarrhoea – children under the age of 5:

- Counterfactual households (with children under the age of 5) were 1,73 times more likely (OR) to have had children under the age of 5 who had Diarrhoea (Sig: $p < 0.1$, 95% CI from 1,153 to 5,870). Differences were even so small: 10.1% in intervention areas to 13,5% in counterfactuals.

Please note, for Diarrhoea in children under the age of 5, an additional analysis, *excluding Birnin Kudu*, was performed. The supportive argument for doing this arose from the fact that the proportion of children under 5 who had Diarrhoea in the 2 weeks preceding the survey was unusually high: 20,1%. We also noted in the DHS surveys (2008 and 2013) *the increase* in “the percentage of children under 5 who had diarrhoea in the 2 weeks preceding the (DHS) survey” in Jigawa, from 8,2% to 17,8% from 2008 to 2013. This is contrary to expectations for this impact evaluation and would potentially introduce skewed results.

We therefore performed the multivariate binary logistical regression per outcome variable again, excluding Birnin Kudu, and then:

- There was a statistical significant result at a 5% level: an odds ratio of 4,242 and a 95% Confidence Interval (CI) of 1,107 to 16,261, $p = 0,035$ was revealed, so the OR was significant. This means a statistical significant difference in the percentage of children under 5 between the intervention (4,5%) and counterfactual areas (9,1%) could be demonstrated.
- Results for the other analytical variables in relation to the outcome variables were similar to the results presented in this section and therefore not included.

C. Primary qualitative data

Reduced incidences of diarrhoea are mentioned by all the intervention and to a lesser extent the counterfactual communities interviewed in the FGD’s, as well as stakeholders at LG and State level. Also reduction in guinea worm, malaria and filariasis are reported, as well as skin diseases.

*“Before we got intervention, there were high cases of cholera, diarrhoea, guinea worm, rashes, skin diseases, but they have become very low now now.”*Community older men, Bakori

The reduction in diseases was reported as being so striking that people have become convinced of the need to stop outside defecation, to drink their water from a safe source and to practice hygiene – and this is now considered the norm in the intervention communities. A reduction in child mortality has been mentioned as a result of the programme by community members.

*“Children have particularly been affected positively as diarrhoea and filariasis which used to lead to poor health and related death has reduced drastically. Defecation outside the toilet is eradicated, personal hygiene encouraged, environment is clean and there is no more odours due to open defecation. All the community members benefit as their health status is improved.”*Community young women, Oju

Respondents in Bondi (Dass) described a reduction in goitre diseases in the community because of the borehole. They stated that the stream water they used to drink before the intervention was responsible for the goitre.

Interestingly though in Birnin Kudu – both Kura Sabuwa and Sambalisa they allude to the increase in malaria cases since the installation of their boreholes. Respondents in Sambalisa said that before the intervention, they used to experience more malaria only during the rainy season but that had changed since the borehole in their community was installed. However, in Bakori, Oju and Osun the respondents mention that malaria incidence has actually reduced.

Another health benefit mentioned as an outcome of the WASH programme is physical safety. As people do not have to go out to the bush to defecate, the risk of snake bites or accidents in the dark has been reduced. In Sambalisa, a safety problem due to children falling into the well was a reason given for their appreciation of water.

Understanding link WASH and health outcomes is seen even in the counterfactual communities where WASHCOMs are active:

“The poor hand washing practice in the community has been linked to cholera and diarrhoea particularly with children. Although there is an extra nearby source of water for the community, the cost has limited our access to the water and has in turn limited the availability of hand washing water within households.”(Yakurr counterfactual)

According to the in-charge of the health facility in Dott, Dass, diarrhoea in children under 5 in the community had reduced remarkably.

“Approximately in a month nowadays we do have between 10 to 13 under 5 children with diarrhoea but before 2011 the number used to be above 40”.

The in charge said he had not come across cases of trachoma, filariasis or schistosomiasis since he started working in the facility in 2009.

The in-charge in Bakori also said that diarrhoea in children under 5 was reduced in the community. He indicated that they used the routine immunization periods to educate the women on how to take care of their children. He said they had not had cases of trachoma or filariasis, or schistosomiasis in two years.

Also the health benefits of the cleaner environment are mentioned by many people, impacting on individual and community life:

“Before now, there used to be open defecation everywhere, when you walk around the house you will see defecation everywhere, now we were taught the danger of open defecation. Because of the flies that usually carry harmful disease from the shit to the food that we eat, but now that we have latrines, frequent illness has reduced so much”(IDI WASHCOM member Dass).

According to the respondents, the reduction of flies and mosquitos in the cleaner environment has enabled people to stay outside longer and even to sleep outside.

Q2. Behaviour changes, at individual as well as at community level

A. Primary quantitative data

There was an open question to the interviewees – about what they perceived as the outcome of the WASH program. Many types of answers came out, that have been analysed statistically and reported above under “effects. Very few answers came out that could be regarded as “outcome” – see table below – or the answers were in terms of outcome, but too few to be meaningful enough to present here. Such as: the number of germs, Insects, or animals reduced in the household, there is a clean Environment; and there was a positive effect on community organization.

Table 19 Perceptions on outcome in the households (N=598)

Treatment Group	CounterfactualAreas (n=272)	Intervention areas (n=326)
Behaviour change: wash hands improved hygiene	54,6%	45,4%
Open Defecation Stopped	33,8%	66,2%

B. Primary qualitative data

“No more open defecation”:

Having a latrine and no more outside defecation – also for children – seems to have become the norm in all intervention communities. As one respondent said:

All households have latrines. People are now ashamed of open defecation because people will laugh and mock anyone caught defecating openly in the bush around the house which leads to building of more latrines(Oju elderly men)

And another one in Dass:

Now every child is aware that when she/he defecates openly she/he will get into a quarrel or even get beaten. Some children now will prefer to dig a hole and defecate and after defecating they will close the hole with sand(Dass Community FGD)

Nevertheless, some of the intervention communities are clear that OD is not completely stopped though they may be at a “95%” level of being ODF. Children and a few miscreants in the communities are described as sometimes flouting the community rules against OD.

Washing hands at critical times:

Washing hands at critical times – again – seems to have become the norm. Water for hand washing is near the latrine according to most interviewees and this even gets checked by the WASHCOM and the household scolded when there is no water. Also use of ash or soap is widely reported – if there is no money to buy soap, ash is being used.

The usual practice was that people made use of leaves or paper to clean up and we never bothered to wash our hands. We never bothered to wash our hands before eating even when we return from the farm. Times when we washed our hands it was done hurriedly because we never knew such practice was bad. The training brought the change and we are now accustomed to doing these things.(FGDCommunity, Ejigbo)

However, in the northern area, Dass, Birnin Kudu for instance, water is not kept in the latrines for hand washing but carried in kettles to the latrines when necessary, a practice that is quite cultural. The change is mainly related to the use of soap/ash for hand washing.

The communities are aware of the benefits of the new behaviours they have acquired and according to them that is a major motivation to sustained behavior because they state that indeed their health has improved since they started practicing better hygiene. This theme runs through all the communities - especially the intervention communities and to a lesser degree the counterfactuals. Indeed some of the counterfactual communities still link their change in behaviours to the target of being ODF in order to get water.

Water handling:

Water handling practices are reported to have improved and to be regularly checked by the WASHCOM. People relate that they cannot get water from the borehole if they do not have a container with a lid. They also mention cleaning of containers in many of the communities. Water in the house is drawn with a cup and people are aware of the need to avoid touching the water with their hands.

We now cover water, especially our drinking water. Our people now take drinking water from containers that have covers, protected from dirt and flies. Our children now use cups to drink water. We don't use containers that don't have handles anymore.(Dass CommunityFGD)

Bathing and washing of clothes:

When people had to get water from afar, they used to minimize the quantity of water used for bathing, with the consequence that especially the children were rather dirty. With increased availability, the people reported that they take baths more frequently.

Things has really changed, before now people do not use to bath enough, you will always see our children very dirty but now that we have water you will always see that our children are very neat.(Dass FGD)

Mind you, your staff from Bakori local government come here (i.e Sister Zainab came here) and one boy go close to her. She said, had it been in another town in Bakori local government area, she would have pushed him away because of the smell he might give out. But here, your children do very good in terms of keeping the body clean(Ganjar, Bakori FGD)

With increased water availability, the respondents stated that it is also much easier to wash clothes frequently and with a better effect. Before the borehole was constructed, people mentioned that washing clothes in the surface water, left reddish stains on the clothes, which is now no longer the case. The more frequent washing has also resulted in a decrease of skin diseases.

In **schools** children are taught that their clothes should be clean and this leads to more frequent laundry washing in the households.

Then, we had clothes piled up but this is no longer the case because we wash our clothes daily. When we get back from the farm, we had to rush out of the house immediately in search of water. Now we wake up early to go to the farm and later get water when needed. Now our mind is at rest because we use water as we wish. We can take our bath at night and bathe thrice if we choose to do so.(Ejigbo CommunityFGD)

In the counterfactual areas, no behaviour changes on hygiene practices are mentioned in Oju (no WASHCOM), but in Gidan Bauche (Bakori), obviously the WASHCOM has influenced behaviour of the community people:

We wash our hands after eating food and before, we also wash after toilet, and at any time we expect there is need for, In this community, it became our character using soap or ash in washing hand, and our children adopted it as their behaviour, and we their parent are happy with this character. No one can keep his water container uncovered in this community, and all of us is benefitting from it because as you can see this is one of the reasons that we have low incidence of diseases(FGD, old women).

In another counterfactual community (Yakurr), the knowledge on hygiene is there, but has not resulted in changed behaviour due to difficulties in accessing water:

The poor hand washing practice in the community has been linked to cholera and diarrhoea particularly with children. Although there is an extra nearby source of water for the community the cost has limited their access to the water and has in turn limited the availability of hand washing water within households(FGD older women, Yakurr).

In Aboyun Omu (Ejigbo) the women in the FGD said that they always had hygiene behaviour and that the event of WASHCOM had not really changed that:

The upbringing of the members of the community has encouraged cleanliness including regular sweeping of the floor. It is also needless for WASHCOM to police the community members before they comply with hygienic lifestyle since their upbringing is already in line with what they are told to do.(FGD older women, Ejigbo)

The CLTS approach appears to have been able to trigger behaviour change in the communities both in the households and the schools. The community men, women and children including the children in EHCs are quite knowledgeable about hygienic behaviour, the value of hygiene and sanitation practices and the impact this has on their health especially relating to water borne diseases. The behaviour change relating to sanitation and hygiene has been quite effective in the communities and schools.

The hardware intervention (water supply) is operational in the communities that have been provided with boreholes, and almost all of the water supplies are working – but they are relatively new, so few breakdowns have occurred. Although many of the communities have taken ownership of the O&M, this only applies to regular maintenance and minor repairs, but a lot is expected from the local government in terms of major repairs. The motivation of getting water if declared ODF appears to be effective in driving behaviour change in the counterfactual communities.

School sanitation has been quite effective in the schools where they have been implemented. The children are more aware of sanitation and hygiene practices and there is evidence of knowledge transfer to the homes both from the interviews of the children of EHCs, the interviews with the school in charges and the interviews of the community women especially. The latrines in the school are not always separate for boys and girls and not always kept clean but the children's personal hygiene practices is declared by both their parents, the teachers and themselves to have remarkably improved.

The impact on behaviour change is expected to be **sustainable**, as long as the water from the borehole is available and as long as people in the communities are motivated to keep their latrines functioning. The current strategy for CLTS is already scaled up to cover all communities in the LGA, and is being replicated in non-SHAWN LGAs. Providing there is commitment from the State governments in terms of funding and interest, it should be replicable also in other States. The impact of the programme is such that it can well be used for advocacy in other States.

Q3. Changes in lives of community members

In this section we discuss changes household's lives like their time allocation, and if this had an influence on e.g. increase school attendance (especially of girls) or drop-out rates for boys and girls;

A. Primary quantitative data

Children aged 5-17 years currently not in school:there is no significant difference between intervention and counterfactual areas – currently in school figures were 74,2% and 77% respectively. However,

- Children in the North were almost 7 times more likely to currently not be in school than children from the South (sign: $p < 0.01$, 95% CI between 3,205 and 14,673).
- Children from households in the poor, average, rich and richest quintiles were more likely to be in school, if these were compared to the children from households in the poorest quintiles, as can be seen from the odds ratio: these children were 3,38 times more likely to be in school than the poorest ($p < 0.05$) - presented in Table 63 in Annex 9 provides the details .

Children aged 5-17 years who missed school: Households reported, per child aged between 5 and 17 years, currently in school, the number of days absent from school in the month preceding the survey.

- Missing school was 1,6 times more likely for children in counterfactual areas (Sig $p < 0.01$; 95% CI from 1,036 to 2,376).
- Children from highly dependent families (i.e. a ratio of adults over the age of 64 and children under the age of 15 to adults aged 15–64), were 1,5 times more likely to miss school than children from low dependency families (Sig: $p < 0.1$, 95% CI from 0,983 to 2,313).

Work (paid or unpaid) by 15-17 year olds: Significant factors influencing whether 15-17 year olds worked for someone outside of the family in the week preceding the survey, were: the geographical area, wealth, dependency ratio in households and lack of knowledge of 3 critical hand wash moments – no significant difference between intervention and counterfactual areas.

- A child from the North was 0,65 times less likely (OR) to work than a child in the South ($p < 0.1$, 95% CI (0,405; 1,056)).
- Children from the richest, rich, average and poor quintiles were more likely to work than the poorest quintile as illustrated in the table 63 in Annex 9. This is also reflected in the household dependency ratio: children from highly dependent families were 0,62 times less likely (OR) to work than children from low dependency families. (Sig: $p < 0.05$, 95% CI from 0,400 to 0,970).
- Knowledgeably children with regard to critical moments for hand washing were 1,7 more likely (OR) to work (Sig: $p < 0.05$; 95% CI from 1,127 to 2,817)).

Household chores done by 15-17 year olds: Significant factors influencing whether 15-17 year olds carried out household chores in the week preceding the survey, were the geographical area, and wealth – no significant difference between intervention and counterfactual areas.

- A child from the North was 0,5 times less likely (OR) to carry out chores than a child in the South (Sig: $p < 0.1$, 95% CI (0,291; 0,861)).
- Children from the richest, rich, average and poor quintiles were more likely to perform household chores than the poorest quintile.

Fetching water by 15-17 year olds: Significant factors influencing whether 15-17 year olds fetched water in the week preceding the survey, were geographical area, wealth, dependency ratio and adult education – no significant difference between intervention and counterfactual areas.

- A child from the North was 0,3 times less likely (OR) to fetch water than a child in the South (Sig: $p < 0.01$, 95% CI between 0,169 and 0,550).
- Children from households with average wealth were more 1,7 times more likely (OR) than the children from the poorest households to fetch water (Sig: $p < 0.1$, 95% CI between 0,927 and 3,295). Children from households in the 4th and 5th quintiles (wealthier) were less likely to fetch water than the poorest children, although this was not statistically significant.
- Children from households with high dependency ratios, were 1.6 times more likely (OR) to fetch water than children from low dependency ratio households (sig: $p < 0.05$, 95% CI between 1,046 and 2,550). In households where no adults were educated, children were 0,5 times less likely (OR) to fetch water. (sig: $p < 0.05$, 95% CI between 0,296 and 0,880).

B. Primary qualitative data

Changes that have been mentioned by people from the community, as well as community leaders, WASHCOM members, latrine builders and pump caretakers are basically the same across board. They relate to increased access to safe water, having latrines and no more or reduced outside defecation and increased hygiene practices as well as increased environmental cleanliness. Some people rate the water supply as

most important, others the better health of the people in the communities. But it is never just one aspect that is mentioned as a major change, as is illustrated by the group of young women from Oju:

*“Water from the river is available during the rainy season and used to dry up during harmattan and dry season. Now water is always available regardless of the season. This has reduced the emotional trauma women used to go through during dry season when they had to struggle to search for new water sources. Women now have water all year round to meet their needs helping them to maintain good personal and general hygiene and water for farming is made available during dry season. Defecation outside the toilet is eradicated, personal hygiene encouraged, environment is clean and there are no more odours due to open defecation. All the community members benefit as their health status is improved”*Community FGD, Young women, Oju

Aside from the health benefits and behaviour changes discussed above, the increased accessibility of safe water has led to time and energy gains because less time is spent on fetching water. The main beneficiaries of this are women and children as they are mostly responsible for fetching water.

This has particularly resulted in increased attendance of children in **school**, both for boys and for girls, as they do not come late anymore because they have to fetch water first. Where it was the task of girls to fetch water (Yakurr, Bakori, Oju), it has increased their school attendance. In addition, because most schools in the intervention communities we have covered now seem to have a borehole and latrines, the children do not have to go to the bush or home for a sanitary stop. Neither are they sent from school to fetch water for the school. This has impacted on school attendance:

“Our children used to go the school very late like 10am this is because they have to go to the river to fetch water and some other chores, but these days things has changed, they now go to school early”(Dass FGD)

“Schools have latrines and improved hygiene environment. Washing of hands after toilet is now possible. There is more time to learn) with the presence of water in school as teachers no longer send students in search of water and less time is consumed to get the water”.(Oju, FGD)

Increased attendance in schools of girls as a result of having separate latrines is not particularly mentioned, although the fact that separate latrines are available is considered good for the privacy.

Income generation as a result of increased water availability has not been mentioned anywhere, except that in the dry season when the stream runs dry, the water is used for farming. However, the training on toilet construction and hand pump maintenance has for some community people led to some work in other communities.

A major change in the community as a result of the WASH programme is the environmental cleanliness. The smell of faeces has disappeared with the construction of latrines, and with the faeces, also the flies have reduced drastically – as one man pointed out, we can sit outside again and even sleep outside. According to the respondents, cleanliness around the water point has led to a decrease in mosquitoes and hence a decrease in malaria cases.

“Before the WASHCOM training, our animals roam around with their dung littering the environment and both the adults and the children stepped on this. Flies was everywhere in our community when we used to defecate in the bush and they perch on the faeces and later on the food. Now that we have latrine we no longer have flies as such. Before the latrine, when it rains the atmosphere is full of bad odour”.(Ejigbo old women)

“The community is now cleaner and people are now more involved in keeping the environment clean because of the existence of WASHCOM. People do not defecate outside again or litter the environment because of the policing activities of the WASHCOM. There was a general dislike for the committee when they were newly selected and everyone complained a lot about their sanitation rules but now people are happy with them and gladly comply with them as they like the clean environment”.(Yakurr, FGD)

Finally, the programme is reported as having improved the personal cleanliness of the people in such a way that it has changed some aspects of the social life of people:

“Men now take cola nuts from their fellow men, before not as they realised their unclean behaviour of not washing hands.”(Oju, FGD)

The programme has an impact on the **empowerment of women and youth**. Women are members of WASHCOMs and as a result have a more formal role in the community and are in the position to influence

community decisions. To what extent this influence goes beyond WASH is not clear. The empowerment aspect has not been highlighted in the FGDs, but it has come to the fore in the discussions on the tasks of the WASHCOM and the hygiene education activities of its members. From these it is clear that the women are in charge of the hygiene behaviour and give information and do house visits to check on the households. This certainly has increased their standing in the community as the increased awareness on hygiene and health is much appreciated by the community (mentioned in the most significant changes).

“Women representation in the WASHCOM resulted in more women being involved in hygiene promotion as village hygiene promoters. Their brief included encouraging households to build toilets with hand-washing facilities and the proper disposal of animal dung. Village health workers were also trained as hygiene and sanitation promoters, and environmental sanitation events were held every two weeks. The success of Ganjar has influenced neighbouring communities. With the support of WASH Dept, we have achieved tremendously”.(Ganjar, BakoriFGD)

Similarly, the important role of youth during the triggering, in conveying the hygiene messages from school to home and in participating in hygiene events, has contributed to youth becoming more involved in village development, as is mentioned by the children themselves and by LG staff.

Q3. Influence on community organization

A. Primary qualitative data

The establishment of the WASHCOMs has an impact on the organisation in the communities, both in intervention as in counterfactual communities. This is not only because the WASHCOMs include members from different groups and both men and women (be it to a lesser extent), but also because they have been able to become an influential part of the community.

“WASHCOM membership cuts across the community. There are five men and two women. The women enhance the unity of the community”(Ejigbo counterfactual)

“WASHCOM exists, and we are happy with it, it is changing our total way of life especially in terms of hygiene and sanitation” (Bakori counterfactual); *“WASHCOM exist in our community and it has brought tremendous development to our community”*(Bakori intervention)

In several places, by-laws pertaining to outside defecation, water supply organisation and hygiene practices have been established and are being enforced by the WASHCOM members – which are fully accepted by the community and has an impact on community life and organisation. This is also illustrated by the fact that many WASHCOMs have established weekly or monthly environmental cleaning days in which all community household participate. There has been no mention anywhere about a WASHCOM not functioning or a WASHCOM that was not representative of the community as a whole.

It is not clear to what extent the WASHCOM has also led to wider development efforts, beyond WASH as this is hardly mentioned. Only increase in uptake of polio vaccinations and mother-and-child health services has been mentioned by the health staff and other LG stakeholders.

*“Yes, because before now, when we go for immunization you will see the non-compliance rate will be so high, some people will refuse to be immunized completely, but because of this programme people are now beginning to comply with immunization, because we tell them about the borehole, (and ask them) so if you people refuse to be immunize how will they bring other things for you?. Completely in the whole local government I don’t think there is non-compliance now.”*In-charge of health facility, Dass

Similarly according to the in-charge of the Ganjar (Bakori) facility the turnout for polio immunization has increased significantly:

*“In previous time the people from this community were agitating that they need water. And when WASH provided water for them they began to bring out their children for immunization. When the water was provided, they said now you have given us our basic need, we can give our children for immunization...”*In-charge of health facility, Bakori

However, the WASHCOM in Bakori, that raises funds from all users by selling water at the borehole, has constructed 7 community latrines out of these proceeds to the satisfaction of the community.

When the In charge of health Dass was asked if UNICEF decided to take their hands off the programme, whether the community or local government could sustain it he said no. He said that due to politics and corruption, it would be difficult for the local government and communities to sustain the program on their own. Additionally, he stated that proper supervision of the program was an area that needed improvement.

However, according to the State focal person Dass the programs are sustainable because there are structures at all the levels - community, state and LGA, and there are WASHCOM at the communities that take care of their facilities and oversee the operations of their facilities. He also pointed out that a lot of training has been done that enable the communities do the minor repairs themselves and call for artisans if major repairs are needed. This is a different view from the communities who state that the artisans are called in for the minor repairs and the local government is contacted for the major repairs. The stakeholder stated the communities have taken ownership of the projects since they were carried along right from the inception and all the work done in the programme is participatory. This view was also held by the LG Bakori stakeholder who stated that the programme was sustainable because it was community led and the changes in the lives of the beneficiaries would motivate them to continue.

“At the community level the WASHCOM are now acting as the protectors of their facilities and since they know it’s very good for them, they will not step aside and see it spoil again”.

When asked about revenues from local taxes, the stakeholder said that they were not a commercial agency and did not collect tax from anybody. The work is done solely from the state government budget.

The LG Dass stakeholder indicated that CLTS had scaled out by itself but this study does not show any evidence of that since we did not visit other LGAs.

The stakeholders are clear that the main problem with sustainability is the issue of funding since the impression is that the local governments do not have enough resources since even the counterpart funding from the LGA is not usually released on time.

3. Contributing and explaining factors

In case there were effects and outcomes of the WASH intervention, this Impact Evaluation if there was an impact – why, how, where and for whom.

Hereto, the following questions will be addressed:

- Q1 what social-economic factors influenced WASH impact?
- Q2. What social-cultural factors influenced WASH impact?
- Q3. What external Contextual Factors influenced WASH impact?
- Q4. What internal contextual factors influenced WASH impact?
- Q5. Was UNICEF support relevant and appropriate in relation with national policies
- Q6. Efficiency in the programme's use of community resources, incl. using people's time

Contextual factors

Q1 what social-economic factors influenced WASH impact?

A. Primary qualitative data

Not all the amounts budgeted by the Federal Government are released to the states and the portion released are not usually on time. This pattern is the same at all the three levels of government. This is documented as a major reason why many water projects are not completed and the completed ones are not functional. The state and LGA contributions are used for both capital and operational expenses, however, getting the governments to honour their financial commitments requires persistent advocacy efforts and the delays affect implementation of the projects. There continues to be irregular release of counterpart funds in the states – some more than others.

The majority of the people living in the communities that have been included in this evaluation are poor. Most are farmers. The socio-economic factors that have an impact on the WASH programme are considerable:

*“The poor people are mostly affected as they cannot afford to buy water most times. The community people prefer the community built borehole to individual borehole due to cost discrepancy, linked to community and private individuals.”*Oju Older men

Water from the public boreholes in all but one intervention community (Bakori) is free and incidental collection is used to pay for the minor repairs of the borehole. The WASHCOMs and community leaders have their own system of collecting these funds – this may be only the wealthier residents that pay, those that are near, and in some those that cannot pay are not forced to do so. This collection does not seem easy and in one place is mentioned that the borehole is broken down because the collection has been unsuccessful (Yakurr). Because of the relatively recent installation of the pumps, there are few boreholes that have broken down so the issue was not really a point of discussion in the FGDs. However, all informants related that for major repairs the LGA would be responsible – even for the funding of the repairs. This is not the approach that the programme envisages as also the LGA's suffer from a lack of funds. The logical solution is to build up a maintenance fund as is done in Bakori where people are routinely charged for water use and this is working well. Why this has not been introduced in other communities is not clear. But in counterfactual communities even with a functioning WASHCOM and a relatively high knowledge on water hygiene, people still collect their water from unsafe sources and not from private boreholes that are in the vicinity, an indication of their inability or unwillingness to pay.

Also with respect to latrines, the majority of the population in the communities opt for a traditional latrine for cost-related reasons. They do realize that an improved latrine is of longer duration and easier to clean, but they cannot afford it. Similarly, more people use ash for hand washing than soap as soap needs to be bought.

There are no strategies mentioned by any of the stakeholders to assist communities in setting up a fund from which they can borrow for latrine construction, having a community saving and loan scheme or making links with a MFI.

Q2. What social-cultural factors influenced WASH impact?

A. Primary qualitative data

There are interesting differences in the various communities relating to their socio-cultural characteristics. For instance, the northern states – Dass, Bakori and Birnin Kudu - retain the culture of using kettle as the main hand washing tool after using the toilet. They use the kettles both for their religious washings and when they use the latrines. In the intervention communities they state that in addition to the water in the kettles they now use soap or ash but less so in the counterfactual communities. The other communities like Oju detail hand washing facilities near the latrines.

The involvement of women in WASHCOMs is seen more clearly in Oju and Cross River and less in the northern LGAs. In these cases, a discrepancy in knowledge is readily seen. The men know more about the operations of the WASHCOMs while some of the women do not even know that there is a WASHCOM in those communities. In Kura Sabuwa for instance, the women said that some of them had been appointed into the sanitation task force but did not know what their duties or roles were. They also did not know what WASHCOM was. The men were very clear that they had a functioning WASHCOM and that some of the members were women.

In Bakori, the men and women of the WASHCOM meet separately and each group reports to the secretary, who conveys the issues to the other group.

It is also interesting to note that in the northern LGAs, the responsibility for fetching water lies mainly with the adult males; this could be one reason for the relatively higher level of interest shown by the men.

A culture of the use of traditional latrines appears to have an influence on the choice of latrines used in the communities. Even though the CLTS process presents options of cheap improved latrines, most of the communities still predominantly build the traditional latrines they are already accustomed to. In communities where there is no culture of traditional latrines, the bush remains an option and the counterfactual communities are sometimes quite vague about how they dispose of their faeces.

The social norms that are of influence on WASH behaviour, have changed as a result of the CLTS intervention, the establishment of the WASHCOMs that are monitoring hygiene behaviour and the bye-laws that have been created in many communities. Where before, it was acceptable to defecate outside and communities had designated places for defecation (this is how it was always done in our community), the triggering has created disgust and shock and a realization of the faecal-oral route of infection transmission. This started the process of latrine construction, but the community action that followed and acceptance of hygiene behaviour has changed the norms. With regard to water hygiene, increased accessibility and reliability of water supply seems to be more of an initial motivator than safe water per se. However, the hygiene education activities have made people more aware of practices that influence the safety of water and has also changed the norms of acceptable behaviour “we cannot draw water without a covered container”. The routine inspections of the WASHCOM in the houses contribute to the acceptance of the new norm. In the counterfactual area in Yakurr, is mentioned that

“The lack of latrines and poor access to free water has limited the imbibing of the hygiene practices taught by the WASHCOM members”.

Q3. What external Contextual Factors influenced WASH impact?

A. Secondary data

In Dass LGA, the stakeholder said that the communities have embraced the programme and are involved in the implementation but a frequent problem encountered is that the community leaders usually want to change where the boreholes are planned to be drilled because of their selfish interests. **“Most of them are doing that.”** They (WASH Unit) send regular reports on their activities and finances to the LGA. They have been instructed to let the LGA know when they receive funds for any activity but they don't do that because of what they describe as the financial problem of the LGA – so they believe that if they tell them when they receive the funds they may end up having access to only half the money to carry out their activities. So they use the funds to carry out the activities and send the financial report at the end of the day to the LGA.

Dass has an active women's group the Dass women cooperative organization that had drilled boreholes in the communities even before the intervention

The state draft wash policy is the guiding document for implementation of the WASH programme. The policy states that every community in the LGA must be served water - at least a single hand pump borehole. For communities with large population, all other communities must be served at least one borehole before an addition to those communities. According to the key informant, before drilling a borehole in any community a geophysical assessment is done in at least three locations and the drilling takes place in the community with the largest quantity of water (though there are some exceptional cases). But this process is usually encumbered by interference from the community stakeholders.

“There are some communities where the community leader insist on having the borehole in his place or area particularly the front of his house and if we do not do it there, they will not give us their full support. We used to have this problem especially when we go to the field, notwithstanding we make use of our diplomacy to make sure they understand us that it is not for one person but the whole community”.

The Bauchi state WASH policy is in line with the national WASH policy and is strictly followed in the implementation of WASH in the LGAs though some times the stakeholders have to adapt some of the elements to suit the people at community level.

The key informant in Bakori LG described the difficulty in getting information from the state to the LG levels due to poor communication between the two levels. She detailed that quarterly meetings are not held and that there are rules that are signed by environmental health that sometimes compromises the rules that suit the people at a local level. She gave the examples of a rule that people should not excavate latrines near wells;

“We adjust them, like in what I said, you cannot build latrines near well, but we allow this law to be violated because of the nature of building in our rural areas”

The key informant in Bakori LGA detailed the usefulness for the WASH programme of the cooperation from stakeholders like clerics, community leaders politician, and traditional rulers and from the state level, NGOs like Service to Humanity foundation who are partners in implementation. Service to humanities foundation for instance, implements the WASH programme in Makarantar Allo (Qur`anic Schools).

According to the state stakeholder in Dass the project is solely supported by NGOs, The state provides the counterpart funding and for the LGA provides points and offices for their WASH unit as well as operational cost for their staff.

The In charge of Dass health facility detailed that a lot of changes had taken place in the area of hygiene and reduction of diseases due to donors and NGOs who support and supply drugs to the facility. He mentioned that IDDIC and BAKATMA supply malaria drugs which attract more people to the facility. He said all these drive the changes in the community.

The In charge of health facility Bakori –said that community effort and cooperation was a major driver of change. He detailed the cooperation of the clerics in the community who always put the WASH programme at the fore of their daily sermons as one of the reasons that the programme has been successful. He also noted what he described as the constant surveillance from WASH as another driver of change.

In Bakori the LG stakeholder detailed a need to train traditional leaders and clerics and provide allowance for them as is done in the MDG intervention and polio immunization – she said that the traditional leaders and the clerics usually had the impression that such an allowance had also been provided for them in the WASH programme and it had been misappropriated by the local government officials.

According to the Katsina state stakeholder, six LGAs in Katsina have been the focal points for the intervention. In Bakori there is a mix of Christians and Muslims and this was capitalized on during the implementation. The stakeholders asked the clerics to make sanitation and hygiene issues a part of their sermons in the churches and mosques and they agreed and it became a regular thing in the communities. The implementers found this to be very effective.

*“Before you know it ... people were attaining ODF within weeks”*Key informant, Katsina

One of the positive effects of the programme according to the stakeholder was the imbibing strategies of the programme into the other projects handled by the LGA even in collaboration with other developmental agencies. According to the respondent, it is now difficult to identify who is doing what on the field because the same strategies are used.

Also of note is an important tool used in promotion of the WASH activities in the programme - the media. This is shown more clearly by Benue in their use of media during the Global Hand Washing Day to disseminate the message widely – reaching about 2 million people in their estimate.

Q4. What internal contextual factors influenced WASH impact?

Most intervention communities have adopted by-laws that prohibit outside defecation, but how this is enforced is not clear everywhere.

WASHCOM gives information on all hygiene practices (water handling, hand washing, environmental cleanliness) and gives penalty to those not applying the information (Oju elderly women). Also in counterfactual communities, the WASHCOMs have established such bye-laws. According to the respondents in Yakurr, the community has become more conscious of having a cleaner environment and also of the negative effects of poor sanitary habits. The committee members go round the community on market days to look out for people who are littering the environment and fine them. They target women and educate them on the dangers of open defecation. They fine anyone that defecates or litters the environment as much as ₦3000 (Yakurr counterfactual)

The effectiveness of the WASHCOMs depends on the support of the traditional leaders, which in our sample seems to be quite strong. The community leaders work hand in hand with the WASHCOMs and support them whenever their influence is needed, for instance in siting the borehole, raising funds for repairs and ensuring inclusive development. They were also influential in the selection of the WASHCOM members.

Before the commencement of each activity we usually discuss it with WASHCOMs members, and the elderly men and women of this community to ensure that, after the total execution of the activity people will benefitted it positively (Community leader, Ganjar, Bakori)

The interviews with the community leaders (Bakori and Dass) revealed an appreciation of the WASH programme and a commitment from their side to cooperate with the LGA WASH team in fulfilling the conditions under which they would obtain the borehole and ensure operation and maintenance by the community. The fact that they are consulted by the LGA on projects to be carried out increases their own commitment.

The consultation is one area that the programme is respected, whenever they want to start or do something they will make proper arrangement and once they start that's all they must finish. They (the LGA team) are so serious not like other people who will do certain project for years (Community leader, Bondi, Dass)

Although the training of the WASHCOMs does not seem very thorough and rather scant as related by WASHCOM members (see section on training), their performance in terms of informing community members on hygiene practices, ensuring that people keep their environment clean and use latrines, is working very well.

"If they notice an environment is untidy they call the people living there to order and such one comply immediately. They ensure the environment of the borehole is kept clean and check the latrine of each HH to see its state. If they notice there's no water in the latrine they make such HH realise it." (Ejigbo, FGD older men)

"The existence of this committee has contributed to the ODF state of the community. This committee has also helped women to understand how to store and maintain water; provided information on the negative effects of having refuse dumps near the kitchen; reduction of malaria by preventing the accumulation of stagnant water. Their services have benefitted every member of the society generally but targets women more specifically. They also inspect houses to ensure that latrines are installed". (Oju FGD older women)

Support to the WASHCOMs by the LGA WASH team and other stakeholders (NGOs, CLTS facilitators) is not only important to support the WASH team and to give them advise on issues that they themselves cannot solve, it should also give continued motivation to the WASHCOMs to keep carrying out their important work and to inform them about strategies that can facilitate their work. Although there are some reports of such support by the LGA, there are indications that limitations in human and financial resources prevent them from doing so.

The WASHCOM officials and the Natural leaders are very important in seeing that we achieve our desired goal, so refresher training should be organized at least twice in a year to educate them about the program activity since they are part and parcel of the community(FGD CLTS facilitators, Dass)

Relevance and appropriateness of UNICEF support

Q5. Relevance and appropriateness of UNICEF support in relation with national policies

A. Secondary data

Appropriateness of UNICEF policies and strategies

The FGN/UNICEF Master Plan of Operations (MPO) for the Country Programme of Nigeria articulates the WASH project strategy, which is being implemented in all 36 states and the FCT. The UNICEF programme policies and strategies have clearly followed those of the draft national water and sanitation policy (2004) as well as the draft water and sanitation policies of the states and LGAs which essentially mirror the national document. It is documented that UNICEF has been quite proactive in this regard providing technical assistance in the drawing up of these policies and strategies.

The limitations noted in this area are not within the programme's control but relates to the country policy environment. The Federal Ministry of Water Resources (FMWR) in collaboration with the States Ministries, the National Water Resources Institute (NWRI), UNICEF, EU, and the World Bank developed, in 2004, the draft National Rural Water and Sanitation Programme Strategic Framework, which is yet to be approved by the Federal Executive Council. Similarly, most of the policy documents at state and local government levels are in draft form. Nevertheless, this does not seem to hinder implementation of the programme in any noticeable way.

The UNICEF programme has embarked on a demand-driven approach in water supply and sanitation services, with an aim of stimulating an understanding and ownership of the WASH objectives/ actions by the local governments and communities. Once the programme (strategies/ policies) was conceived, the programme aimed at establishing community-based self-sustaining models in focus LGAs. The process has entailed several activities including development of statute documents, Standard Operation Procedures (SOP) and generic guidelines for the setting up and operations of WASHCOMs, development of operational manuals aimed at building local capacity; formation and training of community hygiene promoters as well as the establishment and strengthening of community level programme management structures. The programme has also practiced the cost sharing model between the UNICEF programme, federal, state and local government as well as the communities in line with government's reform agenda articulated in the National Water and Sanitation Policy. At the community level, contributions include seed money for post construction operation and maintenance of facilities. The cost-sharing is seen as having promoted participation and ownership. The roles and responsibilities of the different stakeholders in the models are clearly laid out in the relevant program documents and monitoring arrangements are prioritized.

In conclusion, the roll-out of the programme was appropriate/ coherent with the programme as it was conceived.

We have seen no documentation yet on the involvement of intended beneficiaries (the communities) in the design of the projects. The 2010 situational analysis of Nigeria also mentions that the few NGOs that supposedly represent the communities do not always succeed in accurately expressing the needs and preferences of those communities. There is however ample evidence that the communities and their representatives are included in the implementation of the projects – that is indeed a key approach of the programme. Community members are encouraged to participate and hold voluntary offices in the WASHCOMs. This approach has been found to be successful in the focus states and LGAs. UNICEF in collaboration with the National Water Resources Institute has trained a significant number of people on water, sanitation and hygiene as well as community management to support activities of WASHCOMs in the various communities.

In terms of monitoring and evaluation of the programme, the project logical framework provides the basis for monitoring at national, state, LGA and community levels as well as for monitoring overall progress. The

indicators in the framework meet the standards for Results –Based Management. However the monitoring and evaluation structure at the three levels of government is weak. The Draft National M&E framework is actually a frame work proposal prepared by the World Bank for the Federal Ministry of Water Resources (dated 2004). The extent of adoption of this framework is unclear. The SHAWN states have all tried to domesticate this and all have draft M&E frameworks described as being in different levels of operationalization. The draft documents are usually “how to develop M&E system” rather than the M&E system of the program. The indicators are usually process indicators; however a few indicators can be monitored on a routine base. The Benue M&E framework is described as having been validated and details the M&E committee and the roles of the stakeholders at state, local government and community level. It also clarifies the institutional arrangement regarding the three levels in the M&E but does not provide any details about the actual M&E frame work or the performance indicators that would be measured. The document appears to still be in the rudimentary stage. Nevertheless, the program has made obvious efforts to sensitize the stakeholders in M&E and to improve capacity in this area. For instance, a national M&E workshop was held to operationalize the data capture and reporting at state, LGA and community levels through the use of WASHIMS (WASH information management system) software.

In conclusion, M&E systems for WASH are merely in their conceptual phase, there are no finalized M&E systems based on a result-chain (inputs through processes resulting in outputs, then effects, then outcomes) and they are not operational. M&E data that are available are difficult to access. The lack of this kind of information has hindered the IE team to “construct” a baseline and trend analysis. It will be difficult for the WASH management teams – at UNICEF level, at State / LGA and community levels to trace progress, to hold stakeholders to account on results between each other, to adapt strategies and approaches to experiences. In other words: results-based management is hardly possible...

According to the programme documents, all the LGAs (SHAWN AND EU-funded) have developed strategy, plans & budgets for achievement of water, sanitation and hygiene targets. The selection criteria for the LGAs and communities for the programme intervention also have the development of local government plans as a requirement. However only two of those plans were available for our review: the Oju LIP is presented in excel format and is focused on the financial aspects of the plan but the Yakurr plan is a more detailed document. For Yakurr, the LGA investment plan was dated July 2013. No earlier plan was seen. The plan details water supply, sanitation and hygiene service delivery. Effort was made at evidence based planning and budgeting. Participatory gap analysis with different stakeholders on key issues was carried out. The plan is quite structured and the various elements were costed.

The Programme is designed to effectively respond to conditions (including risks), needs and problems identified. For instance there is a Water Safety Plan implemented in 45 EU-funded project communities. This is a tool used by communities to reduce risks and ensure good quality drinking water from source to point of consumption. The initiative enables communities and households through routine checks and surveillance to anticipate and avert contamination of their water source. Disaster Risk Reduction is also covered - surface water scheme intakes appropriately located to withstand floods and water points situated on raised platforms in flood-risk areas are all structures detailed in the documents as what will be put in place. However, a comprehensive training curriculum for WASH sector professionals on mainstreaming climate change adaptation into the WASH sector is documented as having been developed. This is being used for regular training program for WASH professionals in the NWRI

The programme also takes the environmental context into account – it details the problems expected to occur through extreme weather events such as floods, droughts, storms. The likely impacts from climate change expected in the SHAWN states were stated as: Drought, especially in the Sahel region (e.g. Jigawa, Katsina & Bauchi) and Flash floods, especially in areas close to the river banks. The major effects on WASH were expected to be in the form of – reduced water security, water scarcity, water stress, degradation of water quality, contamination of water sources, damage to WASH infrastructure during flooding, failure of WASH infrastructure during drought. Several studies/surveys were done to address these including, Technology options for sanitation under challenging environments – choice of sanitation technologies in challenging environments (also looks at issues of climate change) and Performance assessment of Solar powered water projects and Rainwater harvesting schemes Surveys as well as Research on community innovations on latrine construction in loose soils.

In terms of ease of operation and maintenance, the programme has a preference for hand pumps more than the motorized pumps.

Q6. Are all UNICEF activities achieving satisfactory results in relation to stated long term objectives?

Annual stakeholder meetings involving the National Planning Commission which coordinates all FGN/UNICEF programmes, signs the consolidated country programme Project Plans of Action (PPA) and presides over the Inter-ministerial Steering Committee (IMSC) and annual review meetings, UNICEF, Federal level stakeholders and NGO partners at national level are usually held. The UNICEF annual planning and implementation cycle informs project implementation. A review of the implementation of project activities is carried out in the annual meeting between UNICEF, FMWR, NWRI and NGO partners at the national level and between UNICEF, States, LGAs and NGO partners at the field office level. The outcome of these review meetings influence the joint planning of the activities for the subsequent year. The annual Project Plans of Action (PPA) for the following year are derived from these meetings and are jointly signed by the FMWR, UNICEF, and enables UNICEF to produce the programme estimates for submission to EC and UK-DFID. It is not clear if there is feedback given to the community stakeholders but it is clear that in general, stakeholder management is very well done.

Level of LGA support to WASHCOM; Accountability and transparency measures exist at LGA level

The LGAs in the focus states provide the main support for the community WASHCOMs. They help the communities in the establishment of WASHCOMs by sensitizing the community leaders; they are required to train the WASHCOMs in triggering, understanding different types of latrine options (the sanitation ladder), making CLTS community plans, monitoring of CLTS implementation, quality assurance of latrine construction and management of WASHCOMs. However, the program documents do not show evidence of this taking place and it appears that some of the training at community level is also done by the NWRI.

The situational analysis of the country states that the state and local governments experience challenges regarding transparency and accountability in the channelling of financial resources. The WASH programme aims for improved governance in the WASH sector in the focus states. The mechanisms put in place to achieve this are not clearly detailed in the programme documents. However, the EU funded project in particular tries to improve accountability and transparency amongst sector institutions through public financial management reviews, as laid down in their document "Concept Note on Voice & Accountability".

To what extent has the WASH programme strengthened the capacity of government partners to deliver WASH services

According to the programme documents, capacity have been built in CLTS data management and reporting for CLTS implementing states in the country. Technical assistance in the form of a Database Consultant is provided by UNICEF to the Federal Ministry of Water Resources to strengthen CLTS reporting and information management. The Consultant is attached to the Ministry. As a consequence, some data on CLTS interventions in 25 states is available. Training involving state and local government staff has been carried out extensively by the programme to build the capacity of these government partners to deliver WASH services. Examples of such activities are: Validation workshop for the state M&E framework, validation of implementation guidelines for state specific WASH policy, Training of State Officers on implementation of Hygiene Improvement Framework, Water Quality Monitoring and Surveillance Workshop for State and LGA Water Supply Officers among others. Training is done in collaboration with the NWRI in some areas.

Regarding the training done at country level, WASH officers from all UNICEF intervention states, LGAs and Federal Ministry of Water Resources were selected and attended trainings conducted by NWRI, divided into two zones (Jos and Kaduna). Promising trainees were selected to form what are called "Master Trainers" and certificates were issued. The Master Trainers were expected to form a pool of "Trainers" within each zone and scaled down these trainings at Community level (WASHCOMs) if organised in any State or LGA within their zone. However, for some reasons, many of the Master Trainers could not perform this function and NWRI is in most cases invited to train at Community level as well. The content of the WASHCOM trainings are selected from the manuals developed depending on the focus of the training (hygiene and sanitation or community management or both).

For CLTS no national manual has been developed yet; however there is a joint planned by UNICEF and NWRI in this 2014 to develop a national CLTS manual. Presently the manual developed by Kamal Kar the founder of CLTS is used to train WASH Officers in the country. The knowledge and skills gained from these trainings by the WASH Officers are used in "Triggering" communities and scaling down of the training among their peers. Again, in some cases, NWRI is invited to train at State level. Similarly, under the CLTS there were some promising trainees who have been identified to facilitate CLTS at Zonal, State and LGA levels. It is the

responsibility of the LGA level, staff of the WASH teams and the NGOs working with them, to conduct the trainings at community level. The actual extent of training at WASHCOM level is not clear from the interviews. The two WASHCOM IDIs and FGDs do mention some training on OD and hygiene practices and some training on maintenance of boreholes or latrine construction, but there does not seem to be a structured approach of training and refresher training of WASHCOMs.

The most effective tools for informing communities on 'how to' carry out WASH activities. **Quality Technical guidelines on options for school sanitation**

There are technical options for school sanitation available detailed in the programme relating to hand washing facility, urinal and latrine technical specifications. Guidelines for construction of school sanitation are also included. The programme uses school pupils as change agents and advocates of safe hygiene and sanitation practices as an effective tool to reach the community particularly through their families and peers. Schools EHCs have been key to this process. Capacity building of schoolteachers and environmental health clubs coordinators are carried out. The teachers carry out routine sensitization and training of pupils on hygiene and sanitation transformation using the Life Skills Based Hygiene Promotion and Child to Child approaches. There are also documents relating to the Federation of WASHCOMS which detail how to organize WASHCOMs and management of WASHCOMs.

Establishment & strengthening of systems for hygiene and sanitation promotion

The WASH programme has put several structures in place to strengthen systems for hygiene and sanitation promotion. One of them is the Hygiene Improvement Framework (HIF) which is a set of rational and systematic procedure used to achieve behavioural change motivation within communities and schools. Using this framework the programme identified that the majority of issues that motivate communities toward change in poor hygiene behaviours were more social than health related. This informed the development of tools and strategies in the programme targeting the social angle of change. The HIF was used to achieve hygiene and sanitation transformation within schools and communities. The lessons learned on the field using this framework motivated a move to wider implementation leading to the initiation of National Level dialogue on HIF – a national meeting of WASH practitioners was held for three days in October 2012.

Monitoring of facilitation, process and follow-up quality of CLTS processes – incl. Analysis of the factors that lead to higher ODF success rates/ more sustainable outcomes; CLTS follow-up for ODF attainment, ward level CLTS triggering;

The CLTS approach focuses mainly on “achieving sustained behaviour change through motivation and mobilization of communities to understand the risks associated with open defecation and take collective actions towards solving the problems”. The activities included capacity building of facilitators; triggering of communities using CLTS approach and monitoring and verification of ODF claimed communities.

The programme documents detail that the analysis of the different factors impacting the intervention by the programme has enabled the identification of some salient issues:

- CLTS triggering at ward level and cluster of nearby communities helps to fast-track implementation, makes monitoring easier and is more cost effective
- During the farming season, there is slow achievement of CLTS results both in terms of triggering and follow up because the community members are too busy to participate in the facilitation exercise;
- According to a recent (2014) KAP survey (62.7%) of the population were living in ODF claimed community in the intervention LGAs while only 34.8% lived in ODF certified community under the CLTS sensitization component of the project.
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Q6. Efficiency in the programme's use of community resources,

The programme uses the community human resources quite efficiently – community participation is a key approach. The communities are empowered to take leadership in project implementation and the WASHCOMs are given the responsibility of monitoring and supervision of construction activities and this is documented as contributing significantly to better quality and sustainability in project implementation.

A lesson stated as having been learned from the EU funded SRIP II in their 2013 report is the high level of resourcefulness at the community level that can be targeted towards more sustainable programme delivery. This is based on the vital roles natural (community) leaders have played in the implementation of CLTS both within their communities and in triggering other communities to change. Case studies of the CLTS process have shown the importance and effectiveness of the roles of traditional leaders as well as religious leaders

in sensitizing their peers and the communities and thereby triggering change. The programme has found working with community-based organizations as more result oriented.

Resources and services were allocated to effectively respond to identified needs, problems and risks

The financial resources for the programme is provided using a cost sharing formula between the Developmental partners, the federal, states, local governments and the communities – which would be appropriate in achieving sustainability of the program. Generally, the funds allocated and which are probably available to the water and sanitation sector are inadequate compared with the demands in the sector. Though there are usually delays in the release of government funds at all levels, investments of the various external support agencies (including UNICEF) for the period 2000-2009 showed that the total budget was released. Similarly, for the 2009 -2012 programme, the DFID has released the entire funds– £ 24.7 million allocated. Although, the contribution from the developmental agencies is rather small compared to the aggregate requirements in the WASH sector, it is still usually more than the budgetary provision of the Federal Government.

Are intended beneficiaries & representatives adequately included in monitoring of the projects? M&E guidelines with inclusion of beneficiaries and documentation of actual implementation

WASHCOMs are involved in the monitoring and supervision of construction activities but it is unclear to what extent from the documents available. Benue state M&E framework clearly includes the beneficiaries at state, LG and community level but there is no documentation of actual implementation. The EU-UNICEF Document details the development of Community-based monitoring and reporting mechanism as a key driver for sustainable data generation, information flow and effective feedback. The document states that self-selected communities in the LGAs are now taking up this role of monitoring and reporting on project activities. Community level monitoring structures (WASHCOMs, VHPs, artisans, etc.) use basic reporting tools to compile and forward progress updates on programme activities to the LGAs while using this information to plan and improve on the status of projects within their communities. The LGAs in turn forward these updates, on status of WASH services, to the state for compilation and coming up with a state-wide picture. The evidence of these processes is not seen clearly in the available documents.

Availability of guidelines and tools for the certification and verification processes for declaring communities Open Defection Free (ODF); Third party verification of ODF communities

There is a protocol available for certification and verification of ODF and total Sanitation communities. The protocol includes the processes for certification, the basic indicators for Total Sanitation and a checklist for certification and verification of ODF and Total Sanitation communities.

In order to ensure transparency in programme delivery, third party verification and certification of ODF communities was commenced. In addition validation of 5 to 10% of the ODF certified communities are carried out by the National Task Group on Sanitation. An NGO, the Society for Water and Sanitation (NEWSAN) carried out the exercise in collaboration with the State Task Group on Sanitation. This had the added advantage of strengthening the capacity of the State to conduct periodic verification and certification of claimed ODF communities.

4. Discussion, conclusions and recommendations

Discussion

0. The impact evaluation – methodological issues

The detailed description of the methodology used in the study is found in the first chapter and in the Annex. However, it should be noted that the methodology used, including the sampling considerations, has a few important consequences for the data analysis and the results obtained.

Firstly, the sample size that was agreed between the impact evaluation team and UNICEF has been adapted to meet mainly the conditions of feasibility. As a consequence, the final sample size of the household survey was much smaller than first proposed: 1120 instead of the between 3000 and over 4000 that was originally proposed. With the realised sample size of 1105 households, and one LGA per state, differences between the counterfactual and intervention areas of 5% or less for most indicators may statistically be impossible to detect, in order to maintain the significance level at 5%, the level of confidence at 95%, and the power of the study of 80%.

The analysis focused predominantly on comparison of relevant variables on water, sanitation and hygiene, between the counterfactual and intervention areas. Any comparisons at LGA level could therefore only be descriptive in nature and was kept to a minimum. This made the probability of obtaining statistically significant results of the “with and without” analysis smaller; for that reason, the analysis became more descriptive. The team was able to conduct all the primary data collection as was planned in the sample size – both for the quantitative as well as for the qualitative data collection.

Secondly, there was no baseline study done at the start of the WASH intervention. This made a “before-after” analysis approach difficult - but not impossible: a quasi-experimental, theory-based approach was developed to obtain an indication on trends of different indicators. This was planned to be done through an analysis of the DHS of 2008 and of 2013, covering a similar time period as the evaluation period. However, there were certain obstacles, namely 1) our data are at LGA level, with the limitations already described due to the relatively small sample size, and the DHS for example, was representative at State level, 2) different definitions are used for certain indicators and 3) some definitions of indicators were unclear.

Besides, we had planned to use M&E data from the programme or from WASH teams of States / LGAs – but the availability of M&E data was very limited. As a consequence, trend analysis is similarly very limited.

Thirdly, for an intervention to have “impact”, the intervention needs time. However, though the time lap of this WASH intervention is relatively short (most of the communities were triggered in 2011/2012), we were able to identify effects and some outcomes.

1. From input to effectiveness

A. Effects of the Water program

Most significant changes (MSC) the ultimate beneficiaries expected were: reliability of water supply and reduced distance to the water source – and this is what we found.

The impact evaluation identified a good number of **significant** differences between the households in intervention areas compared to those in the counterfactuals:

Access to improved water (piped water, borehole, protected well or spring) had significantly improved: there was an increase from 39% to 74,0%, and a relative increase from before the intervention to the current situation of 90% - **but** increases in access to improved water sources for drinking water were significant in *both* the intervention and counterfactual areas. Presently, a total of 74,3% of households in our sample have their main source of drinking water from an improved water source. Households use improved water sources for drinking more in the intervention areas (80,4%), compared to the counterfactual areas (68,2%). This has decreased drinking water from rivers in intervention areas: this is now 46,5% lower than in the counterfactual areas.

Of all the households in the survey, only 10.1% have their main source of drinking water on the household premises, this is similar in counterfactual areas. Still, more households in intervention areas reported similar or closer distances to the current water source than in counterfactual areas (63,5% and 53,7% respectively). This had an effect on the average time spent fetching water by a child, which is still done by over two thirds of children. The average time was around 8 hours; this was significantly longer for children collecting water from unimproved water sources (mean 9 hours,) than from improved water sources (mean 7 hours): a gain of two hours.

Other important issues on access to safe water were, however, **not different in a significant way** between intervention areas and counterfactual areas:

A change in water source for drinking water was slightly higher in the intervention areas (65,3%) than in counterfactual areas (60,5%). Also there was no difference in households living within 250m of an improved water source (61%) – and in median waiting times in queues to get water: it took about 10minutes to collect water and return. Households with access to improved drinking water **in counterfactual** areas (68,2%) reported higher daily availability (94,1%) than intervention areas (90,2%). However, improved *sources of main drinking water were used on average for 6 years* in both counterfactual and intervention areas – that is, before of the start of the UNICEF intervention. The frequency of water use from the main water source on a daily basis was the same: 93,5%. Also, there were no differences on who collects water, close to 40% of times it is adult males and close to 40% it is adult females - just over two thirds of children aged 5-17 spent time in fetching water.

It is of course important to know, if improved water infrastructure can be **maintained**, once installed. Median time to *major repairs* took around 6 days – there was no significant difference between counterfactual and intervention areas: in almost half of the cases it took days; for a quarter of cases, weeks. It should be noted, however that major repairs have hardly been carried out in many communities because the pumps are quite new. However, there are still obstacles in maintenance to overcome for major repairs at LGA level: mainly problems of finding necessary funds. Minor repairs are managed within the communities – it took place within days in three quarter of cases significantly faster in intervention areas (on average 3 days) compared to counterfactual areas with an average of almost 5 days. Minor repairs are usually organized by the WASHCOMs, specifically the men, in turn they usually hire artisans who do this.

Besides maintenance of the hardware, there is a need to **keep the water safe**. Only 26,3% of households reported making water safe. Cleaning of water points is mainly done by the community (48,5%), less frequently (<10%) by the household, a specific person, and WASHCOMS. Even so, at household level, majority of the households stored drinking water, and of these, 95,6% stored their drinking water covered. Containers are cleaned after every use in more than half of the cases, and often in a quarter of cases.

As a result, probably, three quarters of the households indicated that the main source of drinking water was always clear, two thirds, that it was always free from visible particles, and only 3% reported foul smelling water. In this case, there were *no significant differences* between intervention and counterfactual areas. This was similar to the findings for taste: of all the households, 94,8% rated the **taste** of their drinking water from the main water source as excellent, and 85,9% reported no salty taste in their drinking water. The only significant difference was found for colour of the water: 91,4% indicated that the color was clear – more in the intervention areas.

What worked and why in the water program – were there Drivers of Change?

Availability of water at all times, it was explained during the qualitative interviews, relieved people from fetching water at night or worrying about when to get the water. In the **counterfactual** communities, also, accessibility to safe water sources is a key issue. Problems cited by these communities regarding why they aim for improved water sources are: distances to non-improved sources were often long and hence time consuming, representing a burden to mainly women (though this is different by cultural setting) and constitutes risk to injuries such as back aches and snake bites. Additionally, bad quality of the water in terms of colour, worms and dirt were cited. Furthermore, because of the burden of fetching water over a long distance, consumption is low, and bathing and washing clothes is minimized. Streams are also often seasonal, so that obtaining water in the dry season is a problem.

In the counterfactual communities, **quality** of water is a very big issue. Many people related the high incidence of diarrhoea to the colour and smell of the water, as well as the worms (including guinea worm) and dirt in it. Even so, in intervention areas, the taste of borehole water is often regarded as not so good compared with sweet river water or the well water, but the increased knowledge about the link between health and water,

drives people to drink the safe water. The **quantity** of water is sometimes considered inadequate for all the domestic needs especially during the dry season. In such instances, the stream or well water available in the community is used. Another quantity issue is caused by the influx of people from outside of the community searching for the improved water: the pumped borehole water finishes quicker than before, as a consequence waiting times have increased, risks of long queues. On the other hand, the hygiene promotion efforts of the WASHCOMs have resulted in people using more water for bathing, washing of clothes, domestic hygiene and personal cleanliness.

In the interviews at LGA level, stakeholders mentioned that they facilitate major **repairs**, they send technicians to carry out the repairs, sometimes at no labour cost – but the WASHCOMs indicated that they sometimes had difficulties in getting the LGA to come for repairs, as the LGA claimed there are no funds for repairs and also they were sometimes not very responsive. From triangulation of interviews with different stakeholders it became clear that the understanding of the distribution of roles and responsibilities between different stakeholders (especially community and LGA) in organising repairs are not always well understood.

There are statistically *significant* differences between **geographical areas** – between households interviewed in the North, and those in the South. Households in the North benefitted more from accessing improved sources for water than households in the South, they also used improved water sources more for other purposes. A quarter of households reported that they make water safe – this was more frequent in the South. Four times more households in the North accessed covered water by pouring or a tap – while cleaning of containers was significantly more frequent (two times) in the South. In the North, significantly more households reported that it took days (51,1%) than the South (39,7%) before major repairs took place

These differences can partly be explained by the fact that 82,4% of the poorest households are in the North and 85,5% of the richest households are in the South.

Intervention areas (that is, sites of this study) are in areas with **relatively richer** households - 33,6% of households is rich or very rich in counterfactual areas ; the corresponding figure for the intervention areas is 46%. This raises questions about UNICEF' selection of communities for its interventions – certainly if UNICEF's policy is targeting the poor; this does not seem the case. It was explained to the team, that communities were selected where the probability of “quick wins” was highest (this is more likely in richer areas), it was even suggested that this was induced by the fact that staff would like to come up with good results to the funding agencies.

There are significant differences between different **social-economic classes** in access to improved water sources:

Richest families were often better off. Even though also for the poorest households there was a relative increase of 168,4%, 87,8% of the richest households used improved water sources in comparison with 69,2% of the poorest households. Three out of hundred poorest households had their main source of drinking water on their premises, while this was in 1 out of 5 of the richest households. As a consequence, 66,9% of richest households were at equal or closer distances to their current water source, (54,9% for the poorest), and 74,3% live within 250m of an improved water source (47,1% for the poorest). Even so, the poor tended to use improved water sources more than the rich. It is interesting to see that among the poorer households it tended to be more adult men who usually collect water, while amongst the richer households this was more done by adult women. In wealthier families, children were more likely to collect water than children from poor families – even so, children from poorer households spent significantly more time fetching water (mean 9 hours, compared to mean 6 hours). Richer families were more likely to have a choice – also it seems that water facilities were more likely to be placed nearby premises of richer families. Wealthier households were also more likely to treat water than poor households.

Water is free of charge on a regular basis, so people (poor or rich) do not have to pay. Households only contribute when needed for repairs. In the North, 73,8% of households claimed to make financial contributions, in the South this was 46,9%. Often, contributions were distributed according to the wealth ranking in the community. The poorest families were less likely to make regular contributions (4,0%) than the richest quintile (50,8%).

On the other hand, financing of repairs remains a problem. Only one community visited had a fund based on fee for service. The others collect money when a problem occurs, based on income – the poor are often

exempted. Also the WASHCOMS are expected to source for their own funds and it seems that the extent of the functioning of the WASHCOMs is likely impacted by their (in-) ability to do this.

In terms of funding, the states and LG stakeholders are clear about the regularity of funds from UNICEF but describe the state funding as delayed. The programme documents also describe the delays in funding at all three levels of government as a major bottleneck in the implementation of the programme activities. The funding constraints clearly impact monitoring and supervision activities at the LG and community levels.

An important driver of change for the counterfactual communities is to be declared ODF – a pre-condition to obtain a borehole.

B. Effects of the Sanitation programme

Most Significant Changes expected by the stakeholders at operational level, were increased latrine construction and behaviour change in terms of latrine use instead of OD practice. This is what the evaluation found:

Significant changes between intervention and counterfactual areas:

Four out of five households have latrines – almost two thirds have an **improved latrine** – slightly more in intervention areas than in counterfactual areas (64% vs. 55%) – though statistically significant; for *unimproved* latrines there were no differences. Almost half of the latrines were constructed in the last 3 years, but only a third of those latrines were constructed as part of a community wide program – 84,1% of the households built the latrines themselves. Almost half of households did not share latrines: they have private latrines.

Only 3,5% of the latrines, usually used by household members, did not **function** at the time of the survey. Close to sixty percent of functioning latrines in households had a cleanable slab – 63,8% in the intervention areas and 50,9% in counterfactual areas. About a third of functional latrines had no superstructure, proportionally more in counterfactual areas. A cleansing brush was present in only one in five functioning latrines, in intervention households (26,6%) more than in counterfactual households (17,1%).

Of households with a latrine, almost one in five reported the pit or septic tank *had filled up* since it was built - significantly more households in the counterfactual. Of those latrines, only one in five covered the pit and dug a new latrine – the remainder emptied the pit.

More households in the intervention area with **school** going girls had latrines in the schools than in the counterfactual area (74,3% and 63,3% respectively) – this was similar for households with school going boys. Eighty percent of these were improved latrines – with four out of five latrines was separate for boys and girls. One in four of the interviewees were not aware if the schools had latrines.

Differences that were **not significant** between intervention and counterfactual areas:

Percentages of households contributing cash, labour or materials to the construction of latrines were similar across counterfactual and intervention areas. Average spending was higher in intervention areas than counterfactual areas.

An important feature is that only 7,3% of households indicated that they were given a list of choices between different types of latrine models, only 7,1% that they received a construction plan at the time of constructing the latrine, provided by LGA staff or WASH committees.

Eighty two percent of households intend to improve their existing sanitation arrangements in the near future – more than half of them want to build a new latrine, almost half want to improve a current latrine. Almost all indicated that the major challenge is lack of finance; for a quarter, there was also a problem of lack of materials.

*However, **Open Defecation** was significantly lower in the intervention areas (13,4% vs. 21,4% in counterfactual areas) – though half of them still practicing OD reported to have a latrine in their household.*

What worked and why in the sanitation program – were there Drivers of Change?

The main driver of change was triggering. As stated above: people in counterfactual communities were interested in increasing latrine coverage because they were trying to gain ODF status in order to get water.

To what extent this ODF status also applies to **school sanitation** is less clear. According to the certification guidelines, it is not possible to be declared ODF if latrines, hand washing facilities and urinals are not available and used in schools, health centres, markets and other public places. The evaluation team however, did not get the impression that this has been a condition in many places to gain ODF status. Yet, school sanitation can be a powerful driver of change; children do motivate their parents to improve sanitation conditions.

In principle, the triggering and subsequent construction of latrines and *behaviour* improvement is just a first phase in improving the living conditions in the communities. The issue is to ensure that ODF status is kept in the longer timeframe.

Key **motivators** to continue using hygiene practices and latrines are health, shame and disgust, privacy and security and convenience and comfort.²⁰ For counterfactuals, *water* quality is really an issue and driven by worries about health/ water-borne diseases. These motivators are all in place and have often led to the ODF status. The perceived financial advantage of the WASH systems is free water and less expenditure on health. The claim that ODF status would raise the socio-economic status of the population has not been confirmed by the results of this study.

The **de-motivators** for ODF are above all, financial constraints; but also limited support for maintenance and repairs; and sharing latrines with others. In our study, the financial constraints have been mentioned many times, so one may ask what will happen if the traditional latrines, that last not very long, collapse?

Slippage may occur. In the CATS evaluation¹⁸ it was suggested that reinforcement of activities *post-triggering* are essential and that this needs attention in terms of capacity and resource needs within the programming. Capacity, however, is available. Most of the community members in the group discussions related that there are masons available in or near the communities and also that getting materials for latrine construction is not difficult. Creating conditions “post-triggering”, mentioned in the CATS evaluation:

“Developing sanitation marketing needs to move beyond the more traditional actions of training masons and entrepreneurs, towards reinforcing the “marketing” of sanitation. This requires a more comprehensive approach to researching the market demand, viability of supply chains, mechanisms and motivations for private sector engagement.” UNICEF is currently starting such an approach.

Another means to support the improvement of traditional latrines is mentioned in the “UNICEF Malawi Frontiers of CLTS” report²¹ that sets out how to increase options available for latrine innovations through participatory research. This document relates how in Malawi the amount of options for cheap latrines have been explored with local latrine builders and other stakeholders and has resulted in designs that take into account local conditions, both technically and financially.

Again, there are differences between Northern and Southern regions, and by wealth index.

In the **South**, significantly more households practice open defecation (bush/field) – if only because there is more “bush” in the South. Still, in the South, 50% more households want to build new latrines, more households build a latrine as part of a community program, Households in the South contributed proportionally more cash, spent significantly higher on building a latrine, had twice as many water seal latrines- as Northern households. On the other hand, **Northern** households contributed more labour, and were more likely to have no superstructure for their latrines, and local masons build proportionally more latrines.

Wealth was strongly associated with latrine issues – this is well-known from international literature.²² Not surprisingly, the richest households used more water seal latrines, the presence of cleansing brushes was higher, had three times more superstructures for their latrines, 50% more households had contributed cash and they had spent on average 25 times more. It’s more surprising that more of the wealthiest households reported having received latrine model options, and that the schools of children having latrines occurs 50% more in rich families than in poor families. Even so, 50% more poorest households indicated that they want to improve an existing latrine.

It should be noted that there was no difference between men and women in latrine use.

C. Effects of the Hygiene program

For most findings in the evaluation on hygiene, differences between intervention and counterfactual areas are **not significant**.

Only a third of households were willing to show the place where household members most often wash their hands. Of those who did want to show this, two thirds of households had no specific place where most household members most often washed their hands. The team observed that in one of five households there was a specific washing station inside the household latrine or close to it. Less than 10% of all households indicated this as the most often used place for hand washing.....

Water to wash their hands was present in just under half of the households. Cleansing agents (one or more) were present in more than half of these households, in a third ash/mud/sand and in a bit less than a third, soap.

There was also hardly any difference in **knowledge** on hygiene between intervention and counterfactual areas. Both type of households mentioned all critical hand washing moments with similar frequency although slightly more (but not significant) households in the intervention areas could mention 3 or more critical hand washing moments. Three quarters of the households mentioned domestic hygiene, cleanliness around the house, covering of food and personal hygiene and a bit more than a third, mentioned disposal of waste water.

Of all the households, 86% saw, heard or participated in WASH activities – this was significantly higher in the North than in the South. The frequency of WASH Committee activities as listed by households did not differ significantly.

There were though a few **significant** differences. Almost 6 in 10 households could adequately explain what ODF is – in intervention areas 30% more than in counterfactuals; this was higher in Northern households – and slightly higher in poor households. 66,8% of all households claimed to have a WASH committee in their community – though all communities in the study, except one counterfactual community, do have one Only 1 in 10 households was aware of a school health club at the school in or closest to their community; even if this was two times higher in intervention areas, it remains low.

What worked and why in the hygiene program – were there Drivers of Change?

The fact that there are hardly any differences between intervention and counterfactual areas have much to do with the fact that in all (except one) communities triggering had taken place. Both types of communities are generally pleased with CLTS approach.

The **WASHCOMS** do make a difference. Generally the WASHCOMs teach people on washing hands at critical times, the necessity of using latrines for defecation, the need to wash clothes and cleanliness of the general environment – though water treatment does not seem to be a subject. Many WASHCOMs visit households to check hygiene conditions. Having women represented in the WASHCOMs resulted in more women being involved in hygiene promotion as community hygiene promoters. The activities of the WASHCOMs are moreover strengthened by the support of the community leaders and the clerical leaders.

But there are **more explanations**, than the WASHCOM, alone. For example, the institution of fines or public disapproval is such that people will comply. In the CLTS evaluation,¹⁸ the existence and enforcement of rules and by-laws and acceptance by the community is considered to be evidence of a change in social norms. Also in the qualitative study, people mentioned hand washing had become a social norm at critical times. If there is no specific place for hand washing, this behavior may easily slip.

Teachers in schools do teach hygiene and the children do transfer this knowledge to their homes and thereby influence the hygiene behavior of the households. Children do not want to be reprimanded in school for not having clean hands or nails, or not wearing clean clothes.

Also hygiene promotion from the government WASH officials did contribute. Health staff has been trained on WASH issues – e.g. during ANC visits, the women were educated both on sanitation and hygiene. Another important factor is the relative social cohesion of the communities in the rural areas. But probably most important: people believe that the WASH interventions have reduced infections and had improved their health.

Finally, an enabling environment is of crucial importance to reach effectiveness in the programme – this is effectively done in Nigeria by having a well-functioning and well trained team at LG level, the establishment

of WASHCOMs at community level, and natural leaders in the community. However, training of these last two needs to become more systematic than is currently the case.

2. From effects to outcome

Most Significant Changes expressed by the stakeholders as being expected outcomes were: increased enrolment in school for female children, a change in hygiene behaviour, and a decrease in water related diseases. This is what the evaluation found:

A decreased incidence of **diarrhoea** was of course expected to be one of the major outcomes of this impact evaluation. It is one of the major motivators for funding agencies as well as (direct, indirect and ultimate) beneficiaries to participate in WASH programs. However, the impact on diarrhoea as found by this impact evaluation was unfortunately limited.

Diarrhoea of “any member of the household” was not significantly different between intervention areas and counterfactual areas – even not for “severe diarrhoea”. Even though there were significant differences between geographic areas (North twice more likely), female headed households (twice as much as male-headed households), and households where open defecation was practiced (also almost twice more affected) – this was even more significant for severe diarrhoea.

However, the difference was significantly lower in intervention areas for *under-five children* – these children had almost twice less diarrhoea than those in the counterfactual areas, or even four times if the data were analyzed for all areas excluding Birnin Kudu. This analysis was carried out because Birnin Kudu presented an atypical case, which was confirmed by the DHS.

Even so – *in the perception of the communities*, diarrhoea has decreased significantly – *they even report* a reduction in child mortality, a decrease in goitre and in some places an increase of malaria (though in other places a reduction). The reduction in diseases is experienced as so striking that people have become convinced to change their WASH related behaviour. People said that improving the WASH conditions not only improved their health, but also their living conditions and their environmental conditions as they experience a reduction of flies and mosquitos in the cleaner environment.

Even if these perceptions would be “wishful thinking”, this is an important outcome: the WASH programme influenced their **behaviour** and the social norms that influence this behavior. No more outside defecation, hand washing at critical times, hygienic water handling, more bathing and washing seem to have become the norm in all intervention communities – also for children.

No significant difference between intervention and counterfactual areas was found on **schooling**. There were significant changes in geographical areas and wealth: children in the North were 7 times more likely not to be in school, while the poorest were three times less likely to be in school, if compared with the other wealth quintiles. Even so, missing school was 1,6 times more likely for children in counterfactual areas, which was a significant finding. Working for children over 5 years was not significantly more in intervention areas – this was more likely in the South and in the better-off children. Over five children did not carry out household chores significantly more in intervention areas – the same counts for fetching water.... In all this, the same influences by geographical area and wealth were significant.

Again, this was different *in the perception* of the people in the communities – but it is never just one aspect that is mentioned as a major change. In their perception, the increased accessibility to safe water has led to time and energy gains because less time is spent on fetching water, it is believed that this has increased their school attendance – both for girls and for boys, as a result from no longer fetching water before going to school, no need to go home for defecation or to fetch drinking water for use in the school. It was explained that the programme has an impact on the empowerment of women and youth. Women are members of WASHCOMs and as a result have a more formal role in the community and are in the position to influence community decisions – it seems to have increased their standing in the community. In the same way, it has been explained that the WASH interventions have contributed to youth becoming more involved in village

development. Similarly, the establishment of the WASHCOMs has had an impact on the organisation in the communities: it has been explained that their members have been able to become an influential part of the community. However, no evidence has been found that the WASHCOM has also led to wider development efforts.

Why did these outcomes occur (or not); what were the Drivers of Change?

It should be noted that this kind of behaviour changes was also mentioned in counterfactual areas, here people are also quite knowledgeable about WASH related issues – this seems to be the outcome of the program's strategies: CLTS triggering, installing and training WASHCOMs – which also occurred in counterfactuals as a consequence of the "LGA-wide approach". If outcomes are less frequent here, it is due to difficulties in accessing water.

Evidence was also found of the effectiveness of another strategy: knowledge transfer by pupils from school to their homes.

There is even so a **risk**: the impact on behaviour change is expected to be sustainable, *as long as* the water from the borehole is available and as long as people in the communities are motivated to keep their latrines functioning. It was even mentioned that the community and/ or local government could not sustain the WASH results on their own, even though there are structures at all the levels, due to politics and corruption.

However, the level of outcome of the interventions already seen from the qualitative interviews suggests that the momentum of the program has to be maintained in order to be sustainable.

Sustainability of effects and outcomes

The most commonly used indicator for measuring sustainability of a water system is system functionality – does the water point work or not. However, the sustainability of service is affected by a range of factors, not only the technical or physical attributes of the system, but also the financial, organisational and managerial capacities of the service provider. The elements that need to be in place to achieve sustainable service delivery are located at *four* levels:

Social-cultural sustainability

Health considerations proved to be a powerful driver of change in sanitation and hygiene behaviour – which is remarkable because traditionally sanitation programmes used motivators of comfort, privacy and status rather than health. It is the CLTS approach that has made health an effective motivator again, as is also noted in the Plan study and the CATS evaluations. This perception – bad WASH conditions affect our health – will probably sustain, even when the intervention stops.

Sanitation and hygiene behaviour seem to have become accepted as a social norm. However, this social norm may very well be sustainable in the absence of continued support to WASHCOMs and other stakeholders, though not certain. This concern is expressed in the CATS study that found that the majority of the interviewed stakeholders question the sustainability of behaviour change and point that it could be only due to the temporary pressure applied on the community by their leaders – if that would be the case, it would not be a social norm.

Sustainability will to a large extent depend on the activities and motivation of the WASHCOMs. But they will need to be supported by regular training, support visits by LGA or NGOs and/or exchange visits to other WASHCOMs.

Most important sustainability issue it seems, however, is that a water intervention is conditional to ODF certification. It is not impossible that, if the program would withdraw, sanitation and ODF status may become less interesting, as water was an important driver of change.

However, in the end – most probably the effects and outcomes will sustain, regardless of if the programme will continue or not: different indicators had already started to improve before the introduction of this WASH programme – as witnessed by the DHS reports from the nineties onwards.

Social-economic sustainability

On the one hand, for (almost) all intervention communities, water is free of charge, so water is affordable, also for the poor.

This would mean “social-financially sustainable” – if not for the fact that the WASH infrastructure needs to be maintained, and that brings along costs that should be borne by somebody. The LGA has insufficient funds to maintain the water supply in their area – certainly for this IE we found that 75% of the respondents do not make regular payments for water. Usually user fees are raised at the moment that the infrastructure breaks down – which will always bring along problems of social action: as contributions are often based on income, communities expect this to be financed by the LGA. This will cause long delays – but also, there will be no funding for preventive maintenance. The WASHCOMS are expected to source their own funds and it seems that the extent of the functioning of the WASHCOMs is likely impacted by their (in-) ability to do this. In other words, it appears that the roles and responsibilities of the different stakeholders in VLOM need to become clearer.

Some communities have solved this problem by collecting user fees at the moment of collecting water – this creates a fund for moments that costs need to be made for the WASH infrastructure. On the other hand, WASH is one of the top priorities in the country – not impossible that one day the Nation, or the State will ensure that their share is enough to co-fund with the community all WASH interventions. A full costing exercise will need to be carried out to determine “who will pay what” .²³

The dependency on community volunteers in the WASHCOMs may not be sustainable without some kind of incentive (not necessarily financial). Some members were reported to have left the committees because they were not paid for their work and they had to engage in farm work to support and take care of their families.

In terms of funding, the states and LG stakeholders are clear about the regularity of funds from UNICEF but describe the state funding as delayed. The programme documents also describe the delays in funding at all three levels of government as a major bottleneck in the implementation of the programme activities.

Technical sustainability

The WASHCOMs are in charge of the organisation of day-to-day operation of water supply, in terms of maintenance, keeping surroundings clean, avoiding misuse and repairing minor problems. Local level operators are able to do minor repairs and are usually trained by the programme. The technical sustainability of the water supply in terms of major repairs is a major cause of concern. The National survey of Hand-pump Functionality mentions that 42% of the population has no access to safe drinking water (2010); mainly due to the large numbers of dysfunctional water sources (56% of sampled hand-pumps were functional). Also the funding constraints caused by delays in payment from the various levels of government clearly impact monitoring, supervision and maintenance at the LG and community levels.

The options for different sanitation technologies do not seem to have been explored, so there are basically two types of latrines and there does not seem to be much support in improving the basic traditional latrine.

Technical sustainability of school sanitation improvements is difficult to assess as we have no insight into the extent of school sanitation improvements (hardware) supplied in the programme.

Institutional sustainability

Policy, legal and institutional frameworks are in place – the rules of law are available, but the ‘rules of the game’ are not established well enough – different stakeholders are not yet well acquainted with their role and responsibilities. Processes between different levels in the system are fully operational. Mechanisms for accountability (in terms of achieving results) are not yet in place. Other

The importance of structured monitoring and evaluation systems for all WASH interventions is well known. Still there is e.g. no official officially approved M&E framework, nor an M&E system. Follow-up activities after triggering are not planned.

With respect to school sanitation, institutional sustainability should also pertain to the education sector. We have not come across any contribution of this sector to the hardware facilities, but we assume that the

curricula do cover different aspects of hygiene as hygiene education in the school has been mentioned frequently during the evaluation.

Towards a “new” Theory of Change for the WASH program

The Terms of Reference invited the IE team to propose a Theory of Change (ToC) for the WASH program, based on the IE results – probably to facilitate future M&E of effects and outcome of/ by the program; in a routine way (M), as well as in a more in-depth way (E). In what follows is an attempt to respond to that invitation:

The former ToC – as we understood it from the program documents – seemed to part from the assumptions that water-, sanitation-, hygiene results developed in an isolated, simultaneous way, and as if effects and outcome result from program activities, only. This is not entirely true. The results of the three WASH components are interconnected (certainly because ODF certification is a condition for starting a water intervention) – and much depends on attitude and behaviour in the community, so on social action. This is taken into account in the program’ operational strategy and it would be best reflected in the ToC of the program documents, and to be integrated in its M&E system.

Change will start at changing the perceived importance of WASH issues on people’s life in the community and at individual level – by triggering;

- Number of triggering agents trained,
- Number of triggering activities in the community
- Awareness in the community of existing risk factors (and related solutions) related to WASH
- Information on risk factors related to WASH are understood and accepted by individuals
- Individuals weigh the potential positive effects of changing their behaviour (e.g. avoiding risk factors, perspective of having water later) – against negative consequences of such a new behaviour (e.g. cultural obstacles, workload, probability of successful intervention) on themselves
- Individuals weigh the potential positive effects of changing their behaviour on how they are perceived in the community against the negative consequences of behaviour (e.g. on their status, potential consequences of opting-out or of a free-ride) on themselves

*The sum of these arguments will result (or not) in a positive **attitude** towards ODF, improved sanitation – at individual- and at community level. If this positive attitude will result in a positive behaviour will depend on*

*A number of **enabling** factors, like:*

- Resources available: human resources, logistical resources and financial resources. And: time.
- Processes and structures in place
- Community members are provided with information to enable an informed choice (e.g. on selecting an appropriate type of latrine)
- Technical sanitation capabilities built/ available at LGA level (construction, major repairs) and at community level (maintenance, minor repairs)
- Poor and vulnerable are supported in building latrines, etc.
- Social action, and a “motor” to facilitate action – inside (WASHCOM), and outside (LGA) the community
- School children motivating parents on positive hygienic/ WASH behaviour

*A number of **hindering** factors, like:*

- Resources not available: human resources, logistical resources and financial resources. And time.
- Social-economical conditions, like presence of different groups in the community (heterogeneity) with different interests
- Difficult internal organisation in the community
- People taking a free-ride, not participating in social action, lack of cohesion in the community, demotivating others to participate
- Social-cultural perceptions on risk factors relating to WASH interventions not in line with the program’s messages

*This will lead to a change in hygienic **behaviour** – the village will be “open defecation free” (ODF certification)*
:

- Proportion of ODF certified communities,
- Proportion of households with a functional well-maintained latrine in use
- Clean latrines according to norms and standards
- Schools in community with functional well-maintained latrines in use, separate for boys and girls
- Hand-washing at critical times practised in most households
- Reduced open defecation

*ODF certified communities involved in the program's **water interventions***

- Proportion of communities with complete package of WASH intervention – equitably distributed according to wealth index
- Proportion of households with access (X KM) to an improved water source
- Improved water sources well maintained, functional
- Maintenance and repair structures and systems in place, functional and sustained – at community and at LGA level
- Drinking water of good (perceived) quality;
- Water available in sufficient quantities for drinking and washing

*WASH activities having **effects** on people's lives*

- Reduced time for fetching water in households
- Increased use of water from improved sources
- Improved hygiene of food

*WASH activities resulting in **outcomes** in the community*

- Decreased incidence of different water-borne diseases (diarrhoea incidence, case fatality rate diarrhoea in under-fives, dracunculosis free,)
- Improved community organisation for WASH activities and more
- Increased support for the poor & vulnerable
- Increased school attendance for boys and girls

*This process of change is influenced by **external conditions** (or assumptions) too, like:*

- Legal and policy framework at national and at State level
- Importance of WASH program in the national development policy/ national budget
- Macro-economic conditions,
- Donors of WASH activities: Ministry of Finance and external financing agencies – and their (pre-)conditions for funding WASH
- Quality of strategic- and operational planning
- Quality of implementation – incl. Supervision, M&E,

Conclusions

This “impact evaluation” on the WASH intervention in Nigeria of different stakeholders supported by UNICEF assessed results that are expected to be from this intervention in terms of “effects” and “outcomes”. “Impact” in terms of its epidemiological definition, e.g. child- or maternal mortality, was not addressed as this would very likely mean a bias by different confounding factors, which would mean that results would probably not be attributable to the intervention.

A “before-after” analysis to define trends and changes over time was based on a secondary data analysis (mainly DHS 2008 and 2013, and the 2011 MICS) to overcome the lack of a true base-line study. This appeared to be of limited value, seen in the fact that the definitions of indicators and of geographical areas were different from those used for this impact evaluation. For that reason most of the conclusions derive from primary data collection based on a theory-based, quasi-experimental, “with and without” (the intervention) approach. The mixed method approach applied here appeared to be very helpful to appreciate if the approach created significant differences between intervention and counterfactual areas (through statistical analysis of quantitative data) – and if so (or did not), why, how, and for whom it worked (through analysis of information gathered through qualitative data collection). On purpose, communities were selected as “intervention” areas (high intervention) and “counterfactual” areas (low intervention) in the same LGAs to ensure that they were comparable, and to improve lessons learning on what works why, what makes the difference. This appeared to be the case, in the end. The agreed upon smaller sample size of the household study, makes probable that for some differences between “with and without” that were found, which were not (statistically) significant; in some cases a larger sample could have made these significant.

This study is about an impact evaluation, so it is different from a program evaluation: so, it did not appreciate for e.g. if the program attained its objectives.

The approach of the WASH program to put an ODF status as condition for a water intervention proved to be highly effective: it created social action to improve sanitation and hygiene conditions as availability of water is highly appreciated, and was for that reason a **driver of change** (DOC). This social action was in itself a DOC too: it stimulated community members to exercise internal social control within the community: monitoring if others respected WASH rules – but also a mutual support to enable others improving WASH conditions, as WASH means an externality for other community members. This also created an environment of “blaming and shaming”, also a DOC. Another clear DOC appeared to be the perception that improving WASH conditions indeed did improve health, diminished disease load and made people healthier – as a consequence, spending less on health services it is believed. Even if we didn’t find significant differences for health outcomes: it became a self-containing argument which changed people’s WASH-related behavior. Another DOC is represented by the WASHCOM – who seem to have become the motor of different WASH activities in the community. A “negative” DOC is the expectation that financing and technical support for maintaining needed infrastructure may pose a problem in the future.

As there was an “LGA-wide approach”, CLTS triggering was done in almost all communities, so we may say that CLTS appeared to be the “mother of all other DOC”. In all communities, also those with no (other) interventions, it has triggered community members to start processes to improve WASH conditions, motivated them to work on those processes, there was always (some) knowledge on WASH and there is consciousness on risks: this has the result that in all communities there was some level of ownership. At the same time, this showed the advantage of the theory-based approach that was able to trace this effect. It also makes it likely that differences between intervention and counterfactual areas for some indicators have probably slimmed down.

The IE provided (significant) evidence that access to improved **water** sources has increased considerably, albeit in both intervention and counterfactual areas. In intervention areas drinking of water from improved sources have increased more – drinking from rivers has decreased to 10%. Even so, there was a change in water sources, but this was not significantly higher in intervention areas. The time needed to fetch water has decreased with 2 hours, affecting time-allocation of children more (in a positive way). Interviewees stated that it affects their lives even more: fetching water now presents less risk from injuries or snakebites to them. They drink more water, wash more often their clothes, and bathe more often. On the one hand, time used for fetching water improved because of increased availability, on the other hand, it increased because people

from elsewhere come to fetch water too – increasing waiting time in the queues. Even so, the quantitative household study provides evidence that time allocation on fetching water decreased significantly.

Safety of water point is a community task, rather than an individual task – for that reason in some communities it is better taken care off, than in others. On the other hand handling of water in the household (storage, transport) has improved. Opinions on the taste of water differ strongly – though most people confirm that the water now is ‘healthier’ and cleaner, so is preferable.

Now four out of five households have a **latrine**, half of them private – significantly more improved latrines with a cleanable slab in intervention areas – and almost all were functional during visits. When filled up, most households will empty them, although the level of hygiene with which this is done, is not very clear. In the intervention areas significantly more communities had a latrine in school, most often separated for boys and girls. Most often, no informed choice on selecting the type of latrine was made possible.

Not surprisingly, knowledge on WASH issues was higher in intervention areas – e.g. knowledge on what ODF means and on different types of **hygiene** knowledge (critical times for hand washing, etc.). The fact that differences between intervention and counterfactual areas are mostly not significant, means probably that the CLTS triggering is very effective – this has been implemented in both types of areas, and resulted in establishing WASHCOMs in both types of areas. WASHCOMs are key in all this by their motivating, organizing and educating the community, monitoring WASH conditions, etc.

Minor repairs of improved water sources do not seem to be operating quite well (mostly within 3 days), though it is the major repairs that seem to be the main difficulty: however, technically this should not be a problem; it is above all, the **financing** that is an issue. Financing of maintenance and repairs has not been taken care of very well, yet. In the intervention areas, households often contribute cash for construction and repair – of latrines, still this is not enough. More than 80% want to improve their latrine, but don’t because of a lack of funding. No structured strategy has been developed to solve the funding issue for water infrastructure, nor for the sanitation infrastructure. This represents a clear challenge for sustaining the WASH interventions in the after-project period. In case funding stops, water points and latrines could end up functioning less – which may negatively influence changes in attitude and behavior concerning WASH.

These all are different from the reported delays in receiving program funds, this is more a management issue.

Many of the changes can be **attributed** to geographical areas and to the wealth index – and they are inter-related: as 82% of the poorest in our sample live in the North, and 85% of the richest live in the South. Probably we may conclude that the influence of the wealth index on the results of this IE is more important. This, besides cultural (e.g. more community program activities), religious and environmental factors – e.g. open defecation is more practiced in the bush because in the South there is more bush. The poor benefitted, but the rich benefitted (significantly) more: they had more access to improved water sources that were closer by, they were more often offered alternatives for improved water sources, and their water was better treated. The rich have more water-seal latrines, more cleaning materials, more super-structure on the latrine, etc. – but they also received better technical support than the poorest. On the other hand, the rich contributed more in financing of repairs and maintenance.

A mixed picture on **outcomes** derives from our analysis. Open defecation was significantly lower in intervention areas. Still, there was no significant difference between intervention and counterfactual in diarrhoeal incidence in the household – but there was a difference in under-five children having diarrhoea. Differences in diarrhea incidence were better explained by geographical area, and wealth: the poor were more affected. We could consider that interviewees perceived that there is less diarrhoea since WASH conditions were introduced as an important outcome, too – even if this is not underpinned by our statistical analysis, as this determines their change of behavior: an important outcome.

The same counts for time allocation: in the perception of the interviewees less time was lost because of the WASH interventions, so more time became available for e.g. schooling. This was not always confirmed by our statistical analysis. Indeed missing school was lower in counterfactual areas – but e.g. differences in

schooling and working for a salary, was not significant. Differences could be attributed more to geographic areas and wealth status.

Empowering women and younger people was explained by the interviewees as an important outcome. They participated more in development activities, which they attributed to the WASH intervention.

If all these changes can be attributed to the program, alone, is not completely certain: improvements had already started before its introduction. For example: mean time people drink from an improved water source is 6 years – that is, before the intervention started.

The fact that in our sampling, the intervention communities ended up being in the (relatively) richer areas, and our counterfactual (low intervention) communities in the poorer areas, makes it likely to be the result of the program seeking “low hanging fruits” rather than seeking “targeting the poor”.

‘Impact’ is on people’s lives, on “happiness” – even if diarrhoeal incidence would not have decreased, water is a key, basic need/ commodity/ right that everybody should have access to.

Recommendations

This study is about an impact evaluation, the team did not evaluate the program itself. Even so, the team permits itself a number of recommendations:

Building an evidence base

1. In order to measure impact, it is important to do a “before-after” study; as such a baseline study is essential. Relying on a “with and without” study only has its limitations because identifying counterfactuals for the intervention areas is difficult and may be hampered by sources of bias.
 - Establish a baseline study, instruments of this IE can be used
 - Reduce the number of variables of this study to diminish the workload – by using the Most Significant Change tool, to establish the priorities in information needs of different stakeholders;
 - Adapt the indicators of the program’s M&E tool to those of the baseline, in order to have management information at the project’s disposal at all times
 - Make the adapted “draft” M&E policy framework official
 - Negotiate with MACRO to include indicators on WASH effects and outcome in the DHS linked to data incorporated in the baseline and end-line evaluations
2. More systematic approach to monitoring done by WASHCOMs, including training on analysis and consequent actions - so they know why they are monitoring and what happens with the results.
 - Create accountability structures between providers and clients involved in WASH services
 - Data on results deriving from this WASH-MIS to be presented/discussed in network meetings between providers and clients, between WASHCOMs, and between WASHCOMs and villagers, leading to action
 - Introduce incentives (not necessarily only financial) for best results to create some kind of competition

Approach

3. For the triggering approach:
 - School sanitation to be taken as a first action of the village so that youth becomes a driver of change and they also get proper latrines and water in schools - explore links with education sector for hardware funding
 - Provide community members support by giving them different latrine types to choose from according to their context and conditions.
4. As the triggering approach seems to work well, put more emphasis on a “post-triggering approach”, when communities have an ODF-certificate
 - Establish more clear distribution of roles and responsibilities between community representatives, WASHCOM and LGA – eventually through a contracting approach
 - Strengthen the capacities of WASHCOM, by a continuous training program on particular issues – will keep WASHCOM people interested/motivated
 - Put WASHCOM in the conditions to do their work that is expected from them – search ways to end their voluntary status, hold them accountable on results
 - Facilitate networking between WASHCOMs in a systematic manner
 - Develop a social-marketing strategy for WASH activities
 - Develop a strategy to involve the private sector more in maintenance and repair of WASH infrastructure
5. At present richer quintiles benefit more from the WASH interventions than the poorest. Develop strategies to target the poor and prioritize the poor areas more, as their WASH conditions are already

lagging behind and as they have more problems to overcome in order improve their situation – while they are very eager to work on improving their WASH conditions.

6. Include Neglected Tropical Diseases (NTD) in WASH education as people are seeing an impact from WASH particularly also in NTD. For UNICEF to broaden its coordination to include health sector and especially those involved in NTD (www.washtnds.org)

Financial sustainability

7. Not all who have entered an ODF process will receive support from the WASH program, because of a lack of funding. It is better not to start a triggering process if support (financial, technical, logistical) support is not guaranteed. Ensure funding for the total WASH program (including water) when starting CLTS
8. Ensure co-payment and/or revolving fund system to sustain the existing WASH infrastructure. Once this does exist:
 - Internal generated funding (user fees, prepayment systems, voucher systems, for repair
 - Discuss options for regular user fees for water as this system is not sustainable if pumps are really going to break down.
 - Explore possibility of loan facility in WASHCOM (from water fees) so people have access to funds for latrine improvement and/or income generating activities (e.g. soap making)
 - Carry out feasibility studies to establish the importance of co-payments made by Government (Central- State, LGA- levels)

Explore with latrine builders and private sector cheap alternatives so even poor can climb the sanitation ladder away from collapsing traditional latrines

References

1. WHO. Global Water Supply and Sanitation Assessment. World Health Organization. Geneva. 2000
2. United Nations. Progress on Water and Sanitation. The Millennium Development Goals Report 2011.
3. National Population Commission. National results: population by state and sex. [Online]. 2006 Available from: URL: <http://www.population.gov.ng/index.php?id=6>
4. WHO & UNICEF. Joint Monitoring Programme. 2011.
5. UNICEF. RFP WASH Terms Of Reference 2013
6. World Bank. A Guide to Water and Sanitation Sector Impact Evaluations. 2006
7. Cairncross, S., J. Bartram, O. Cumming, and C. Brocklehurst. "Hygiene, Sanitation, and Water: What Needs to be Done?" *PLoS Med* 2010; 16;7(11).
8. Independent Evaluation Group. "What Works in Water Supply and Sanitation? Lessons from Impact Evaluations." IEG World Bank Fast Track Brief. July 3, 2008.
9. International Initiative for Impact Evaluation. "Running Water, Working Toilets and Safe Hygiene Practices: Essentials Services to Save Lives." 3ie Enduring Questions Brief No. 10. August, 2009.
10. DFID. Water, Sanitation and Hygiene. DFID Literature Review. September 9, 2011.
11. Wolf-Peter Schmidt, Robert Auger, Yolande Coombes Determinants of hand washing practices in Kenya: the role of media exposure, poverty and infrastructure. *Tropical Medicine & International Health* December 2009, no 12, 1534–1541
12. Rubin, Donald B. Estimating Causal Effects from Large Data Sets Using Propensity Scores [Measuring Quality, Outcomes, and Cost of Care Using Large Databases]. The Sixth Regenrief Conference: Statistical Methods. *Annals of Internal Medicine*, October 15, 1997 Volume 127, no 8S, 757-763
13. O'Brien Peter. Procedures for comparing entries with multiple endpoints. *Biometrics* December 1984, vol 40, 1079 -1087
14. Liebman B. Jeffrey and Kling R. Jeffrey. Experimental Analysis of Neighborhood Effects on Youth. Working Papers (Princeton University. Industrial Relations Section) March 2004 no: 483
15. Seidel JV. Qualitative data analysis. Qualis Research, 1998
16. Yin, R. Case study research: Design and methods . Thousand Oaks, CA: Sage Publishing. 2nd Edition, 1994.
17. Coffey A. Jane and Paul A. Atkinson. Making Sense of Qualitative Data: Complementary Research Strategies. SAGE Publications, Inc. 1996
18. (UNICEF – Global evaluation of CATS Sector Strategy – Final report – March 2014
19. Peter Burry and Catarina Fonseca. Applying the life-cycle costs approach to sanitation. Costs and service levels in Andhra Pradesh (India), Burkina Faso, Ghana and Mozambique. IRC International Water and Sanitation Centre 2011.
20. Tyndale-Biscoe, P, Bond M, Kidd R, Plan ODF Sustainability Study. PLAN International, USA, FH Designs, Australia 2013.
21. UNICEF Participatory Design Development for Sanitation. Ben Cole for UNICEF Malawi. Frontiers of CLTS: Innovations and Insights. Issue No. 1, November 2013.
22. Impact evaluation of drinking water supply and sanitation interventions in rural Mozambique. Unicef, Netherlands Government 2011:
23. Harold Lockwood, Stef Smits Supporting rural water supply. IRC International Water and Sanitation Centre and Aguaconsult. 2011

Annexe

Impact Evaluation of Water, Sanitation, and Hygiene (WASH) within the UNICEF Country Programme of Cooperation, Government of Nigeria and UNICEF, 2009-2013

Terms of Reference

Background/Context:

Over 63 million Nigerians still lack access to improved water supply facility while over 113 million people still lack access to basic sanitation facilities (JMP, 2011). This is a far larger number of unserved people than in the majority of countries in the developing world and is a significant portion of the population in Africa. In addition, wide disparities persist across zones and within states, especially those living in the lowest quintiles, which aggravated the situation and leaving more children and women vulnerable to sickness and poverty.

The water, sanitation and hygiene programme within the UNICEF Country Programme (2009-2013) aims to increase access to safe water sources, hygienic practices and improved sanitation especially in the rural areas and among vulnerable populations. The main results planned include an increase of 5% of proportion of population in focus States with access and use of improved water sources (2007 baseline); an increase of 3.5% of proportion of population in focus States with access to and use of improved sanitary and hygiene facilities (2007 baseline); an additional 800 schools have safe water sources and sanitation facilities; adoption of sustained behaviours for water, hygiene and sanitation adopted in 2000 communities; and Nigeria certified *dracunculiasis*-free.

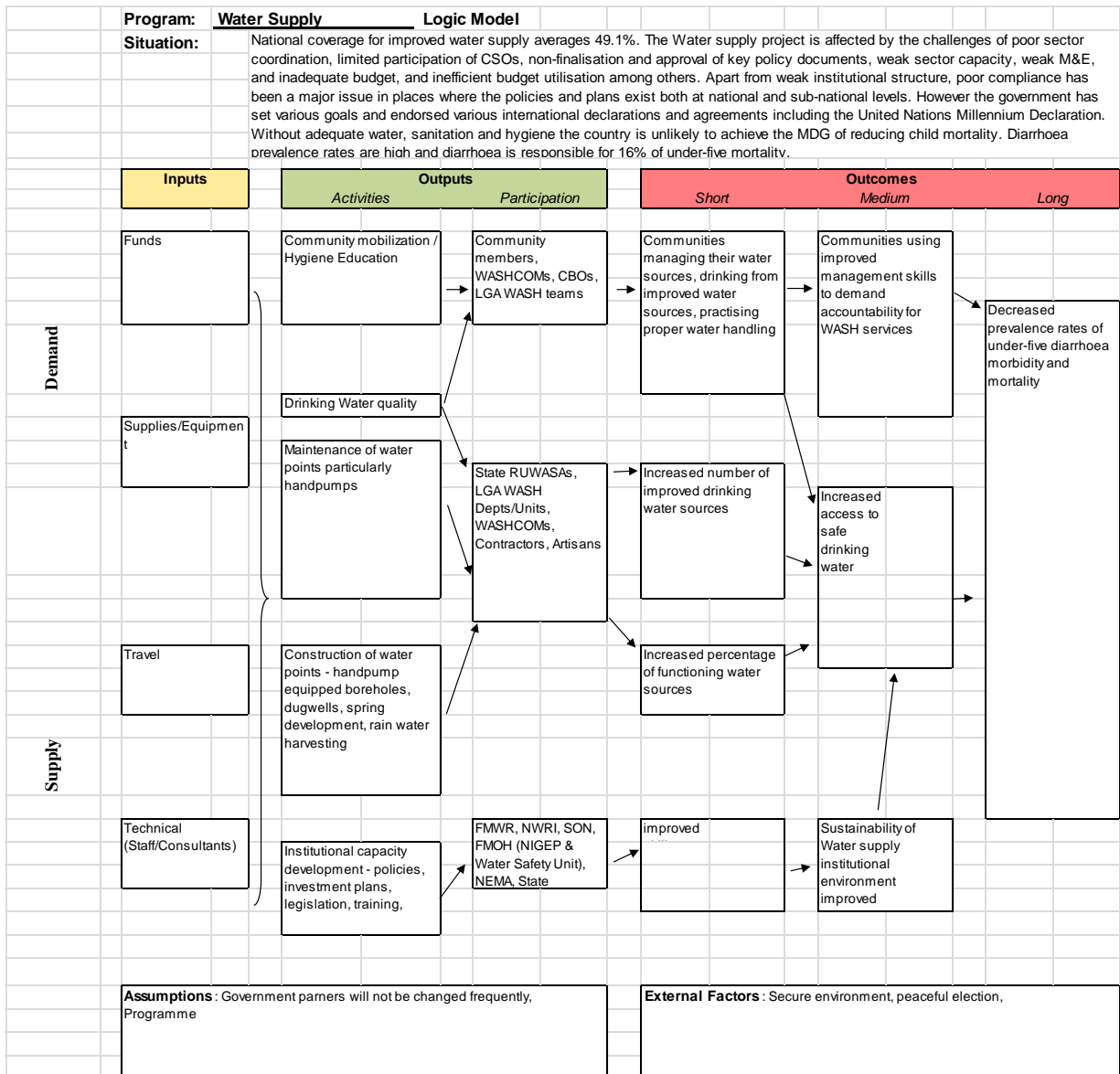
The programme has been funded with UNICEF regular resources and donor funds from the European Commission (EC), United Kingdom Agency for International Development, and a few others. The programme has provided services in the 36 states and the FCT, Abuja. To date, four million people have gained access to improved water supply and three million people to improved sanitation facilities. More than four hundred schools and twenty-five health centres had been provided with water supply while about one thousand schools and more than two hundred and seventy health centres have functional sanitation facilities.

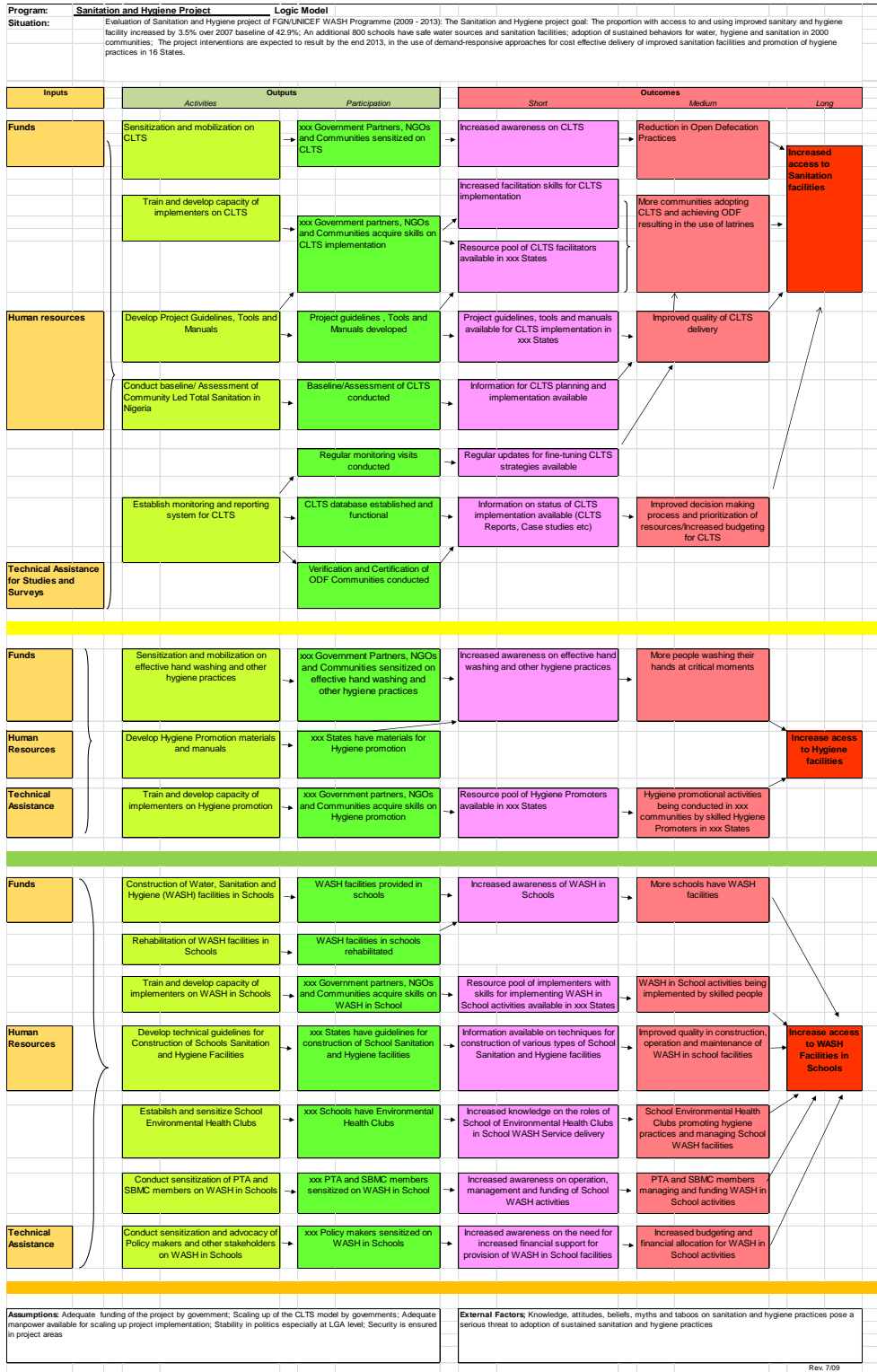
Indicator	2009	2010	2011	2012	2013	Total
People who gained access to improved Water supply	1,735,170	695,850	539,050	1,000,000		3,970,070
People who gained access to safe Sanitation	156,030	503,523	811,290	1,370,000		2,840,843
People who received information on good Hygiene practices	28,800,000			7,300,000		36,100,000
Schools provided with improved water supply		134	177	123		434
Schools provided with sanitary facilities	229	564	75	127		995
Health centres including CMAM centres provided with improved water supply		25				25

When does the project started and ended?

The project which started in January 2009 and was to have ended in December 2012 will now be ending in December 2013.

Theory of Change of the WASH Programme





Purpose of the evaluation:

The purpose of this evaluation is to build our knowledge based on effective strategies, and thus determine what worked well, where, why and under what circumstance? Thus it is to learn with the

intend purpose of identifying lessons learn for scaling up. The evaluation findings shall be used for advocacy activities with the intention of influencing S and Federal government to support, scale up and increase budget.

This evaluation is part of a commitment made to government of Nigeria within the context of the Country Program 2009-2013. It is also timely proposed as its finding shall reinforce the implementation of the next country program 2014-18.

Scope and focus:

The scope of the evaluation covers the period of the programme life span of January 2009 until December 2012. The programme has a number of component projects based on the source of funding as well as its structure. The programme has been implemented in the thirty-six states and the Federal Capital Territory (FCT), Abuja as indicated in the table below:

The key objective of this evaluation is to determine the effectiveness and impact of the WASH interventions. Hence the evaluation will:

- Conduct an evaluability assessment of the programme components; Water, Sanitation and Hygiene;
- Assess the extent to which the projects have been implemented as intended;
- Assess whether the intended outcomes were achieved, and whether there were any unintended outcomes;
- Identify lessons learned, exploring what has worked well in each project, what has not worked as well and make recommendations for potential scaling up
- Assess the extent to which project has been adapted to meet the needs of the communities and LGAs that it was intended to serve
- To determine the impact of the WASH program in Nigeria

To this end, the evaluation will seek to answer the following questions using the key and relevant criteria

:

Objective	Criteria	Questions	Sub-Questions
Conduct an evaluability assessment of the programme components; Water, Sanitation and Hygiene;	Evaluability	<ul style="list-style-type: none"> • Were there a clear description of the situation before the intervention that can be used as reference point to determine or measure change?; • Whereas the objectives and expected results, clear, observable once implementation is under way or completed? • Whether the WASH program evaluability and data available allow for an impact evaluation? 	<ul style="list-style-type: none"> • Were there a set of clearly defined and appropriate indicators with which to measure changes? • Were there a defined timeframe by which expected results should be occurring?
Assess the extent to which the	Relevance	<ul style="list-style-type: none"> ▪ To what extend the intervention design is 	<ul style="list-style-type: none"> • To what extend does theory of change

projects have been implemented as intended;		<p>appropriate?</p> <ul style="list-style-type: none"> ▪ Did the intervention meet the needs of the communities and users? ▪ Is the project aligned with the prevailing WASH sector policies, strategies and guidelines? 	<p>robust?</p> <ul style="list-style-type: none"> • What is the level of satisfactory with respect of Water, Sanitation and Hygiene services/practices? • To what extent does the government (State/Local) policies and program matches the project interventions and approaches?
Assess the extent to which the projects have been implemented as intended;	Appropriateness of design	<ul style="list-style-type: none"> ▪ Are goals, objectives, results and performance indicators meet standards for Results-Based Management? ▪ Resources and services designed to effectively respond to conditions (including risks), needs and problems identified? ▪ The choice of delivery channel is based on an assessment of options and a sound evidence base; 	<ul style="list-style-type: none"> • How risk was managed? • To what extent was the support for M&E adequate? • Are intended beneficiaries and their representatives adequately included in the design, implementation and monitoring and evaluation of the projects?
Assess the extent to which the projects have been implemented as intended;	Effectiveness	<ul style="list-style-type: none"> • Are all activities achieving satisfactory results in relation to stated objectives short and long term? • To what extent has the WASH programme strengthened the capacity of government partners to deliver WASH services. 	<ul style="list-style-type: none"> • Are the expected behavioural changes happening? • To what extent does the number of water sources increased?
	Equity focused	<ul style="list-style-type: none"> • To what extent does the WASH intervention beneficiate the poorest and most deprived Women, children and particular girls? 	<ul style="list-style-type: none"> • To what extent does the poorest and most marginalised children Women and girls, have increase access to Water? • To what extent does the poorest and most marginalised Women, children and particular girls have beneficiate from CLTS? • To what extent does the poorest and most marginalised Women, children and particular girls have increase access to sanitation services? • To what extent does the poorest and most marginalised Women, children and particular girls have increased access to WASH facilities in school?
	Efficiency	<ul style="list-style-type: none"> • Was the project able to identify efficiency gained? 	<ul style="list-style-type: none"> • What is the ratio of effort and percentage of functioning water source over time? • To what extent was the WASH intervention able to increase partner's performance?
	Impact	<ul style="list-style-type: none"> ▪ What is the impact of the WASH program, at individual and community level? ▪ Is the impact sustainable? 	<ul style="list-style-type: none"> • How does the communities receiving the WASH intervention perform in term of behavioral changes, access to water and water born related disease?

		<ul style="list-style-type: none"> ▪ Is the current strategy replicable or scalable? 	<ul style="list-style-type: none"> • To what extent does the WASH project/intervention contributed to behavioural change in the targeted communities in respect of the all programme components (Water, Hygiene and Sanitation)? • What are the impacts of changes in the lives of beneficiaries with respect of water born health disease? • What are the intended and unintended outcomes as a result of the interventions (positive and negative)?
	Sustainability	<ul style="list-style-type: none"> ▪ What are people's resources, motivation and ability to continue these activities in the future? ▪ Are the results achieved sustainable? If not, what additional measures are required to be in place to sustain the program? ▪ Are behavioural changes expected to last and what is needed for people to continue acting in new ways? 	<ul style="list-style-type: none"> • Are the investments in WASH owned by the local authorities, with the necessary technical and management capacity developed for future operations and maintenance; • Are the local authority seen their capacity increased, including M&E? • Are adequate measures been taken to ensure longer-term sustainability of water supply both in terms of quantity (taking into account social and environmental projections and considering different water uses, e.g. agricultural irrigation) and quality (including managing pollution)?

Existing information sources:

Identify relevant information sources that exist and are available, such as:

- Monitoring systems and/or evaluations (provide an appraisal of quality and reliability)
- Project documents and reports for the period
 - WASH Programme Annual Reports – 2009, 2010, 2011, and 2012
 - WASH Programme Mid-Term Report – 2010
 - DFID SHAWN Project Annual Donor Reports - 2010, 2011, 2012, and Progress Reports for 2013
 - WSSSRP-I - Biannual and Annual Donor Reports – 2009, 2010, 2011, 2012, and 2013
 - SRIP - Annual Donor Reports – 2011, 2012, and 2013
 - WSSSRP-II - Annual Donor Reports – 2013
 - NDSP – RWSSSP - Annual Donor Reports – 2013
- Trip reports of relevant UNICEF programme staff
- Surveys, studies, evaluations for the period of XXX
 - Public Expenditure Management and Financial Accountability Review (PEMFAR) - 2011
 - EU WSSSRP-I Periodic Result Oriented Monitoring (ROM) Reports – 2011, and 2013
 - National Survey of Handpump Functionality – 2012
 - SHAWN Baseline Survey – 2010

- Baseline Surveys for WSSSRP-II and NDSP-RWSSSP (?)
- Study of Household and Community Self-Help water Supply Schemes - 2010
- Nation-wide CLTS Baseline Assessment – 2010
- Documentation of CLTS Experiences - 2012
- Data from government offices
- Meetings with XXX
- WASH Programme Activity Reports
 - NTGS Verification of ODF Communities

List of LGAs/State who benefited of WASH Technical assistance over the 2009-13 period

Field Office	Regular Resources (2009-2013)	European Commission					UKAI D – SHAWN (2010-2013)	UNDAF (2009-2013)
		WSSSRP -I (2005–2011)	SRIP (2010 - 2012)	WSSSRP- II (2012-2017)	NDSP – RWSSSP (2012-2017)	WSSSRP- III (2013-2018)		
AFO	Abia Akwa Ibom Bayelsa Ebonyi Enugu Imo Rivers	Anambra Cross River	Anambra Cross River	Anambra (2 LGAs) Cross River (2 LGAs)	Akwa Ibom (2 LGAs) Bayelsa (2 LGAs) Rivers (2 LGAs)		Benue (4 LGAs)	Akwa Ibom Benue Imo
BFO	Delta Edo Ekiti Lagos Ogun Ondo Osun Oyo	Osun	Osun	Osun (2 LGAs)	Delta (2 LGAs) Edo (2 LGAs)	Ekiti (2 LGAs)		Lagos
CFO	Kaduna Kebbi Kogi Kwara Niger Sokoto Zamfara						Katsina (6 LGAs)	FCT, Abuja Kaduna
DFO	Adamawa Borno Gombe	Jigawa Kano Yobe	Jigawa	Jigawa (2 LGAs) Kano (2 LGAs)		Adamawa (2 LGAs)	Bauchi (5 LGAs)	Adamawa

	Nasarawa Plateau Taraba			Yobe (2 LGAs)		Plateau (2 LGAs)	Jigawa (5 LGAs)	
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Key Tasks to be completed:

The tasks to be completed by the contractor include, but are not necessarily limited to the following:

- Review background documentation on the WASH intervention, other WASH intervention and evaluations in Nigeria or abroad, as well as all relevant information;
- Perform a literature review on WASH impact evaluation intervention, and ensure that it feed the impact evaluation approach and design;
- Validate the Theory of Change (Logic model) as required, using both documentation and interview source of data ;
- Meet with relevant stakeholders, such as donor, private sector, government partners (LGAs, etc.) CSOs as directed by UNICEF ;
- Present for, approval by the UNICEF, an inception report containing a detailed Evaluation Plan, and evaluation design that address the specific evaluation questions proposed but not limited to;
- Propose potential evaluation questions that will allow us to meet the evaluation objectives, relevant indicators, data collection methods and present evaluation design options to meet the quality expectation state herein;
- Identify relevant control group or relevant strategy (such as Theory based, INUS and contribution analysis⁹) evaluation to identify a counterfactual, for attribution or contribution analysis as part of the evaluation design;
- Propose relevant data collection strategy, such as sample size, and household survey;
- Implement the Approved Evaluation Work Plan;
- Liaise with the Stakeholders through email, teleconference, in-person meetings as needed;
- Inform proactively the relevant in UNICEF Nigeria of any significant modifications to the intervention/project that could affect the evaluation and any difficulties that may arise in implementing the approved evaluation design;
- Prepare the inception and the draft evaluation report described as the agreed deliverables table.

The approach and methodology must include, but not limited to, the following:

- The impact evaluation approach shall use an ex-post evaluation design, aiming at quasi-experimental approach, such as matching methods, Regression Discontinuity design or other as relevant.
- Ensure that all data collection processes, analysis and training of field staff, as relevant, are subject to a Quality Assurance plan that will be detailed in the Inception report.

⁹ See *BROADENING THE RANGE OF*

DESIGNS AND METHODS FOR IMPACT EVALUATIONS, DEPARTMENT FOR INTERNATIONAL DEVELOPMENT, Working Paper 38 http://r4d.dfid.gov.uk/pdf/outputs/misc_infocomm/DFIDWorkingPaper38.pdf

- Incorporate data from the monitoring and information system implemented by the partners and other relevant sources of information available;
- As required help direct data collection activities to ensure that the necessary activities and outputs are being measured.

Quality expectations

It is expected that the evaluation design will deal with the four dimensions of impact evaluation quality and the proposal will demonstrate how it will successfully address the following: statistical conclusion validity; construct validity; external and internal validity.

Statistical conclusion validity is concerned with whether the presumed cause of the WASH programme and the presumed effect (the impacts as per the Logic model) are related. Measures of effect size and their associated confidence intervals should be calculated. Statistical significance (the probability of obtaining the observed effect size if the null hypothesis of no relationship were true) should also be calculated.

Construct validity refers to the adequacy of the operational definition and measurement of the theoretical constructs that underlie the WASH programme, outcomes and impact. We need to ensure that we indeed measure what we intend to change.

External validity refers to the generalizability of causal relationships across different persons, places, times, and operational definitions of interventions, outcomes and impacts. Since the intent here is to scale up the WASH programme, should it be successful, it's important to ensure that the ingredients responsible of the success of WASH programme being replicable elsewhere.

Finally the **internal validity** refers to the correctness of the key question about whether the WASH programme really did cause a change in the outcome and impact expected. Essentially is the evaluation design appropriate and deal with a counterfactual e.g.: what would have happened to the WASH communities (experimental units) if the interventions have not been applied to them?

The evaluation will occur in several phases:

Inception phase, during which an evaluability assessment will be conducted. The main objective of the evaluability assessment is to determine the best evaluation approach and design for the impact evaluation, considering the constraints. As a consequence, the approach and methodology to be employed during the data collection phase will be developed by the team and approved by the steering committee. This will include a data analysis plan, in which the procedures related to the data to be analyzed under the evaluation design will be described and detailed. The data analysis plan is integral part of evaluation plan.

Data collection phase, during which the great majority of new data acquisition, aligned with the approved evaluation plan & design and the major analytic work is completed. This shall include sample size and selection; household survey, focus group, data collection at the community level and related field work, as relevant.

Delivery phase, during which a draft report is delivered, for comments and approval. Then a final evaluation report addressing all comments should be submitted within a month to Chief of PME for approval.

Stakeholder participation:

The evaluation will be steered by a Committee composed of the relevant stakeholder (WASH to propose). The TORs of the committee include the following responsibilities:

- Approve the all deliverables of the Impact Evaluation, including inception report, evaluation plan and reports.
- During the inception phase review the proposal by the service provider and recommend changes as appropriate.
- Review the inception report, recommend changes if needed, and approve the inception report.
- Approve the data collection instruments and tools where applicable.
- Provide feedback on draft reports, including comments from peer reviewers to the service provider, and a workshop with stakeholders if appropriate.
- Approval of the final report as a satisfactory evaluation report that fulfills the agreed inception report.
- Recommend approval or not of specific recommendations emerging from the report.
- Communicate the results of the approved evaluations.
- Develop minutes of the meeting including all relevant decisions.

Accountabilities:

The Chief of PME&FC will serve as the primary contact with the Evaluation Team. He will thus be providing the necessary Technical guidance. The WASH specialist will support the coordination of the evaluation, by facilitating the Evaluation steering committee and provide necessary assistance, information to effectively support the Chief of PME. Upon approval from the Chief of PME, the WASH specialist will authorize payment.

The Regional Office will also be invited to comment on the draft deliverables. The Chief of PME and Field Coordination will give final approval for all the deliverable, including inception report, the final Evaluation report, and prior to last payment.

Evaluation team roles/responsibilities and qualifications:

The evaluation team should be composed of a team leader, and a national evaluator. The team leader will be responsible for the overall oversight of evaluation and its quality. The national evaluator shall assist the team leader in carrying out the assignment, including but not limited to facilitating meetings with stakeholders and identifying relevant data sources.

The formats for the deliverables will be determined later, but in general all written items should be in Microsoft Word and all presentations in PowerPoint. All documentation must be in professional level Standard English.

Work deliverables

1. Inception Report, including the detailed work plan outlining the approach, method and timelines
2. A Progress Report that include result of Quality Assurance system for the data collection
3. Draft data collection tools;

4. Presentation materials for steering committee meetings
5. Records of quality assurance routines devised and executed on sampling strategies, data processing and other activities, if requested.
6. Data files, survey data etc, if requested.

Final Products: Documentation

8. Final evaluation report (Outline and details to be developed with the reference group). A maximum page limit of approximately 50 pages is envisioned, with additional annexes expanding on the main text allowed.
9. A stand-alone maximum 4 page summary of the evaluation. A well written executive summary may suffice for this deliverable.
10. Accompanying visual material (if any) in final edited form.
11. Assessment of the evaluation methodology, including a discussion of the limitations. This may be presented as an annex within the report.
12. Self-contained PowerPoint presentation of up to 25 slides and complete speaking notes that summarizes the final report. This must be to a standard that it can be understood or presented by persons not on the evaluation team.

Critical note: The evaluation and its deliverables should be in compliance with UNEG standards and norms.

Qualifications of team members

The selected firm/consultant must possess the following qualifications:

- Demonstrated experience with sound impact evaluation
- Excellent report writing and analytical skills
- Previous experience in carrying out impact evaluations for WASH programmes;
- Strong capacity and experience in planning and organizing evaluation logistics;
- Strong capacity in data management and statistics;
- Strong background in microeconomics, statistics and econometrics;
- Excellent track record in partnering with African survey firm(s) to conduct the field work;
- Excellent track record of working with Sub-Saharan African clients, including Governments;

The following qualifications are preferred:

- Experience of working in Nigeria
- Familiarity with UNICEF's programming strategies and organizational culture
- Knowledge of additional sectors involved in WASH/CATS programming (e.g. Education, Communication for Development (e.g. for the Social Norms items)

Risks and Risk Mitigation

It is impossible to predict all the problems and risks that might arise. Those that are considered most likely to appear are the following:

a) Perceptions that the evaluation is threatening the support provided both financially and technical.

Having a steering committee that manage the evaluation and own the findings; An effort will be made from the beginning to communicate the evaluation's objectives, purpose and scope, and to highlight the need to improve and scale up.

b) Timing presents a major risk for this evaluation. Time for data collection will be tight.

Country office including Field offices support will be necessary to ensure that time spent in country is well used and documentation sharing happens well before arrival, so that consultants can quickly begin with data collection and logistical issues resolved prior to arrival. In addition, bidders are encouraged to be forthright about whether they recommend a longer period, or the compromises they project emerging if that duration is maintained.

c) Data availability, quality and consistency are to a degree unknown. The mitigation factors will be to perform an evaluability assessment to feed the choice of approaches and methods. It is also expected that the creativity and skill of the consultants in identifying appropriate data source.

Ethical Considerations:

The Evaluation will follow UNICEF guidelines on the ethical participation of children. In addition, all participants in the study will be fully informed about the nature and purpose of the research and their requested involvement. Only participants who have given their written or verbal consent (documented) will be included in the research. Specific mechanisms for feeding back results of the evaluation to stakeholders will be included in the elaborated methodology. All the documents, including data collection, entry and analysis tools, and all the data developed or collected for this study/consultancy are the intellectual property of UNICEF (may need to add partners names here, including government, as appropriate.) The Evaluation team members may not publish or disseminate the Evaluation Report, data collection tools, collected data or any other documents produced from this consultancy without the express permission of, and acknowledgement of UNICEF (may need to add partners' names here, including government).

Procedures and logistics:

The consultants or firm will be responsible for arranging their own transport, accommodation and other logistics.

Accountabilities:

Responsibilities related to this consultancy will be divided as follows:

Evaluation Team Leader

- Oversight and management of team members
- Orientation and training of team members, data collection assistants where applicable
- Responsible for meeting deadlines and quality of evaluation products
- Principal authorship of final report

Country Office

- Liaison with the evaluation team
- Collection of relevant internal materials
- Facilitation of new data collection--e.g. set up intranet questionnaires; admin support to trips
- Coordination of stakeholders
- Securing agreement of country and regional offices for field visits
- Review and acceptance of intermediate and final products
- Authorizing payment

Deliverables:

- An inception report, detailing an evaluation design and approaches that meet the Quality expectations, a detailed workplan, a description of the evaluation quality assurance process and detailed budget.
- Draft Evaluation Report, which should include
 - Executive summary
 - Evaluation scope
 - Methodology: description of sampling and evaluation methodology used, assessment of methodology and its limitation, data collection instruments, and data processing (analysis methodology, and quality assurance)
 - Findings
 - Conclusions
 - Recommendations
 - Lessons learned
 - Annexes: List of indicators, questionnaires, and if survey, table of sample size and sample site as appropriate;
- A final evaluation report based on one the above outline.
- The report should be provided in both hard copy and electronic version in English in the required UNICEF format.
- Completed data sets (filled out questionnaires, records of individual interviews and focus group discussion, etc.)
- The evaluation report will be required to follow and will be rated in accordance with “UNICEF Evaluation Report Standards” and UNICEF Evaluation Technical Notes

Timeframe:

Weeks / Dates	Description of activities	Expected Duration
	Inception phase	
1-3	Inception mission and evaluability assessment	3 weeks
3-4	Inception report the results of evaluability assessment and proposed approaches and methods	2 weeks
5	Review of the study plan, protocol, analytical framework and indicators by steering committee	1 week
6	Feedback and revision; acceptance of the inception report	1 week
	Data collection phase	1 week
7-10	Data collection phase: preparation (conception of household survey, pilot the survey, training of enumerators, etc.) and execution. In the field.	3 weeks
	Data analysis	
11-12	Preparation and submission of draft report	3 weeks
13-14	UNICEF feedback on draft report	1 weeks
15	Preparation and submission of final report	1 week

Payment schedule:

This should be in instalment payments, based on deliverable, the last being made upon satisfaction of the last deliverables.

Payment schedule	Payment proportion
Deliverable 1: Inception report	50% of total cost
Deliverable 2: Draft report	30% of total cost
Deliverable 3: final report	20% of total cost

Resource requirements:

- Estimate the cost and prepare a detailed budget. Note the source of funds. Link the budget to the key activities or phases in the work plan. Cost estimates may cover items including:
 - Travel: international and in-country
 - Team member cost: salaries, per diem, and expenses
 - Payments for translators, interviewers, data processors, and secretarial services.
 - Training cost and printing of material if relevant

- Estimate separately any expectations in terms of time costs for:
 - Staff (before, during, after)
 - Other stakeholders, including primary stakeholders.

UNICEF reserves the right to withhold all or a portion of payment if performance is unsatisfactory, if work/outputs is incomplete, not delivered or for failure to meet deadlines.

All materials developed will remain the copyright of UNICEF and that UNICEF will be free to adapt and modify them in the future

Prepared by: _____
 Chief of WASH Signature Date

Reviewed by: _____
 Chief of PME Signature Date
 and FC

Approved by: _____
 Deputy Rep. Signature Date

ANNEX 1

Evaluation matrix (suggested as a deliverable to be included in the inception report)—The evaluation matrix is a tool that evaluators create as map and reference in planning and conducting an evaluation. It also serves as a useful tool for summarizing and visually presenting the evaluation design and methodology for discussions with stakeholders. It details evaluation questions that the evaluation will answer, data sources, data collection, analysis tools or methods appropriate for each data source, and the standard or measure by which each question will be evaluated. (See Table A.)

Table A. Sample evaluation matrix

Relevant evaluation criteria	Key Questions	Specific Sub-Questions	Data Sources	Data collection Methods / Tools	Indicators/ Success Standard	Methods for Data Analysis

ANNEX 2: United Nations Evaluation Group – Code of Conduct for Evaluation in the UN System

Evaluation Consultants Agreement Form

To be signed by all consultants as individuals (not by or on behalf of a consultancy company) before a contract can be issued.

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant:

Name of Consultancy Organization (where relevant):

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at () on ()

Signature: _____

