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Sanitation and Hygiene Applied Research for Equity

REPORT

SHARE Annual Report 2017

July 2017

Building knowledge. Improving the WASH sector.

Review Date: 1 July 2017
Programme Value: £15,890,000
Start Date: 20 January 2010
End Date: 31 December 2018

Cover photos
1. School children in Kagera, Tanzania
2. Nurse in Zanzibar
3. Menstrual hygiene management in Malawi

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Contributors

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Acronyms

CAG	Consortium Advisory Group
CEO	Chief Executive Officer
CIDRZ	Centre for Infectious Disease Research in Zambia
DFID	Department for International Development (UK)
GLUK	Great Lakes University of Kisumu (Kenya)
IIED	International Institute for Environment and Development
LF	Logical framework
LMIC	Low and middle income countries
LSHTM	London School of Hygiene & Tropical Medicine
M&E	Monitoring and evaluation
MEIRU	Malawi Epidemiology and Intervention Research Unit
MEL	Monitoring, evaluation and learning
MITU	Mwanza Intervention Trials Unit
NGO	Non-governmental organisation
ODI	Overseas Development Institute
PLOS	Public Library of Science
RIU	Research into Use
SDG	Sustainable Development Goal
SDI	Shack/Slum Dwellers International
SHARE	Sanitation and Hygiene Applied Research for Equity
SUN	Scaling Up Nutrition
UN	United Nations
UNICEF	United Nations Children's Fund
UNIMA	University of Malawi
VfM	Value for money
WASH	Water, sanitation and hygiene
WASHTED	Centre for Water, Sanitation, Health & Appropriate Technology Development
WHO	World Health Organization

Executive summary

SHARE has continued to develop as a research consortium over the last year, and has matured as a partnership.

Research is now well underway, and publications are being produced with an excellent average citation rate of 17.7; however, there still remains the challenge to further improve the balance of first authors from low and middle income countries (LMIC). As Phase II research comes to an end, we should see a better balance between LMIC and high income country authors, reaching its maximum post SHARE.

Gender continues to be a focus with SHARE having improved coordination over the year, and showcased gender-related research at key events such as Stockholm Water Week. We took a targeted approach to events to encourage equal representation of women, and learnt more about perceptions of gender in partner institutions through a gender survey.

SHARE also took the opportunity to improve its monitoring and evaluation through a logframe review. The changes have tightened up the indicators, challenging SHARE particularly around peer-reviewed publications, and providing more meaningful management indicators for performance. It is therefore particularly pleasing to see that each of the output indicators for research, research into use, capacity development, and management has been met, or exceeded. This is a testament to the hard work that partners and the Secretariat have put in to making this a successful year.

A major change was initiated to resolve the previous underperformance of the capacity development programme, with excellent results. SHARE's Management Group addressed the vulnerability of the old structure and increased researcher access to specialist knowledge relevant to their areas of need. The recent recruitment of a new and dynamic Capacity Development Manager will continue this improvement over the coming year.

As the research progresses, each principal investigator has identified the surprises and challenges of the formative research phase of their projects. One overriding lesson is about the importance of this step in the research process. A great deal of learning has been produced from this phase and was shared at the partners' meeting in June.

SHARE's research uptake work continues to influence the water, sanitation and hygiene (WASH) sector through its convening role. Highlights include continued engagement with the World Health Organization (WHO)-led Global Action Plan for WASH in Health Care Facilities, and hosting a high-level WASH and antimicrobial resistance event. SHARE's WASH & CLEAN toolkit from Phase I was adapted on demand from the WHO in South East Asia and the Government of Gujarat, India, from covering just delivery suites to the wider healthcare setting.

Child in Chikwawa district, Malawi

SHARE also continues to tailor its findings to strengthen uptake by key sector actors. We have continued to support UNICEF staff development through the annual webinar lecture series. Our body of research is influencing the next generation of researchers, policymakers and practitioners, by informing the London School of Hygiene & Tropical Medicine's Tropical Environmental Health MSc module's curriculum. We are also continuing to ensure that our research feeds into our funder's work. In response to demand from DFID, we have published a short review of evidence on the health and social impacts of WASH, to update the Evidence paper produced in 2013.

Finally, SHARE has continued to improve its cost savings with an average 27% reduction on travel costs booked through agreed agents, and a financial forecasting variance of only 1% against invoiced expenditure.

A Introduction and context

Outline of programme

The SHARE programme contributes to achieving universal access to effective, sustainable and equitable sanitation and hygiene by generating evidence to improve policy and practice worldwide. It works with national and global partners to enable evidence-based improvements to the way they plan, implement and monitor their activities in the sector.

Throughout Phase I (2010–2014) SHARE focused its activities on working closely with national sector partners to define research priorities, and support the generation of rigorous and relevant applied research. It also worked to enhance the uptake of new and existing research in accordance with the main research themes developed throughout the inception period. Capacity development centred on providing six PhD scholarships, Masters' research projects, and supporting capacity development within research projects.

In response to SHARE's success during its first phase, in late 2014 the Department for International Development (DFID) granted SHARE a three-year cost extension to run from January 2015 to January 2018. A further time-only extension was given in response to the unexpected and devastating loss of a key member of the team, Jeroen Ensink. The current contract will now end in December 2018.

Phase I

From January 2010 to December 2014 SHARE developed its strategic approach through three calls for proposals:

- **Inception period and Call A – (assessment):** invitation to submit ideas for small/exploratory research, research-into-use and capacity development projects that would help to inform and contribute to SHARE's strategy.
- **Call B – (research):** development of the four key research themes identified from Call A. The resultant 'pillars', or knowledge areas were health, equity and gender, urban sanitation, and sanitation markets.
- **Call C – (collaboration):** building on Call B, the terms of reference required collaboration with at least one other partner (internal plus external if desired) for research based on the four thematic research areas.

In addition, the four country platforms in Bangladesh, India, Malawi and Tanzania each convened stakeholders to explore their knowledge gaps and national sector needs, and prepare a call for collaborative research proposals in response to the identified needs.

Table 1: Sanitation and Hygiene Applied Research for Equity (SHARE) Phase I

Phase I dates: 20 January 2010 – 19 January 2015
Value: £10,000,000
Partners: **United Kingdom (UK)** London School of Hygiene & Tropical Medicine (LSHTM) (Lead) International Institute for Environment and Development (IIED) WaterAid UK **Africa** WaterAid (Malawi) WaterAid (Tanzania) Shack/Slum Dwellers International (SDI) through IIED **South Asia** International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) WaterAid (Bangladesh)

Phase I of SHARE also supported activities in the following countries: Ghana, Mali, Namibia, Nepal, South Africa, Tanzania, Thailand, The Gambia, Uganda, Vietnam, Zambia and Zimbabwe.

Phase II

The aim of Phase II is to maximise the legacy of Phase I. Through consultation with DFID, Phase II focuses on sub-Saharan Africa. In Malawi and Tanzania, we are building on the foundations laid during Phase I and developing water, sanitation and hygiene (WASH) national research programmes including scaling up activities in the WASH sector. This is being supported by budgets for staffing and relevant research. We have also focused on two more countries in the region – Kenya and Zambia, drawing on new strategic partnerships that build on Phase I work. Introducing four new national partners has succeeded in increasing diversity, providing a broader range of approaches to developing knowledge, and created opportunities for greater collaboration between the different institutions and organisations. The resulting network provides more effective partnerships and creates more sustainable change.

Phase II also focuses on exploring four areas of research that grew out of the earlier 'pillars': pro-poor urban sanitation, WASH and childhood nutrition, WASH and complementary food hygiene, and WASH and vaccines. Five main studies have been funded under these themes.

As well as integrating its capacity development, research into use (RIU) and monitoring activities in the research projects, SHARE continues to provide a separate programme of activities in these areas.

Table 2: Sanitation and Hygiene Applied Research for Equity (SHARE) Phase II

Phase II dates: 20 January 2015 – 31 December 2018
Value: £5,890,000
Partners: **UK** LSHTM (Lead) WaterAid UK through WaterAid Tanzania **Africa** Centre for Infectious Disease Research in Zambia (CIDRZ) Great Lakes University, Kisumu (GLUK), Kenya Malawi Epidemiology and Intervention Research Unit (MEIRU)/University of Malawi (UNIMA) Mwanza Intervention Trials Unit (MITU), Tanzania **South Asia** International Centre for Diarrhoeal Disease Research, Bangladesh **Associate** IIED with SDI

Table 3 shows the research partners and their respective projects for Phase II.

Table 3: SHARE research projects and partners

Main projects	Lead implementing partner	Country
Safe Start: The effect of a novel early childhood hygiene intervention on enteric infections and growth faltering in low-income informal settlements of Kisumu, Kenya – a cluster randomised controlled trial	Great Lakes University of Kisumu (GLUK)	Kenya
Integrating WASH and hygiene of weaning foods	Malawi Epidemiology and Intervention Research Unit (MEIRU)/University of Malawi (UNIMA)	Malawi
Mikono Safi: Hand hygiene intervention to optimise helminthic infections control: a cluster-randomised controlled trial in NW Tanzania	Mwanza Intervention Trials Unit (MITU)	Tanzania
Achieving universal access to adequate, sustainable and equitable sanitation and hygiene services in the Cities of Tomorrow	WaterAid	Tanzania
SanDem: creating demand for sanitation in peri-urban settlements	Centre for Infectious Disease Research in Zambia (CIDRZ)	Zambia
Subsidiary projects	**Lead implementing partner**	**Country**
Rotavirus vaccine seroconversion and potential interference from Environmental Enteric Dysfunction: A comprehensive evaluation of diarrhoea among immunized child populations in Zambia	CIDRZ	Zambia
Gendered WASH vulnerabilities in Southern Tanzania	MITU	Tanzania

B Performance and conclusions

Annual outcome assessment

Table 4: Progress towards outcomes

Indicators	Milestones	Progress
1a: Amount of funds invested by other donors in research (£)	Baseline: £6.4 million Year 1 target: £0.25 million, actual £50,000 Year 2 target: £0.5 million (cumulative)	**£904,000** Figures are approximate due to exchange rates
1b: Amount of Funds invested in sanitation and hygiene projects influenced by SHARE (£)	Baseline: £80.8 million Year 1 target: £0.5 million, actual £700,000 Year 2 target: £2.5 million (cumulative)	**£5.6 million** Figures are approximate due to exchange rates
2: Percentage of progress markers met by recipients of funding, as indicated in the outcome mapping document developed by each partner (for each research project)	No baseline Year 1 target: 20%, actual 15% for one partner Year 2 target: 40%	Average 33% of progress markers met in outcome mapping plans for research uptake CIDRZ met 48%, GLUK met 28%, MEIRU/UNIMA met 33%, MITU met 24%, and WaterAid met 32%
3: Percentage of capacity development outcomes met by recipients of funding, as indicated in the capacity building strategy documents prepared by partners.	No baseline Year 1 target: 20% - no data Year 2 target: 40%	**43%** of capacity development outcomes met

Good progress has been made towards all three outcome areas, with specific details captured in Table 4. The most significant progress is under **Outcome Indicator 1**, which records funding invested by other donors in SHARE research, and in sanitation and hygiene projects influenced by SHARE. Of the thirteen projects that were funded by other donors under Outcome Indicator 1a, seven related to gender-specific activities, amounting to 55% of the total received. Under Outcome Indicator 1b, a £5.4 million contract was awarded by DFID Tanzania to conduct the second phase of the Tanzania National Sanitation Campaign. This builds on Phase I of the campaign, the evaluation of which was funded and technically supported by the first phase of SHARE.

Progress on **Outcome Indicator 2 has markedly improved during the reporting period.** All SHARE partners have now submitted their outcome mapping documents and have been reporting against these plans quarterly. It is important to note that progress on the plans set out in the outcome maps is inextricably linked to the availability of research updates of sufficient significance for interest and uptake by stakeholders. The progress of research projects has been very good in the last year, following the initial delays reported in 2016 caused by contractual challenges and resourcing following the death of Jeroen Ensink. However, findings from the formative phase of research have only just started to emerge for most projects. This has posed a huge challenge to dissemination and uptake activities, so it is a credit to the partners that they have managed to achieve so much, at only seven percentage points short of the 40% target. All partners have worked closely with the SHARE Secretariat to refresh and revise their RIU activities for 2017. Further information on the outcome mapping process, and monitoring and evaluation (M&E) processes, is given in Section H and Annex I.

All partners have finalised their capacity building strategy documents and these have been synthesised into a set of capacity development outcomes (**Outcome Indicator 3**). Challenges over the last year centring on staffing for capacity development have been addressed, and solutions developed for the remainder of SHARE – this is discussed in Section C, Output 4.

13
new peer reviewed journal publications

38
events

2,629
event attendees

Overall output assessment (narrative)

In the current reporting period, there has been good progress towards most outputs, with some particularly strong achievements as follows:

- **Thirteen** new peer-reviewed journal publications
- High number of event attendees (**2,629**) and events (**38**), exceeding our target (2.2.1)
- High number of new translational outputs produced (**44**) (2.4.1)
- Five of six SHARE PhD students have gained employment in the WASH sector (3.3)
- Consistently high number of attendees (165) at SHARE training sessions (3.1.1) of whom **42%** were women
- Of the training attendees who completed retrospective feedback forms, **83%** reported they found the event useful in improving their knowledge and used the training after the event (3.1.2)
- Increased average number of citations – **17.7** per paper – for peer-reviewed publications (1.2 and 1.3)

Key challenges relate to:

- While SHARE has achieved its milestone with regard to first authors from low or middle income countries (LMICs), we expect to see further improvement when Phase II papers begin to be published. This is an area that still needs attention, not just within SHARE. Data for Phase II publications will be disaggregated from Phase I data to better show progress. Further analysis on author demographics can be found in Annex J: Gender in SHARE.
- Speeding up progress on outcome mapping activities, and meeting progress markers. These have been slow due to delays in starting the formative research phase, and resourcing challenges at the national level. We expect further RIU activities as partners have research findings to disseminate and share.

UK MP visits SHARE project in Zambia, March 2017

Key lessons

- **Challenges around influencing national governments when the partner is not based in the capital need to be considered and mitigated.** Three partners have raised this issue and some have come up with their own solutions such as MEIRU/UNIMA in Blantyre, Malawi, which has organised quarterly Research Advisory Groups in Lilongwe. These have given them the opportunity to have face to face meetings with key national-level stakeholders, and keeps SHARE in mind during subsequent discussions.

  It was SHARE's forethought during the planning for Phase II to provide national coordinators for the partners in Malawi and Tanzania who would link with national stakeholders. SHARE will continue to assist MEIRU/UNIMA and MITU with developing these roles to answer the challenges they face.

- **Early stakeholder engagement plays an important role in project design and planning.** The SHARE partners used outcome mapping plans to identify key stakeholders during the research inception phase. This allowed them to build relationships before starting their research. Benefits included:

> Better definition of the project target populations, behaviours and site options (CIDRZ).

> Early engagement with county-level stakeholders led to an invitation to lead the Kisumu County Sanitation Research and Policy Group (GLUK).

> Holding an initial inception workshop with key stakeholders enabled WaterAid to ensure participation of all stakeholders in its research. It also cultivated a sense of local ownership. The local government has invited WaterAid to advise on the development of a city-wide sanitation plan, and requested support from the SHARE research team on specific areas.

> Early engagement of national stakeholders by the SHARE research team in Malawi has increased their invitations to provide presentations and expert advice and be involved in numerous platforms including the National Sanitation and Hygiene Coordination Unit, the Water and Environmental Sanitation Network and the Community Health Division.

> MITU has found that hosting initial discussions between principal investigators and the local education authorities has led to strong support for the formative research phase. This is expected to continue through the main trial, and may be beneficial after the research has ended.

- **It takes time to develop a behavioural intervention.** CIDRZ, MITU, MEIRU/UNIMA and GLUK have all found that developing formative research for a behavioural intervention is resource and time intensive. Support from LSHTM staff and other international collaborators with expertise in behavioural science has helped to address this. This feeds into SHARE's capacity development strategy and strengthens institutional knowledge of behavioural science for future interventions.
- **It is important not to make assumptions when creating templates.** All subcontracts include LSHTM's standard financial statement template to ensure appropriate reporting. The template needs to be customised for each project, which happens at the first payment request and can cause confusion and delays. The opportunity to modify this, or any other institutional standard template before inclusion in a subcontract would create a much smoother process.
- **It is best to leave room for relevant ideas to form in context.** When creating projects and roles outside the normal research environment, such as with the national coordinators in Malawi and Tanzania, the SHARE programme sought to make the terms of reference generic in order to drive the programmes to the desired outcomes while leaving room for interpretation relative to context. This has proved effective as the two partners have developed different, context-appropriate approaches.

Research participants meet the project team in Chikwawa, Malawi

> MEIRU/UNIMA has committed to working through an extant multi-disciplinary centre in the University of Malawi.

> MITU has expanded its relationship with NIMR in Tanzania, while engaging with another SHARE partner – WaterAid and its research collaborators – thus forming an external synergistic network.

Key actions

- Maintain support for partners' research projects during the intervention and data analysis stages (support to come from the partners as well as LSHTM)
- MEIRU/UNIMA to finalise plans for their national programme research, and start implementation
- All research projects to remain on track during the year. Potential delays or issues to be reported to the Management Group within a week, together with a mitigation plan
- Continue to work with national coordinators to support them in their ability to act as representatives of SHARE partners in-country and convenors of key stakeholders
- Continue to work with partners to enable their research to inform policy and practice
- Continue to raise awareness of the areas where partner institutions need to work towards greater gender balance
- Work towards a better balance between Phase II publications from LMIC and high income country authors
- Ensure the capacity development of research staff is maintained as the research projects develop and near completion
- Continue to improve consortium engagement
- Chief Executive Officer (CEO) and Research Director to meet with Kingston City Group and LSHTM to discuss the internal audit and implement recommendations

Has the logframe been updated since the last review?

The logframe has been revised since the last annual review. This was to incorporate recommendations from the review and make additional improvements. These changes mainly aimed to revise milestones/ targets to ensure they are realistic (in light of previous delays) but also ambitious.

Key revisions

- Increasing targets for number of peer-reviewed journal publications, translational outputs and event attendees
- Disaggregating targets on the percentage of authors from LMICs and female authors by Phase I and Phase II of SHARE to reflect increased efforts in this area in Phase II
- Scaling down capacity development targets slightly to ensure they remain realistic, given the delays in this workstream
- Removing two indicators relating to measuring the downloads from SHARE's website as it was not possible to get this functionality on the website: similar indicators exist which will enable us to measure engagement with our outputs
- Streamlining two management indicators on follow up of recommendations from the Consortium Advisory Group (CAG) into one improved indicator (4.3)
- Measuring financial spend using LSHTM's financial system, Agresso, rather than measuring the number of projects tracking to budget (which was a more subjective measure) (4.4)
- Measuring citations with an overall average using bibliometrics software rather than for each paper; this reduces time on data collection while still providing rigorous data

DFID has approved the revisions and the updated logframe is included as Annex A.

C Detailed output scoring

Output 1: Research

Output 1: SHARE builds new evidence and synthesises existing knowledge

Output number per LF: 1
Risk: Moderate
Risk revised since last AR?: N
Impact weighting (%): 25%
Impact weighting % revised since last AR?: N

Table 5: Output 1 progress

Indicator(s)	Milestones	Progress
1.1.1 Number of peer-reviewed publications on SHARE research	Baseline: 60 Year 1: 77 Year 2 target: 87	**91** papers at present (13 new papers in this reporting period, all from Phase I). In addition to this progress, two papers from Phase I and one paper from Phase II are in submission to journals.
1.1.2 Number and percentage of first authors are from institutions in low and middle income countries	Baseline: 27% Year 1: 20% Year 2 target: 30%	**30% or 27/91 papers have a lead LMIC author** (Phase I). We expect to see a higher % of LMIC authors once Phase II papers are published, due to our efforts in Phase II to work closely with LMIC institutions.
1.1.3 Number and percentage of first authors who are female	Baseline: 30% Year 1: 43% Year 2 target: 45%	**56% or 51/91 papers have a lead female author** (Phase I). We expect to see a high % of female authors once Phase II papers are published, due to our efforts in Phase II to better include women researchers.
1.2 Average number of cumulative views per SHARE journal paper from Research Online	No baseline Year 1: 230 Year 2 target: 270	**271** average cumulative views per paper. This covers the 67 of SHARE's 91 papers that are available on Research Online.
1.3 Citations of SHARE I and II publications (expressed in average number per article)	Baseline: 11 average citations per paper Year 1: 13 Year 2 target: 15	**17.7** average citations per paper. This covers 73 of SHARE's 91 papers as citation data is not currently available for all papers.

Phase II research progress

Evidence of SHARE's hard work in progressing its research over the past year is seen in the achievement of all indicator targets. As mentioned in Section A (Table 3), Phase II of SHARE funds five main research projects. It also funds two additional smaller projects – one on rotavirus in Zambia (implemented by CIDRZ) and one on psychosocial stress in Tanzania (implemented by MITU).

The research partners' main activity this year has been to design and conduct the formative research element of their projects. Formative research is context-specific to enable the researchers to design locally appropriate (and therefore more effective) interventions. Some partners were also able to analyse and interpret the results during the period. Formative research is especially important where the intervention aims to achieve behaviour change, as all of the main SHARE studies do. The need for formative research has only become widely recognised in recent decades. Since it is often qualitative and open ended, with limited published guidance, this involved a steep learning curve for most of the partners. Specific technical support was given by LSHTM to the formative research of MEIRU/UNIMA, MITU, CIDRZ and WaterAid as part of the capacity-building work. Findings from the formative phase will become available in the few months following publication of this report, as there are several papers in preparation for submission to peer-reviewed journals at the time of press.

Here is a brief update on progress for each project:

Main studies

- CIDRZ has completed its formative research and has cleaned and analysed the data. It has finalised the development of the randomised controlled trial design for the main behavioural intervention. This has received ethical approval from LSHTM and is awaiting national ethical approval. Work has begun on drafting manuscripts from the formative research data.
- GLUK has completed its formative study data collection for Phases I and II. Analysis of the formative study data is now taking place and work on drafting manuscripts is beginning. GLUK is now mapping out the study area in preparation for the main intervention.
- MEIRU/UNIMA is undertaking its formative research, which involves 1,000 households and is expected to be completed by the end of June 2017. Initial analysis has taken place on demographic, observational data and stakeholder analysis. Researchers have developed protocols and begun micro-biological sampling in 600 households. MEIRU/UNIMA have convened a Research Advisory Group and held an initial meeting.
- MITU has completed its formative study. As part of the formative research, it has upgraded water supply infrastructure in three schools. MITU has also conducted an intestinal worm survey across 61 schools and is planning a publication on worm prevalence data. It will begin the main randomised controlled trial in June 2016.

- WaterAid has completed a situational analysis and baseline in the town of Babati and is finalising data cleaning of its household survey. Data collection through focus group discussions, political economy analysis and the Shit Flow Diagram is in progress. The research project is also feeding into the Babati Spatial Master Plan, led by the Tanzanian government.

Smaller studies

- CIDRZ's additional smaller project on rotavirus and vaccines in Zambia received ethical approval and the research protocol has been finalised. Initial analysis of lab results for serum environmental enteric dysfunction markers has taken place and a paper on the findings has been submitted to PLOS ONE for review. In the coming months, analysis of stool samples will take place and further manuscripts will be produced.
- MITU's mixed-methods study on WASH-related psychosocial stress in Iringa, Tanzania is in the qualitative research phase. In-depth interviews with 30 women are complete and data analysis is ongoing in preparation for a second round of qualitative sampling in mid-2017. Data collection for the qualitative component will be completed by July 2017 and a quantitative survey is planned for autumn 2017.

National research programmes

Two African national programmes developed out of the research platforms set up by SHARE in Tanzania and Malawi in Phase I. Following on from SHARE's early work in India on violence against women, the Tanzania programme has initiated a new study in Iringa on psychosocial stress and sanitation. In Malawi, discussions around proposed research projects have taken place with their Research Advisory Group and progress is pending the contract from LSHTM. Two potential projects have been identified; an evaluation of current menstrual hygiene pad distribution programmes, and a competition to find solutions to the continued cholera outbreaks among the Lake Chilwa fishing communities by addressing the floating toilets problem.

Malawi and Tanzania both have their National Coordinators in place, though they approached the appointments differently. In Malawi the role has been split between Dr Tracy Morse, as the National Coordinator, and Kondwani Chidziwisano as the Malawi Fellow. The national programme works through WASHTED, the Centre for Water, Sanitation, Health & Appropriate Technology Development based in the Polytechnic, University of Malawi (UNIMA). The Centre is an autonomous body in UNIMA that can raise its own funds and is supported by the university through a small number of core staff, including the Director, Dr Salule Masangwi. This offers the opportunity for capacity building for the Centre and sustained support of WASH programmes thereby integrating the legacy plans of SHARE in Malawi. Integration of the SHARE programme with WASHTED has already reaped benefits as the Centre has since been approached for expert advice and policy review.

In Tanzania the situation has been less straightforward, with the National Coordinator originally being part-funded by the Ifakara Health Institute. This advantageous arrangement ended when the appointee was offered a full-time job at the Institute. The difficulty of finding a suitable replacement has been exacerbated by many national candidates preferring to work in Dar es Salaam. Following a disappointing round of recruitment MITU filled the post with a temporary appointment for two months. Amani Beda has since been confirmed in post, ensuring continuity of work in the programme.

Peer-reviewed publications

Thirteen new peer-reviewed journal articles have been published during the reporting period. This includes papers from SHARE Phase I former PhD students: Dr Prince Antwi-Agyei, Dr Richard Chunga, Dr Om Prasad Gautam and Dr Sheillah Simiyu. Additionally, Parimita Routray, current SHARE Phase I PhD student, has published two papers.

Two papers have also been submitted for publication from Phase I focusing on issues around menstrual hygiene management and gendered sanitation vulnerabilities. One paper has been submitted with early results from Phase II research on rotavirus and vaccines in Zambia.

In addition, a major study that began in Bangladesh during SHARE Phase I has led to important new conclusions around the public health significance of groundwater pollution by pit latrines. The relevant paper is in the final stages of preparation.

Table 6: Peer-reviewed publications

Publication title	Journal title	Lead author	SHARE URL	Year of publication	Country/ regional focus	Phase of SHARE
1. Faecal contamination of commuters' hands in main vehicle stations in Dhaka city, Bangladesh	Transactions of the Royal Society of Tropical Medicine and Hygiene	Islam	Link	2016	Bangladesh	Phase I
2. Taking Stock: Incompetent at incontinence – why are we ignoring the needs of incontinence sufferers?	Waterlines	Hafskjold	Link	2016	Global	Phase I
3. Learning from Sustained Success: How Community-Driven Initiatives to Improve Urban Sanitation Can Meet the Challenges	World Development	McGranahan	Link	2016	Global	Phase I
4. Adopt or Adapt: Sanitation Technology Choices in Urbanizing Malawi	PLOS ONE	Chunga	Link	2016	Malawi	Phase I

5. Safe distances between groundwater-based water wells and pit latrines at different hydrogeological conditions in the Ganges Atrai floodplains of Bangladesh	Journal of Health, Population and Nutrition	Islam	Link	2016	Bangladesh	Phase I
6. Estimating the Cost and Payment for Sanitation in the Informal Settlements of Kisumu, Kenya: A Cross Sectional Study	International Journal of Environmental Research and Public Health	Simiyu	Link	2017	Kenya	Phase I
7. A long way to go – Estimates of combined water, sanitation and hygiene coverage for 25 sub-Saharan African countries	PLOS ONE	Roche	Link	2017	Global	Phase I
8. Water, sanitation and hygiene (WASH) in schools – Results from a process evaluation of the National Sanitation Campaign in Tanzania	Journal of Water, Sanitation and Hygiene for Development.	Antwi-Agyei	Link	2017	Tanzania	Phase I
9. Trial of a Novel Intervention to Improve Multiple Food Hygiene Behaviors in Nepal	American Journal of Tropical Medicine and Hygiene	Prasad Gautam	Link	2017	Nepal	Phase I
10. Processes and challenges of community mobilisation for latrine promotion under Nirmal Bharat Abhiyan in rural Odisha, India	BMC Public Health	Routray	Link	2017	India	Phase I
11. Women's role in sanitation decision making in rural coastal Odisha, India	PLOS ONE	Routray	Link	2017	India	Phase I
12. Determinants of quality of shared sanitation facilities in informal settlements: case study of Kisumu, Kenya	BMC Public Health	Simiyu	Link	2017	Kenya	Phase I
13. Preference for and characteristics of an appropriate sanitation technology for the slums of Kisumu, Kenya	International Journal of Urban Sustainable Development	Simiyu	Link TBC	2017	Kenya	Phase I

Output 2: Research into Use

Output 2: SHARE disseminates and communicates research to encourage uptake of policy and programming

Output number per LF: 2
Risk: Minor
Risk revised since last AR?: N
Impact weighting (%): 25%
Impact weighting % revised since last AR?: N

Table 7: Output 2 progress

Indicator(s)	Milestones	Progress
2.1 Percentage of RIU activities completed by funding recipients in their outcome mapping document	No baseline Year 1: 62% for 3 partners for 2015/2016 activities planned in that period Year 2 target: 50%	**55%** of planned RIU activities for 2016 and 2017 for all five partners have been completed (54 of 98 planned activities).
2.2.1 Number of attendees at SHARE knowledge sharing events	Baseline: 848 of which 262 were women Year 1: 657 Year 2 target: 600	**2,629** event attendees at 38 events in Year 2 of which **37% (963)** were women.
2.2.2 Number and percentage of attendees of those events that report they found them to be useful in improving their knowledge	No baseline Year 1: 98% Year 2 target: 80%	**At the six events surveyed, 100%** or 36/36 attendees reported they found the event useful in improving their knowledge.
2.2.3 Number of external events using SHARE resources	No baseline No target because this is outside our sphere of influence but is a good measure of research uptake by key stakeholders Year 1: 1 event	**Three** external events used SHARE resources.

2.3 Number of recipients of SHARE technical assistance	Baseline: 29 Year 1: 7 Year 2 target: 10	**10** requests
2.4.1 Number of translational outputs arising from SHARE research, as indicated in the list of content type on the resource pages of SHARE website	Baseline: 163 Year 1: 34 Year 2 target: 64 translational outputs (cumulative from Year 1)	**69** translational outputs produced in Phase II (44 new outputs in this reporting period).
2.4.2 Average monthly number of views of SHARE website	Baseline: 2,666 Year 1: 3,261 Year 2 target: 3,000	An average of **3,395** web views per month.

Research into use/RIU is central to the SHARE theory of change, and RIU activities are broadly clustered into four categories: **convening** boundary partners/users, **translating** research and synthesis, **projecting** SHARE work online and through other means, and **rapid response** to policy opportunity. RIU activities contribute indirectly to most logframe output and outcome indicators, and contribute directly to Output 2.

All indicator targets have been met and many have been exceeded during this reporting period. Our key achievements are highlighted in the following narrative, and further information on outcome maps and digital presence is given in Annex I and Section K respectively. Annex H also includes visual representations of progress on our research projects.

Convening

During this reporting period SHARE has continued to assume a convening role in the WASH and related sectors. Through SHARE-led events or participation in established conferences and meetings, SHARE raises the profile of research findings and engages audiences to help shape evidence-based discussion on research, policy and practice, identify persisting knowledge gaps, and chart the way for future research agendas.

SHARE has been involved in 38 events since July 2016. In our four focus countries, partners have continued to participate in relevant fora to establish themselves as key stakeholders in the WASH sector in preparation for their research findings to emerge. For example, GLUK has continued to present its Safe Start research project, including at the African Academy of Sciences and the Royal Society of Tropical Medicine and Hygiene conference in Nairobi. It also has a new role as Chair of the District Technical Working Group on Policy

"Most of the time researchers involve policymakers at the end of the project, but as we have realised, involving policymakers in the field from the start so they see what you are implementing is an important step."

Kenneth Makata, MITU

and Research. MITU presented on the Mikono Safi project at the 2016 Tanzanian National Institute for Medical Research Annual Joint Scientific Conference. CIDRZ presented on its sanitation demand project at a sanitation symposium where sector players met to scope multi-sector investment opportunities in the sanitation industry for Zambia. MEIRU/UNIMA presented at the 1st National Sanitation and Hygiene learning forum and promoted SHARE research at the National Water Conference.

Our partners have also continued to use existing sector mechanisms for policy and practice-oriented knowledge sharing. For example, GLUK presented at the Kisumu County Sanitation Stakeholders Forum and the National Environmental Sanitation & Hygiene Inter-Agency Coordinating Committee Workshop. MEIRU/UNIMA has participated in Technical Working Groups on the Essential Health Package and Community Health as well as presenting quarterly updates at WASH NGO fora.

During the reporting period SHARE has taken forward its important role in connecting individuals and institutions across sectoral and disciplinary boundaries. SHARE instigated – and co-convened with the LSHTM Antimicrobial Resistance Centre – a roundtable on WASH and antimicrobial resistance in June 2017 to develop a roadmap for future research in this area. While improved WASH may offer an important contribution to the reduction of anti-microbial resistance, this has to date been relatively understudied. SHARE is also planning a roundtable on WASH and oral vaccine efficacy in autumn 2017. This aims to engage key experts in moving towards an integrated approach to enteric vaccine delivery that places greater emphasis on environmental health, both as a preventive measure in its own right and to maximise the effectiveness of vaccination programmes and strengthen health.

SHARE has also continued to ensure an active presence on a global level at key high-profile conferences, presenting on Phase I work. Highlights of these can be found in Table 8.

There are several further events in the pipeline for 2017 – an event on urban sanitation and nutrition at Stockholm World Water Week, another on the challenges posed by peri-urban environments to universal access at the International Conference on Urban Health in Lisbon, side events at the Water, Engineering and Development Centre's 40th annual conference on nutrition and vaccines respectively, and two events at the University of North Carolina's Water and Health Conference on behaviour change intervention design and WASH-related vulnerabilities among urban populations.

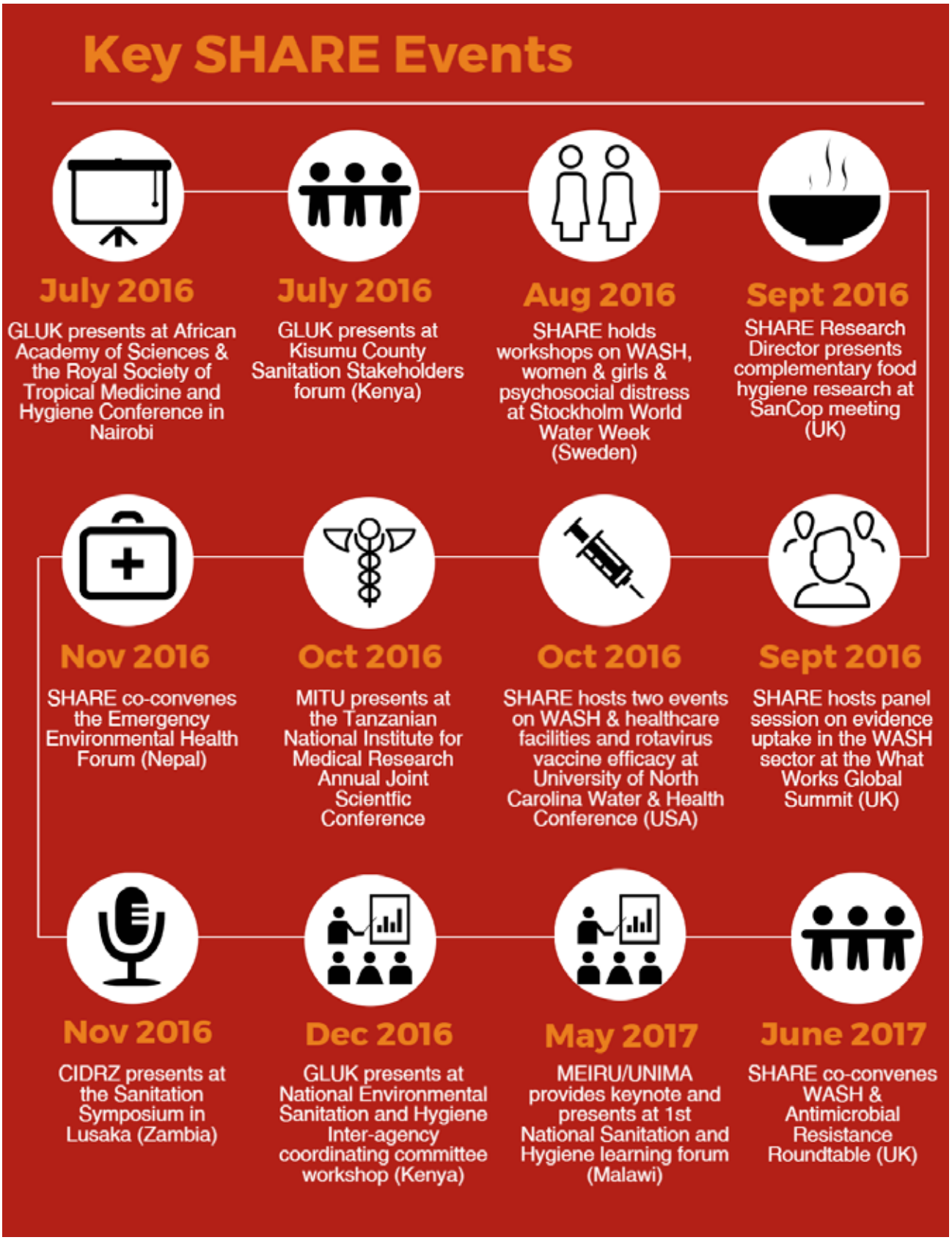
"The entire team are beginning to understand the policy level - before it was just a few people. We are checking if what is happening on the ground will help close the gaps that exist at the policy level."

Jane Mumma, GLUK

Table 8: Key SHARE events

Event	Activity	Audience
Stockholm World Water Week, Sweden, 2016	SHARE held a workshop on two emergent areas related to the WASH needs of women and girls (August 2016): psychosocial distress and vulnerabilities associated with constrained access to WASH services and menstrual hygiene management	Experts, practitioners, decision-makers (including national governments), academics and business innovators
University of North Carolina Water and Health Conference, United States, 2016	SHARE ran two events – one on evidence for action on WASH in healthcare facilities, and another on the effect of WASH on rotavirus vaccine efficacy.	Academia, governments, policymakers and donors from the WASH and health sectors
Emergency Environmental Health Forum, Nepal, 2016	SHARE supported the organisation and documentation of the conference – the theme was Creative WASH Initiatives: exploring research, field practice and new technologies.	Practitioners from humanitarian/emergency organisations with expertise in WASH
18th SanCoP meeting, 2016	Sandy Cairncross presented SHARE-funded complementary food hygiene body of research.	Donors, academics, practitioners, experts
What Works Global Summit, United Kingdom, 2016	SHARE hosted a panel session at the conference focusing on evidence uptake in the WASH sector.	Donors, academics, practitioners, experts
WASH & Antimicrobial Resistance Roundtable, 2017	SHARE initiated and co-convened the roundtable.	Donors, academics, practitioners, experts
WASH & Oral Vaccine Efficacy Roundtable, 2017	SHARE initiated and convened the roundtable and presented an overview of the evidence to-date, drawing on SHARE-funded research and synthesis.	Donors, academics, practitioners, experts
The African Academy of Sciences and the Royal Society of Tropical Medicine and Hygiene Conference: 'The Epidemiological Transition', Kenya, 2016	Damaris Nelima, GLUK PhD student presented SHARE Phase I findings and SHARE Phase II proposal to participants.	Local government, donors, practitioners, academics, private sector
CIDRZ Sanitation Symposium, Zambia, 2016	CIDRZ presented on sanitation demand and health research.	Local government, donors, practitioners, academics, private sector
Annual Joint Scientific Conference, Tanzania, 2016	MITU presented the Mikono Safi trial.	Local government, donors, practitioners, academics, private sector
1st National Sanitation and Hygiene learning forum, Malawi 2017	MEIRU/UNIMA's Steven Taulo (SHARE Co-Investigator) gave the keynote address on sanitation in Malawi. Save Kumwenda (SHARE Research Fellow) presented on appropriate sanitation technologies for flood prone areas.	Local and national government, donors, practitioners, academics, private sector

Figure 1: Key SHARE events timeline



Translating and projecting research and synthesis

SHARE continues to produce a range of informative translational outputs, which summarise SHARE research into accessible formats targeted at policymakers, practitioners and the media to foster uptake. This year, SHARE has produced **44** new translational outputs. Those of particular interest to WASH and other sectors include:

- **Three policy briefs** – on menstrual hygiene management, microfinance and the evaluation of the Tanzania National Sanitation Campaign – which bring together the body of work on this topic that SHARE has funded and offer recommendations based on the findings.
- **A report** on WASH and nutrition called *The Missing Ingredients*, co-produced with WaterAid and launched in August 2016. The report highlights the degree to which national nutrition and WASH plans and policies are coordinated and integrated to end malnutrition.
- **Four summary reports** bringing together the findings from the Phase I City-Wide Sanitation project in collaboration with the International Institute for Environment and Development.
- Seven research briefing notes and six infographics on our Phase II projects.

During the reporting period we have also maintained our partnership with key stakeholders and developed new ones, listening to demand and tailoring our outputs to meet this.

This year has seen the fourth edition of the webinar lecture series for UNICEF country and headquarters staff, which draws significantly on SHARE-research (more on this in Section C, Output 3). The course continues to receive extremely positive feedback from participants and is set to run again next year. LSHTM's own MSc module on Tropical Environmental Health continues to reference a large proportion of SHARE research, including handwashing and food hygiene behaviour change, WASH and reproductive health, and disability and WASH.

We have also continued to engage DFID in our focus countries to disseminate our research and instil a sense of involvement in ongoing work throughout the study timelines. In Malawi, DFID are represented on the Research Advisory Group and meet with the National Coordinator quarterly. In March 2016, the Hon. James Wharton MP, Parliamentary Under Secretary of State for International Development, UK, visited a series of DFID-funded WASH projects in an informal urban settlement on the outskirts of Lusaka, Zambia, and CIDRZ presented its work on sanitation demand.

In addition, we have strengthened our partnership with the Scaling Up Nutrition (SUN) Secretariat. Our joint report with WaterAid *The Missing Ingredients* received input from SUN, and was subsequently shared widely within the network and at external events, and used to develop their messaging. Although impact is difficult to measure, it is highly plausible that the report played an instrumental role in helping drive the new partnership between SUN and the Sanitation and Water for All Secretariat, and influenced the work plan of the partnership.

SUN is also using the findings from *The Missing Ingredients* report as part of its criteria for assessing 'good practice' countries for nutrition and WASH integration (which it will use for in-depth interviews with country-level spokespeople for Stockholm Water Week).

Online media

SHARE's website continues to be a successful platform to increase accessibility of SHARE's resources, receiving an average of **3,395** views per month. Additionally, the blog is a popular channel to profile and reflect on conferences, events and research. In 2017, SHARE began a Researcher of the Month series on the blog, providing more insight into our partners' work and interests.

Altmetric has also captured online discussions of SHARE's work by tracking Twitter, news websites, media sites, blogs and other social media. The number of SHARE-funded publications that are now in the top 5% of all publications ever listed on Altmetric has increased to seventeen; four more than in the last reporting period. The SHARE publications with the highest scores are as follows:

- *Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries* scores 327, and was cited in a policy document by the Inter-American Development Bank.
- *Effect of a behaviour-change intervention on handwashing with soap in India (SuperAmma): a cluster-randomised trial* continues to have success. With an Altmetric score of 170, it has been tweeted 73 times and appeared in 10 news outlets, as well as on blogs and Facebook.
- *From Joint Thinking to Joint Action: A Call to Action on Improving Water, Sanitation, and Hygiene for Maternal and Newborn Health* scores 154. It has been tweeted 87 times as well as featured in policy documents, news, blogs and Facebook.
- *Effectiveness of a rural sanitation programme on diarrhoea, soil-transmitted helminth infection, and child malnutrition in Odisha, India: a cluster-randomised trial* has a score of 150, and has been featured in 7 news outlets and 5 blogs and received 74 tweets.
- *Does Global Progress on Sanitation Really Lag behind Water? An Analysis of Global Progress on Community- and Household-Level Access to Safe Water and Sanitation* scores 105, and has been mentioned in 8 news outlets, a blog, 8 Facebook pages and 36 times on Twitter.
- *Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children* scores 100. It has been mentioned in four blogs, including the World Bank blog and a World Bank policy report, and 47 times on Twitter.

SHARE in the news

Several of our research publications have featured in national and international news outlets. Here are some highlights:

- Research by former SHARE PhD student Dr Prince Antwi-Agyei featured on major Ghanaian TV stations and online news outlets (modernghana.com, myjoyonline.com, peacefmonline.com and ghanaweb.com) in December 2016. Prince was also selected as a panellist for the Guardian's online Q&A on wastewater on World Water Day 2017.
- AllAfrica.com has referenced several of SHARE's publications in news articles, including *From Joint Thinking to Joint Action: A Call to Action on Improving Water, Sanitation, and Hygiene for Maternal and Newborn Health* in an article on handwashing with soap, and *The Sanitation Ladder, What Constitutes an Improved Form of Sanitation?* in an article on African cities and basic toilets, first published in The Conversation.
- Huffington Post and BuzzFeed have referenced SHARE publications, notably *Menstrual Hygiene Practices, WASH Access and the Risk of Urogenital Infection in Women from Odisha, India* in articles about menstrual hygiene among homeless women.

"As a result of our research into use activities, we have come to be known as an organisation that is doing WASH in a different type of way. DFID knew we were taking a novel approach to sanitation so they invited us to be part of the VIP visit."

Jenala Chipungu, CIDRZ

RIU-led research and synthesis

Through the RIU Fund, SHARE has been able to respond to current policy and programmatic demand for evidence. In the reporting period this has led to two systematic reviews that have synthesised the best available evidence relating to policy questions on (1) WASH and oral vaccine efficacy and (2) WASH in healthcare facilities. SHARE has also responded to demand from both UNICEF and DFID for a comprehensive synthesis of what we know on the impact of WASH on key health and social outcomes, producing two targeted reviews of evidence. We have also acted on continued interest from the Government of India in an expanded version of the SHARE-funded WASH & CLEAN toolkit that looks beyond the labour ward, towards a suite of tools that could capture cleanliness at the facility level. This is being developed by SHARE through the Public Health Foundation India.

Finally, following the success of the Missing Ingredients report, Action contre La Faim proposed partnering with WaterAid and SHARE to produce a second report, due to be published in late summer 2017. Titled *Recipe for Success*, this will analyse nutrition and WASH plans in 10 additional countries, as well as donors' commitments, and will provide recommendations for effective integration.

Output 3: Capacity development

Output 3: SHARE develops the capacity of key stakeholders in the WASH sector and other related sectors

Output number per LF: 3
Risk: Moderate
Risk revised since last AR?: Y
Impact weighting (%): 25%
Impact weighting % revised since last AR?: N

Table 9: Output 3 progress

Indicator(s)	Milestones	Progress
3.1.1 Number of attendees at SHARE training sessions	Baseline: 491 Year 1: 43 Year 2 target: 30 new attendees (80 cumulatively)	191 training attendees (80 women and 111 men: 42% women and 58% men). Cumulatively this is 234 attendees at training events in Phase II of SHARE.
3.1.2 Number and percentage of those attendees that report using at least one aspect of the training in their day-to-day work at least one month after completing the training	No baseline Year 1: no data Year 2 target: 65%	15/18 event attendees surveyed across two events (Malawi Financial Management Training and CIDRZ Scientific writing course) reported using at least one aspect of their training in their day-to-day work. This is 83%.
3.2 Number and percentage of research partners reporting that their experience working with SHARE has developed their research capacity	No baseline Year 1: no data Year 2 target: 65%	4/4 or 100% of partners receiving capacity development funding gave examples of how their research capacity has developed through working with SHARE.
3.3 Number and percentage of SHARE-supported postgraduate students who gain employment in a WASH-relevant role sector post-graduation	No baseline Year 1: 67% Year 2 target: 60%	83% – 5/6 students are working in WASH now.

Capacity development strategy

The changes made to SHARE's management of capacity development have proved extremely successful in terms of partner engagement, and achieving all of the milestones. All partners have now finalised their capacity development strategies and plans. Partner plans share common themes of **increasing sectoral WASH capacity** through supporting Masters students and providing workshops for the broader sector; **increasing contributions to scientific evidence** through improving writing skills and increasing publications; and **increasing**

the dissemination and use of evidence through presenting at national and international WASH conferences. They also include increasing clinical, technical and administrative skills in organisations as well as improving access to relevant IT software.

SHARE conducted an internal review of capacity development support in April 2017. Partners highlighted the value of working with international collaborators, noting this has helped them improve on areas such as how to work with UK funders and how to adopt new methods and approaches including behaviour change, qualitative approaches and formative research. They also highlighted the development of early career researchers over time especially around areas such as scientific writing.

Capacity development events

Key achievements during this reporting period include hosting again the online UNICEF 'Evidence-based WASH Policy and Practice' lecture series in partnership with UNICEF colleagues. Attended by 67 senior and mid-level staff from 37 different offices, 76% of participants said the course has changed their views on research for the better, and over 95% reported they would recommend the course to colleagues. This course had a good gender balance of 48% women and 52% men.

SHARE has also hosted training events involving 191 new attendees:

- Half-day outcome mapping training for the whole consortium in Dar es Salaam in July 2016
- Five-day scientific writing workshop hosted by CIDRZ in Lusaka, Zambia in November 2016
- Half-day RIU training for the GLUK team in Kisumu, Kenya in November 2016
- One-and-a-half day financial management workshop for staff from MEIRU/UNIMA in Blantyre, Malawi in November 2016
- Half-day workshop on providing an appropriate institutional contracts environment for staff from MEIRU/UNIMA in Blantyre in November 2016
- Three-day WASHTED strategic workshop with MEIRU/UNIMA in Mulanje, Malawi in January 2017
- Two-day RIU, monitoring, evaluation and learning (MEL) and outcome mapping workshop for MEIRU/UNIMA team in Blantyre in February 2017
- One-day RIU and MEL training course for MEIRU/UNIMA's partners in Blantyre in February 2017
- Half-day workshop on grant management for academic and support staff for GLUK in May 2017
- Research seminar for GLUK in May 2017

"Now, I feel that I have got fresh blood to analyse the available in-country data and advocate to the government of Iraq for better understanding the situation."

Participant from UNICEF Iraq

By considering gender in the invitees list for events, SHARE was able to involve 42% women and 58% men on training activities. SHARE seeks to ensure that women have equal access to SHARE's capacity development opportunities.

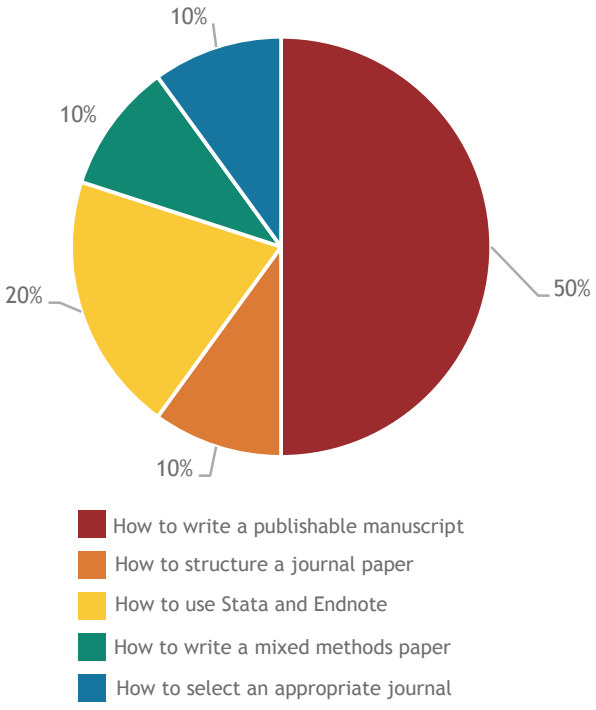
Of these events, the CIDRZ scientific writing workshop was particularly successful. It was attended by 15 people (8/15 [60%] women) with one space on the course ring-fenced for each SHARE partner institution. A follow-up survey conducted four months later found that 100% of survey responders had applied the skills learnt in the training to their work since course completion. Participants highlighted that they had been able to apply new skills to areas including writing journal papers, data analysis, hypothesis development and literature reviews. Here are comments from two participants:

"The event was intense and well organised. Without such intensity, my paper would have still been far off. Intense is good!"

"The event was so enlightening that I would like more to be organised so that other people can learn scientific writing skills."

Figure 2: Most valuable thing learnt by participants in CIDRZ Scientific Writing Workshop

Q: What was the most valuable thing you learnt? (n=10)



As a result of the scientific writing workshop, seven publications are currently in draft, two have been submitted to a journal and one has been accepted for publication.

"I want to commend the LSHTM team (and lecturers) for the professionalism you have all shown throughout this e-course. I think the participant feedback is amazingly good. You have successfully engaged the majority of course participants and made learning motivating and fun."

Guy Hutton, Senior WASH Advisor at UNICEF

Other capacity development progress

The CIDRZ financial management team have attended grants management training in Uganda and two CIDRZ lab staff have attended training on genetic sequencing. Several partners have purchased software for data analysis including Stata and NVIVO licences.

Kenneth Makata, MITU's Research Coordinator, spent five weeks in London attending two modules taught for MSc students at LSHTM: Tropical Environmental Health and Environmental Epidemiology.

Sharing experience

Opportunities are arising more often, and are increasingly being seized by our partners, to share experience and expertise via South-South collaboration. A chance opportunity at the annual partners' meeting in Tanzania in 2016 when a field visit had to be cancelled led to a series of one-to-one meetings between the partners. This was so successful that the feature has been included in subsequent face-to-face partners' meetings.

There have also been cross-partner visits, including one by Kondwani Chidziwisano, responsible for the behaviour change intervention in the MEIRU/UNIMA team, to GLUK's fieldwork site.

Postgraduate students

One more SHARE Phase I PhD student completed her thesis this year. Dr Sheillah Simiyu studied the effects of urban sanitation on property prices and rents. Soon after passing her viva voce examination she was appointed as GLUK's SHARE Research Fellow.

SHARE continues to support one PhD student who is due to complete in August 2017 (Parimita Routray). The delay in Parimita reaching this stage is partly due to her role as field manager of the Odisha randomised trial of low-cost sanitation, which SHARE helped to get off the ground in the first year of Phase I.

In Phase II it is intended that at least 12 postgraduate students will benefit from SHARE. CIDRZ has awarded one Masters' student scholarship and funding to two Masters' engineering students who are in the process of conducting research. GLUK has enrolled three MSc students and two PhD students. Kondwani Chidziwisano (MEIRU/UNIMA) has begun his PhD studies.

MEIRU/UNIMA has processed two rounds of Masters' research funding and funded six projects to date. Round 1 funded projects on the hygiene of vended water, the availability and suitability of WASH facilities for women and children in bus stations and the sustainability of community-led sanitation and open defecation free programmes. Round 2 funded projects aligned with the main research protocol including analysis of hygiene behaviours in an urban setting (to be compared with rural data from the main research), the sustainability of handwashing with soap programmes and the efficacy of integrating WASH services within Community Management of Acute Malnutrition programmes.

> *"Exposure to the writing workshop in Zambia gave me an opportunity to interact with up and coming researchers and to share thoughts, opportunities and challenges in scientific writing."*

Evalyne Aseyo, PhD candidate, GLUK

SHARE hosts a research uptake workshop at GLUK

SHARE Research Fellows

All four SHARE Research Fellows have now been appointed, three women: Sheillah Simiyu for GLUK, Caroline Chisenga for CIDRZ and Elialilia Pallangyo for MITU, and one man: Save Kumwenda for MEIRU/UNIMA.

Technical assistance

SHARE has continued to provide external technical assistance across the sector. This includes support on research, MEL and RIU to actors such as WaterAid, the Water Supply and Sanitation Collaborative Council, the SUN Secretariat, and the Institute of Fiscal Studies.

In addition to the responsive research assistance given by the Research Director to SHARE partners, his visits to Zambia, Malawi, Tanzania and Kenya have resulted in more than just contact with the research project staff. The SHARE Research Director's technical support has included:

- Giving talks to institutional research groups
- Participating in the interview panel for the SHARE Research Fellow in Malawi
- Spending a day with the team from the Nelson Mandela African Institute of Science and Technology in Tanzania instructing in more rigorous methods of writing hypotheses and preparing questionnaires, and generally honing the research skills of the teams
- Exchanging information with the Babati Town water and sanitation engineers in Tanzania in support of their planning of water, sanitation and solid waste services

- Providing important feedback to the Regional Administrative Secretary, Babati, and the District Commissioner, Manyara Region on key needs and methods of approaching water and sanitation in their context
- Holding a seminar on formative research for hygiene behaviour change at the GLUK Centre for Research, Consultancy & Postgraduate Studies, to address some of the practical issues raised during research and discuss approaches
- Providing information on practical hygiene practices in situations where the WHO guidelines cannot be followed in Central 1, a village in Kisumu

In the same countries, the CEO has supported the SHARE research projects and partner institutions in ways such as:

- Running workshops and training on appropriate financial management for international donors, and the use of different contract environments to reduce risk in international research
- Mentoring finance, administration and technical staff with career information and personal development strategies in the sector
- Supporting the development of research and management strategies for WASHTED through a workshop, and providing support to the Centre Director
- Holding a workshop for academic and finance staff on understanding the grants management cycles, planning and implementing grant management, and communication routes

Output 4: Management

Output 4: The SHARE consortium is efficiently and effectively managed

Output number per LF: 4
Risk: Moderate
Risk revised since last AR?: N
Impact weighting (%): 25%
Impact weighting % revised since last AR?: N

Table 10: Output 4 progress

Indicator(s)	Milestones	Progress
4.1 Number and percentage of SHARE consortium executive members who report feeling actively engaged in SHARE planning and decision making.	No baseline Year 1: 54% Year 2 target: 70%	80%
4.2 Attendance rates of SHARE executive group meetings by research coordinators.	Baseline: 89% Year 1: 81% Year 2 target: 90%	91%
4.3 Percentage of agreed CAG recommendations that are addressed within 3 months	No baseline Year 1: 76% Year 2 target: 100%	100% of recommendations (4/4) have been addressed within 3 months.
4.4 % of invoice expenditure against forecast programme expenditure	No baseline Year 1: No data (new indicator) Year 2 target: 29%	29%

Partnership

The achievement of 'efficient and effective management' of SHARE is due as much to the success of each part of the consortium, as it is to the development of appropriate systems. Over the past year research has got under way, partners have increased their engagement, and the Management Group has resolved previous issues in capacity development. Taken together with robust monitoring and regular review of SHARE's processes, this has contributed to a successful year, and the achievement of all the management milestones.

With the finalisation of key research subcontracts for the partners during the period, there has been greater concentration by the partners on preparing and conducting research and far less on management issues. Since the CAG meeting in July 2016 there has also been increased collaboration and contact across the consortium, resulting in shared knowledge and support between partners, and

increased opportunities such as the provision of free training (see Section D on value for money (VfM) for further detail).

Engagement has also increased with the Secretariat, resulting in a freer flow of information, and quicker problem solving. There has been much more use of Skype and telephone calls with the CEO, the Research Director, and the partners showing greater feelings of accessibility and confidence.

Executive Group

There has been excellent attendance and strong involvement of the Executive Group in meetings, and a feeling of more engagement with SHARE decision making. While issues are still brought to the Executive Group for discussion, most are now being raised informally and are more likely to be directed towards specific people who can help, rather than through the Executive or Management Groups. Increased engagement can be seen for example with MEIRU/UNIMA who now share the notes of their regular research meetings with the Management Group for input and comment.

To resolve some of the problems arising from the technology of virtual meetings, LSHTM has been using a web-based system. Despite some teething problems, this seems to be working better, and can be used to dial partners' phones, hence saving costs. One of the partners said that the new system made accessing the meetings much easier and that they could join in from anywhere.

CAG Recommendations

There were four recommendations made at the December 2016 CAG meeting, all of which have now been addressed.

1. A short note was requested on learning from SHARE's MEL framework and tools as a guide to other consortia. Often the knowledge comes too late in a programme cycle, therefore the note would be shared with DFID and other consortia. The M&E Officer has discussed this with DFID who were positive and this will be considered as something to include as part of SHARE's legacy.

2. Partners were asked to describe their data management strategies and protocols following a discussion on methods that were acceptable to LSHTM and DFID. The partner institutions all have documentation on their data management, and have reported this to the CEO. Two partners are also taking advantage of LSHTM's secure repository for their data.

3. In the July 2016 CAG, a suggestion was made to organise ad hoc webinars by and for the partners. No webinars had been requested or arranged and at the December 2016 CAG, partners were asked if these were still wanted. A follow-up elicited no interest, and the idea was dropped.

4. The annual review of SHARE governance was presented to the CAG in December 2016. Several suggestions were made, and these were carried out. The revised structure can be found in Annex G.

Expenditure

Table 11: SHARE budget and expenditure

Budget for Period: 20 Jan 2015 - 31 Dec 2018 (Amendment #2 Mar 2016)			Expenditure: 01 Apr 2015 - 31 Mar 2016			Expenditure: 01 Apr 2015 - 31 Mar 2017	
Phase II	Proposal Budget	% of total budget	Phase II	Expenditure to 31 Mar 16	% of budget spent	Expenditure to 31 Mar 17	% of budget spent
Research Projects	2,000,000	34%	Research Projects	11,449	1%	1,013,553	51%
National Research Programme (NRP)	1,509,848	26%	NRP: Personnel (TEF)	40,192	12%	114,691	15%
			NRP: Projects	136,607		109,693	
Capacity Development (CD)	954,652	16%	CD: Personnel (TEF)	76,967	9%	156,272	30%
			CD: Projects	9,755		132,924	
Research into Use (RIU)	825,500	14%	RIU: Personnel (TEF)	202,201	35%	395,954	63%
			RIU: Projects	86,567		123,650	
Management (MN)	600,000	10%	MN: Personnel	143,631	25%	335,344	62%
			MN: Expenses	8,061		35,728	
Totals	5,890,000	100%	Totals	715,430	12%	2,417,809	41%

External Review	110,000

Phase II Contract Invoice Split	
Personnel	1,684,844
Projects & Expenses	4,205,156
Contract Value	5,890,000

	Expenditure: 01 Apr 15 - 31 Mar 16	Expenditure: 01 Apr 16 - 31 Mar 17	Total expenditure: 01 Apr 15 - 31 Mar 17	Phase II % expenditure against budget
Personnel	462,991	478,398	1,002,261	59.49%
Projects & Expenses	252,439	1,223,981	1,415,548	33.66%
Total expenditure	715,430	1,702,379	2,417,809	41.05%

Total Budget Phases I & II	
Personnel	3,745,827
Project & Expenses	12,144,183
Contract Value	15,890,010

	Cumulative Expenditure: 20 Jan 10 - 31 Mar 16	Cumulative Expenditure: 20 Jan 10 - 31 Mar 17
Personnel	3,203,449	3,681,847
Projects & Expenses	8,345,765	9,569,746
Total cumulative expenditure	11,549,214	13,251,593

Expenditure in Phase II increased from 12% to 41% over the year, thereby achieving the target of 29% for indicator 4.4. The two areas of concern from last year, research and capacity development, have shown remarkable improvement with research rising from 1% to 51% as the projects got underway and partners worked hard to get them back on track. Capacity development had spent only 9% of its budget last year but this rose to 30% as a result of the work carried out with the partners to complete their capacity development plans and by establishing a more robust support structure.

While expenditure on the national programmes remains a concern, much of this is due to contract delays; MITU has recently had their subcontract signed off and invoicing will take place in June, MEIRU has had one subcontract in place through the University of Strathclyde for some time while the second is still outstanding. The national programmes were slower to start, as the research took precedence in resources and timing. The projected spend for the next year will bring this in line.

Note: Part of the national programmes budget and expenditure was vired after consultation with DFID, following the death of Jeroen Ensink. This has created an apparent drop in total spending from the previous year.

Figure 3: SHARE spending against forecast, 2010 to 31 March 2017

Other management areas – staffing

There have been a number of staff changes during the year, particularly around RIU.

- **Policy Research Manager** – Joanna Esteves Mills returned from maternity leave in January 2017. Erin Flynn, who had taken on the role during Joanna's absence, stayed for a handover period, which resulted in good continuation while Joanna got back up to speed.
- **Research Uptake Officer** – Sophie Durrans has been with SHARE since September 2016, bringing a fresh approach to SHARE's outputs, particularly through the website and social media.

- **RIU Volunteers** – Since 2016, SHARE has introduced skilled volunteers to the work of the consortium through a voluntary RIU role. The position lasts for approximately two months, and volunteers develop a workplan that supports their professional development goals and objectives, while providing valuable support to the Secretariat and partners. Volunteers who have held the position to date are Nyemachi Nworgu (October–December 2016) and Jasmine Burton (April–May 2017).
- **Finance Officer –** Chantelle Thomas left SHARE in November 2016 with short notice, to pursue a management career. The role was supported by Gail Marsom during the recruitment process, and Elenor McCoy was appointed in February 2017.
- **Administrator** – Grading of the post has been completed and Gail Marsom continues to fill in as the temporary administrator while recruitment takes place.
- **CEO** – Eileen Chappell's time on SHARE has been reduced from 70% to 60% as part of the process of reducing LSHTM's management commitment throughout Phase II, and scaling up through the two national programmes. The change took place in January 2017.
- **Capacity Development Director** – due to a lack of suitable candidates through two rounds of recruitment, LSHTM will not be replacing the senior lecturer role filled by Jeroen Ensink. As Jeroen spent much of his time as SHARE's Capacity Development Director, this left a large hole in the consortium. Towards the end of 2016, the Management Group decided to split the role as an interim measure, and used other senior academics at LSHTM who were already working with the SHARE partners on their research, to fill in. The arrangement was trialled from January to March 2017. Following a favourable review by the partners and researchers, it has been extended to 31 December 2018.
- **Capacity Development Manager** – Dr Belen Torondel has been recruited to manage the capacity development arrangements described in the previous point, and to ensure that the partners' plans are realised. Dr Torondel worked in biomedical research before joining LSHTM to work with Jeroen Ensink on innovative sanitation solutions. Her current main area of research interest is menstrual hygiene management in developing countries and her work has a strong focus on gender.
- **Consortium Advisory Group** – Professor Pete Kolsky has stood down after six years of service to SHARE, providing insightful comments and challenges in all areas of the consortium's activities. Dr Manuel Alvarinho has filled the vacancy left by Professor Kolsky. Dr Alvarinho holds an Honorary Doctorate from the Technical University of Delft, and was formerly the Chair of the Mozambican Water Regulatory Commission.

The Management Group have worked on a Legacy Strategy, which will be made available on the SHARE website.

Participants at EEHF 2016, rapporteured by SHARE.

Summary of responses to issues raised in previous annual reviews

The Kingston City Group has conducted an internal audit of SHARE management/governance on behalf of LSHTM. This is a routine audit to comply with the institution's governance and finance procedures. Once the audit has been assessed and recommendations made, SHARE will work with LSHTM and DFID to implement changes.

DFID recommended that indicator 4.3 should be streamlined into one, and this was addressed in the logframe review. DFID also suggested that indicator 4.4 should be split into two indicators (one on tracking to agreed budget, the other to agreed timelines) so it can be measured more accurately in future. After follow-up discussions with DFID and the CAG, it was agreed to revise this indicator to measure finance more accurately, which will also reflect how well SHARE is tracking to timelines. DFID also suggested that SHARE revisit the need for a VfM indicator and this has been addressed by developing indicator 4.4.

D Value for money and financial performance

Key cost drivers and performance

The three key costs for the past year have been research (59%), staff (32%) and other projects (9%).

- **Research** is contracted out to SHARE's partners, and as such is a large cost for SHARE that is fixed through contracts. During the year, the research projects have got underway, and this is reflected here.
- **Staffing** costs cover management staff, the key staff on the national programmes in Malawi and Tanzania, capacity development, M&E and RIU personnel.
- **Other projects** are defined as activities within capacity development and RIU. These include training events, conferences and meetings that are part of the programme plans for these budget activities.

Further details about these activities are included in Table 12.

As a member of the London Universities Procurement Consortium, LSHTM has access to many prearranged contracts from which SHARE benefits. Typical savings for key costs are shown in Table 12.

Table 12: Key costs and cost drivers

Key costs	% total budget (FY2016/17)	Cost drivers	Actions to manage key costs
Research	59%	• Seniority of researchers • Laboratory costs: technical staff, equipment, maintenance, consumables, out-sourcing analyses • Institutional overhead rates No trigger points have been reached	• Staff time and cost is fixed in the contract budget. A check is made on the availability of named personnel annually. • Alternatives are suggested to reduce costs, where possible. Sharing resources is encouraged to provide better value for money. • Consumables and equipment are bought ahead of price rises where possible. Best prices are arranged in advance for contracted-out work. • These are negotiated ahead of contracting where possible. Most institutions have a lower overhead rate for research work. SHARE research has defined budget limits and institutions have to work within their contract value. Changes in individual projects primarily relate to changes of staff or when an unforeseen need arises for specialist expertise. In the period, this occurred in Tanzania and a specialist was brought in from LSHTM. This has worked well in that there is greater availability at no increase in cost, the research has been enhanced, and the country partner has had the added benefit of training in the specialism.
Staffing	32%	• Lead institution staff • National programme staff No trigger points have been reached	• Costs are controlled by LSHTM staff contracts, with increments and cost of living rises known in advance of the budget preparation. Temporary staff costs are covered by the London Universities Purchasing Consortium. • National programme staff budgets were defined and contracted ahead of recruitment and therefore have controlled costs. Staff have been recruited within budget. The budget for LSHTM takes into account all reasonable controlled costs. However, the potential for promotion of staff cannot be taken into account as SHARE has defined roles at agreed grades. Where the CEO is notified of a potential promotion, the budget is reviewed and arrangements agreed with the budget holder and the relevant LSHTM department. There have been no promotions in the period of this annual report.

Other Projects	9%	• Travel and accommodation • Event fees	• Travel is purchased through one of the London Universities Purchasing Consortium contracted agencies. LUPC have recorded an average 27% saving. • Fees are known reasonably well in advance of events and budgets planned for 'early bird' applications. The nature of SHARE's work means that where opportunities arise at short notice costs can rise. This is especially true for travel but also with events where there is often an 'early bird' offer of reduced fees. Where possible travel and events are booked as far ahead as possible. Events such as the annual Partners' and CAG Meetings, which take place in Africa and London, are arranged well in advance. Preferential discounts on venues are arranged through local agreements, and can take advantage of 'local fees' rather than the increased rates for international visitors

VfM performance

Table 13: VfM performance

Area of VFM	VfM assessment measure	Performance in this area
Economy – whether the project has bought inputs of the appropriate quality at the right price	Developed partner profiles analysing each Phase II partner's projects and institutional policies against the criteria of economy, efficiency and effectiveness.	SHARE has consistently worked to provide high quality rigorous research in partner institutions through working with internationally recognised experts available in the consortium. This is highly cost effective. • All the projects use some existing staff within partner institutions; this reduces additional costs for international or new staff and seeks to build on existing strengths and experience. • All partners have institutional procurement policies that follow best practice and meet LSHTM's criteria for partnership. • LSHTM uses the London Universities Purchasing Consortium for procurement to get best price and value. Economy has increased with savings in travel 27%, ICT 19% and temporary staff 12%.
Efficiency – how well the project is converting inputs into outputs ('Spending well')		As the institutions in Phase II have developed their knowledge of one another as well as a network, efficiency has increased through their willingness to help and support other staff and projects across SHARE. Actions taken to increase efficiency include: • Using existing electronic platforms for direct data entry to save both the cost of stationery and time (CIDRZ) • Hosting trainings within the institution for a relatively low cost in comparison with an external venue (MEIRU/UNIMA) • Taking advantage of SHARE Secretariat visits for facilitation of relevant workshops (MEIRU/UNIMA, GLUK, MITU) • Participating in meetings online where possible to make cost savings (WaterAid, Executive Group) • Using external contracts to buy in expertise, while learning the skills from them (GLUK with University of Iowa)
Effectiveness – how well the outputs produced have had the intended effect/ achieved the outcome ('Spending wisely')		• Four of the projects use randomised controlled trials as their methodology; this approach enhances project effectiveness because it generates robust and high quality quantitative data. • As part of SHARE's focus on RIU, all projects have developed a research uptake strategy from the outset to maximise potential for future scale up and increase intervention effectiveness. • Where appropriate, partners are delivering their interventions through existing infrastructure such as community health volunteers; working through existing Ministry of Health systems and training existing healthcare staff will create a more sustainable intervention (GLUK and MEIRU/UNIMA). Investing in research is cost effective because it provides an evidence base for future programming that can lead to more efficient and effective programmes. Additionally, there is a strong public health case for investing in WASH. It is estimated that inadequate WASH causes over half of all diarrhoeal disease, or 1.5% of the total disease burden (WHO, 2014). One estimate suggests that adequate WASH could prevent 5.5% of deaths of children under five (Prüss-Üstün et al., 2014).

Cost effectiveness - what the project's ultimate impact on poverty reduction is, relative to the inputs that we invest in it	Developed partner profiles analysing each Phase II partner's projects and institutional policies against the criteria of economy, efficiency and effectiveness.	There are also economic benefits to WASH investments; WHO estimates an economic return of US$4 for every US$1 invested in water and sanitation (WHO, 2012). Similarly, the World Bank states that hygiene promotion is one of the most cost-effective health interventions (World Bank, 2006). The SHARE programme therefore has the potential to have a large impact on poverty reduction and to influence and improve WASH programmes globally.
Equity	SHARE has also considered the fourth 'E' of VfM: equity, and considered how the portfolio integrates equity across its work.	All projects focus on equity by targeting vulnerable populations in low and middle income contexts: • MEIRU/UNIMA is working in Chikwawa District in Malawi, one of the poorest and most remote areas of Malawi with high infant mortality and an average life expectancy of just 45 years. • CIDRZ is working in one of the poorest and most densely-populated informal settlements in Lusaka and this area has no government provision of sanitation infrastructure and services. • GLUK is also working in informal settlements with relatively high levels of infectious disease morbidity and mortality. • WaterAid's project seeks to develop a municipal sanitation and hygiene plan in a participatory and inclusive way, this should meet the differing needs of all the citizens of Babati including those with specific vulnerabilities. • MITU is focusing its WASH intervention on children aged between 6 and 12 who are vulnerable to chronic diarrhoea and helminthic infections that can lead to malnutrition and poor child development and cognitive performance.

VfM good practice over the lifetime of the project

Table 14: VfM good practice

VfM good practice	Example, impact and VfM savings
Use of existing purchasing agreements and access to institutional agreements for services	• LSHTM has used around 40 agreements with the London University Procurement Consortium, providing it with an ROI of 114:1. • MEIRU/UNIMA has a contract with the College of Medicine for research management and laboratory facilities.
Use of other programmes to support training and learning in SHARE's partner institutions	• MITU runs an annual Wellcome Trust funded two-week Research Methods course and invited four early career Research Fellows from SHARE partner institutions to attend with waived fees, which would have otherwise cost £10,000 per person. • MEIRU/UNIMA has used visiting Eawag staff to run two courses, which have involved SHARE staff in delivery and capacity building - Faecal Sludge Management (4 and 5 May 2017) and RANAS (Risks, Attitudes, Norms, Abilities, and Self-regulation, 12 May 2017)

Use of SHARE core personnel to run workshops, training and capacity development	• M&E Officer rapporteured Emergency Environmental Health Forum event (November 2016) rather than hiring consultant. • M&E Officer attended outcome mapping training, which she then applied to run workshops for partners. • CEO led a strategy workshop for the WASHTED Centre, UNIMA, instead of buying in a facilitator for a week. • RIU volunteers recruited to deliver additional VfM by supporting smaller-scale projects thereby increasing SHARE's responsiveness, and developing the skills and experience of the volunteers. • See Section C, Output 3 for additional examples.

VfM performance compared with the original VfM proposition

Three objectives capture SHARE's aim of capitalising on the successes emerging from Phase I continue to underlie the consortium's work and drive progress as it gears up during 2017 and 2018. They are:

1. Capitalise on research insights from existing work to maximise VfM and support scaling up
2. Scale up results through targeted work with national programmes
3. Strengthen the capacity for sustained global sanitation and hygiene research by southern researchers and institutions

Objective 1: Capitalise on research insights from existing work to maximise VfM and support scaling up

SHARE's research builds on existing work.

- GLUK and MEIRU/UNIMA's projects on WASH and nutrition build on Phase I work on the effect of WASH on complementary food hygiene and child nutrition outcomes in Mali, Bangladesh, Nepal and the Gambia as well as SHARE's Phase I Cochrane Review on WASH and undernutrition.
- MITU's study on WASH and helminth infections builds on Phase I's systematic review on the effect of WASH interventions on undernutrition. The review stressed that intestinal worms was a pathway through which WASH could potentially affect childhood nutrition. It also builds on Phase I work on helminths in Tanzania, Kenya, India and Vietnam as well as SHARE's systematic review on WASH and soil transmitted helminths.
- WaterAid and CIDRZ's studies on urban sanitation build on Phase I work on city-wide sanitation in Malawi, Tanzania, Zimbabwe and Zambia, the development of the Sanitation Mapper monitoring tool, the EcoSan project in Malawi and research on urban sanitation in Tanzania.

- CIDRZ's WASH and vaccines study builds on WaterAid's work in this area in Bangladesh during Phase I.
- MITU's psychosocial stress study builds on the Phase I work carried out in India on gender, sanitation and psychosocial stress.

Objective 2: Scale up results through targeted work with national programmes

Malawi

- National programme staff are the National Coordinator and the Malawi Research Fellow. The National Coordinator is responsible for the SHARE budget and for ensuring that research and RIU activities are developed and delivered.
- To provide scalability, activities are channeled through WASHTED, which coordinates WASH in the University, and has a presence in the sector. All SHARE research is undertaken as part of WASHTED, and therefore has access to its staff, facilities and network to enhance the reach and sustainability of the work.

Tanzania

- MITU collaborates with the National Institute for Medical Research, Tanzania and LSHTM. Their National Coordinator is responsible for coordinating activities, particularly RIU.
- MITU's research programme builds on current and previous work, and is currently planning for sustainability of its staff after SHARE finishes.
- MITU coordinates with WaterAid Tanzania and the Nelson Mandela African Institute of Science and Technology through visits to their SHARE research programme and regular communication.
- Evaluation of the National Sanitation Campaign in Phase I has resulted in investment by the Government of Tanzania and DFID Tanzania to design and implement a national sanitation and hygiene behaviour change campaign (CLEAR). CLEAR uses evidence, including from SHARE's body of work, to make improvements to the national programme.

Objective 3: Strengthen the capacity for sustained global sanitation and hygiene research by southern researchers and institutions

Each partner's capacity development plan is directed at the needs of individual staff, institutional support, and direct development of research capacity. This is provided by:

- LSHTM through each of the targeted capacity development plans.
- Partners through sharing their expertise by providing courses and support to the benefit of other partners.
- Other institutions through buying-in expertise to increase research effectiveness, and learning new skills in the process.

Assessment of whether the programme continues to represent value for money

As research has got underway during the past year, partners have put greater effort into developing relationships and in sharing resources, knowledge and opportunities across the consortium. Examples include:

- MEIRU/UNIMA visiting GLUK to learn new methods and increase collaboration between the studies.
- MITU sharing resources from a Wellcome Trust grant to waive the fees for the newly appointed SHARE Research Fellows for its two-week research methods course. This provided the opportunity for them to spend time together and develop their network, as well as to meet other early career researchers in Tanzania.
- The CIDRZ writing workshop used the incentive that the first participant to submit a publishable paper after the course would receive an educational trip to South Africa. This incentive has helped attendees consolidate their learning through continued practice after the course. The course was provided by CIDRZ using SHARE funding.

SHARE continues to realise its VfM objectives for Phase II and has increased assessment through partner VfM plans. Fee rates to DFID continue to be maintained at the same rate as 2015 providing savings on the cost of living rises and annual increments that university staff received.

Update on quality of financial management

A change in Finance Officer has provided another opportunity to review and revise the finance monitoring systems that SHARE uses to interface with LSHTM's finance system, and subsequently manage the consortium budget.

As the functionality of LSHTM's Agresso system is not up to handling the complexity and size of the projects managed in SHARE, there is an element of duplication of work to ensure that the SHARE Management Group can effectively navigate the matrix of interrelated projects and subject budgets. The key to financial monitoring is the coding of expenditure, as with any programme of this size. While this requires some manual entry, reconciliations to the Agresso system ensure the integrity of the data. All partner contracts have a unique project code, and invoices must include this information. Financial reports are also required with each invoice.

E Risk

Overview of programme risk

Scaling up

Considerable progress has been achieved around external context in focus countries since the last report. In Malawi, instigation of the WASHTED strategy retreat, and enhanced activity in identifying and applying for relevant calls for proposals has had a sustained energising effect. The public launch of WASHTED's 2017–2021 strategy document and plan in July 2017 will be a high profile event aimed at consolidating the Centre's place in collaborative WASH research. Using WASH-related technology research experts gives WASHTED a unique profile in the sector nationally. This is also supported by the engagement of high profile members of the Research Advisory Group who can promote and support SHARE activities in Malawi.

In Tanzania progress has been made through a collaborative approach. MITU and WaterAid Tanzania, together with their partner the Nelson Mandela African Institution of Science and Technology, will continue to work to develop a collaborative partnership for WASH research. MITU is in a unique position to assist the Country Director of WaterAid, who sees the importance of WASH research and working with academic partners to further WaterAid's work in Tanzania.

Due to initial delays in starting the research projects, most are now running to the third or fourth quarter of 2018, this presents a problem for delivering their research uptake activities. While SHARE will continue to support ongoing RIU over the course of the projects, by their completion there will be little to no time available to produce substantial policy and practice outcomes. As the management team plans for assessing the impact of SHARE post-2018, this issue will be included in the strategy and proposal.

Contracts

Most partner contracts have now been in place for a while, and the benefit can be seen in the increase in research expenditure during the year. Where contracts are required, however, they are still generally slow. Problems arise for LSHTM, as with other UK institutions wishing to subcontract American universities, and one in particular has caused a considerable delay for GLUK who are being supported by the University of Iowa. Negotiations have now finally concluded but at a considerable cost of institutional and management time and effort.

Resources

The potential risk for unexpected, as well as expected, events around resources was highlighted last year with the loss of the Capacity Development Director. It took longer than expected to find a solution as no suitable candidates applied for the position. This encouraged a rethink of our approach to the problem, and has resulted in a more robust solution. The role no longer resides in one person but with a

team of four senior specialist researchers with oversight by a Capacity Development Manager who guarantees the programme outputs.

The potential loss of the CEO and Research Director continues to pose a high risk to SHARE. The situation is monitored through the Management Group, LSHTM senior management, and in discussion with DFID. The CEO (0.6 FTE) has overall responsibility for delivery of SHARE. There are a number of similar positions in LSHTM, and should the CEO leave, there are suitably qualified staff who would be available to support SHARE while recruitment takes place. The Research Director (0.6 FTE) is responsible for driving SHARE's research strategy and ensuring its legacy. Should he leave, retire or be unable to perform his duties, the position will pass for the remaining time of the DFID contract to the next most senior academic within SHARE's management team.

The potential loss of other key roles due to the uncertainty of funding during the no-cost extension has also been addressed. The combination of savings from earlier staff losses, and from careful management, have resulted in SHARE being able to fund the Secretariat to the end of the programme, and contracts have been issued to give staff security. All research project staff are covered by their current budgets and will not incur any additional cost. The Secretariat continues to work with the partners to help them attract additional funding both during the life of SHARE and to extend its work beyond 2018.

Children use handwashing station in Kagera, Tanzania

Overview of partnership and delivery risks

Partnership risks are assessed through the filters of disengagement, project delivery and financial.

Disengagement: Risk Rating Low

Progress with the partners' research projects has increased meeting attendance as well as involvement in the specific partnership-based meetings held before the CAG twice a year. This engagement has also increased the amount of sharing and networking that has taken place among the partners. Key contracts were finalised during the year, which has also facilitated engagement.

Project delivery: Risk Rating Moderate

Progress on the research was slow during the start-up stages and the formative research. This latter activity has taken longer than expected by all partners; however, the benefits and insights that have accrued from it are improving the resultant research interventions. This has been a major learning point and has benefited from support from the capacity development team and the partnership network. The unexpected benefits have been exceedingly good, and will speed up the next stages of the research.

An exogenous issue affected two partners, the first being the lack of a suitably qualified pool of post-docs from which to draw applicants for a key role, and the second the closure of one institution for a period of five weeks. Both issues were resolved and work brought back on track in time for reporting.

Financial: Risk Rating Moderate

Monitoring and control of partner expenditure is maintained through milestone delivery and financial statements that record progress against invoices. The CEO's visits to partner institutions includes an assessment of financial and management governance, with the provision of support and training if necessary or requested. Required changes are discussed and implemented, such as the provision of a new cash book system for one partner's finance office.

Risk on delivering research in resource poor settings can fluctuate a great deal. Information by project has been recorded on the downstream partner mapping spreadsheet provided in Annex F.

Outstanding actions from risk assessment

- **Research Director** – providing support through appointing an Administrator was delayed due to grading issues. These were resolved in May, and recruitment is underway. In mitigation, a temporary appointment was made until recruitment is finalised.
- **Assessment of availability of research staff** took place during the July meetings with the partners and again during the Research Director and CEO's visits to Tanzania Malawi, Zambia and Kenya between October 2016 and May 2017. Updates were received at the June partners' meetings in Zambia. This pattern of monitoring research resources availability will continue, especially as we head towards the final year of SHARE's current activities.
- One outstanding risk from the last annual report is that of CB08, the **completion of the final PhD student from Phase I (Parimita Routray).** Progress has been made including the recent publication of a paper on her research topic, and she is scheduled to complete in August 2017.
- Significant risks are discussed with DFID as they arise.

F Commercial considerations

Delivery against planned timeframe

Programme progress is shown via the logframe and planned activities.

1. **Logframe:** Indicator milestones show SHARE's achievements within the year, and as a cumulative figure against targets set to ensure impact and effectiveness.

   Performance to date shows that SHARE is generally back on track after delays and challenges during the early part of Phase II.

2. **Planned activities:** These are almost exclusively contracted projects for research, RIU and capacity strengthening undertaken by the SHARE partners. Those currently showing against their milestones as being on track, or within 5% of their targets, are CIDRZ in Zambia, WaterAid in Tanzania and GLUK in Kenya. MEIRU/UNIMA in Malawi is 7% under target, which is an acceptable margin at this stage, and MITU in Tanzania is 33% under target.

   It should be noted that while MITU has had difficulties with recruiting its national coordinator, they are working well on their research projects and have contributed effectively to SHARE and the partnership. Their underperformance arises from the time taken to complete the contract paperwork for the national programme; this has caused a delay in their invoice submission claim for expenditure. MITU received its contract amendment paperwork in May, and has submitted its invoices, bringing it back on track. Due to the timing of SHARE's financial statement, MITU's expenditure will be included in the 2018 annual report.

Performance of partnerships

Partnership performance has improved significantly over the past year as the formative research has got underway. Meeting attendance increased from 89% to 91%, with 100% attendance at the face-to-face meetings that are held twice yearly, in Africa (mid-year) and London (in December). The partners have engaged further by changing the style of partnership meetings held before each CAG. These reflect the partners' drive to have more targeted individual and group sessions in which to discuss research activities and questions, and to have time with members of the Secretariat, including the Management Group, for problem solving.

Researchers visit the intervention site in Kisumu, Kenya

Asset monitoring and control

SHARE maintains an asset register in addition to that held by LSHTM. Most assets are small value items such as IT and office equipment; however, there are some larger assets located with partners, most notably a second-hand vehicle in use in India. Vehicles purchased directly by LSHTM are subject to annual checks covering their documentation, status and location to provide full insurance under LSHTM's policy.

The CEO checked and signed off the asset register for GLUK during her recent visit, and will do the same with the other partners during subsequent visits. All partners are required to dispose of their assets at the end of the programme, in line with DFID's general terms and conditions. SHARE's current asset register has been submitted to DFID.

G Conditionality

This section is not applicable. SHARE is a multi-country programme and does not provide funding through government systems.

H Monitoring and evaluation

Evidence and evaluation

2017 has been a year of consolidation for SHARE's approach to monitoring, evaluation and learning. SHARE continues to work to its MEL strategy, logframe and theory of change, seeking to take a reflexive and adaptive approach to MEL. This year SHARE has sought to add value to existing MEL systems by conducting a deeper analysis on areas such as gender and VfM.

SHARE has undertaken a logframe review to ensure it is fit for purpose and that targets remain both ambitious and achievable. This process addressed recommendations from the 2016 DFID annual review as well as CAG feedback and challenges relating to data collection that the M&E Officer identified in 2016.

SHARE has produced a series of Stories of Change to capture and better understand impacts from Phase I of the SHARE consortium. This approach was selected following a systematic phase of testing methodologies in communication with DFID and documented in SHARE's Impact paper. Stories of Change rigorously investigate how an intervention contributes to specific outcomes through looking at the pathways of expected or unexpected change. The approach involves analysing qualitative MEL data and gathering evidence to write a narrative story about the change. SHARE Stories of Change have built significantly on the success stories published in previous annual reports but have sought to take a systematic approach to integrate learning and to further quantify change.

The Stories of Change also include estimated indirect beneficiaries for each research theme. These figures use robust data from credible data sources, make reasonable estimates, include clear assumptions and are transparent about any calculations made.

The quarterly reporting system has ensured SHARE regularly receives monitoring data from partners and members of the SHARE Secretariat. This year SHARE has also launched consolidated quarterly reports that have been shared within the consortium to better communicate progress, challenges, successes and opportunities.

Monitoring progress throughout the review period

Key MEL activities and achievements during the review period include the following:

Strategic

- Reviewing and updating the Phase II logframe with input from the Management Group, CAG, partners, SHARE Secretariat and DFID
- Developing three Stories of Change capturing thematic progress from Phase I of SHARE and estimating indirect beneficiaries for these three thematic areas. We have also discussed further Stories of Change with DFID and more will be developed in the coming year
- Gaining deeper insight into gender as it relates to capacity development within SHARE through applying qualitative methods (see Annex J)
- Developing a monitoring framework for capacity development that synthesises partner capacity development strategies into measurable outcomes
- Working with each partner to develop VfM profiles looking at efficiency, effectiveness, economy and equity

Tools and systems

- Working with the RIU team to help partners review planned RIU activities for 2017 and incorporating these into outcome mapping documents
- Introducing outcome mapping reporting templates for all partners
- Refining and adapting quarterly reporting tools in response to partner feedback
- Introducing consolidated quarterly reports for improved internal communications
- Testing training event feedback tools using online and paper surveys, as appropriate for context
- Developing a lessons log and incorporating lessons learnt into quarterly reporting

Networking and engagement

- Attending learning events, including Bond MEL working group meetings and LSHTM seminars on MEL topics
- Giving presentations at events such as the What Works Global Summit as part of a panel discussion on SHARE's MEL approaches and a Development Study Group Women and Development workshop on monitoring gender in SHARE
- Increasing the presence of MEL on the SHARE website through a series of blogs reflecting on events and partner visits

Partner engagement and capacity development

- Providing direct outcome mapping support to GLUK, MEIRU/UNIMA, MITU and WaterAid through in-person visits
- Providing in-person induction to MITU's new RIU Coordinator on outcome mapping and SHARE's other MEL tools, in collaboration with the SHARE RIU team
- Giving ongoing remote support on outcome mapping, reporting and other MEL matters to all partners over the course of the year
- Creating a short outcome map for the rotavirus and vaccines project in collaboration with CIDRZ and SHARE's RIU team

MEIRU hosts a workshop on M&E and RIU for local stakeholders

Transparency

LSHTM operates to ensure transparency for the use of funds, particularly those of its donors. It has a system of internal and external audits, with large programmes such as SHARE being monitored closely. LSHTM operates a system for procurement of goods and services that requires quotations, purchase orders and multiple sign-off; additional procedures are put in place as the value of an item or service increases. Budget holders sign to say that they have conformed to LSHTM's policies and procedures.

SHARE's partner institutions have similar policies and procedures, and the CEO has visited all partners and discussed arrangements with the appropriate institutional managers. Each institution must submit with their invoices, the relevant output/deliverable and an authorised financial statement signed by the relevant signatory and bearing the institutional stamp. All terms and conditions imposed on SHARE by LSHTM and DFID are passed on to its partners, and to their subcontractors.

J Leave No One Behind

The SHARE programme was designed to contribute to the achievement of universal access to effective, sustainable and equitable sanitation and hygiene in sub-Saharan Africa and South Asia, for the benefit of the poorest populations in these regions. This aligns with and contributes towards Sustainable Development Goal (SDG) 6. SDG6 seeks to achieve adequate and equitable sanitation and hygiene access for all, noting that particular attention should be paid to the needs of women and girls as well as other vulnerable groups. The SDGs note that "water and sanitation are at the very core of sustainable development, critical to the survival of people and the planet" (UN, 2017).

SHARE recognises that inequality within countries increases the risk that marginalised groups may be systematically excluded from national development. SHARE continues to use its research and policy influencing work to prioritise the interests of the people most marginalised, and those most at risk of violence and discrimination.

Through high quality research on sanitation and hygiene, SHARE better informs those responsible for providing WASH services and financing such as policymakers and donors. SHARE produces targeted policy briefs that make evidence-informed recommendations for implementation, programming and further research. SHARE has recently produced policy briefs on menstrual hygiene management and micro-finance in WASH; both of these topics have direct implications for groups vulnerable to exclusion. As noted in Section C, Output 2, SHARE also presents at international and national conferences and fora to influence key policymakers, donors and international agencies.

SHARE's research includes and focuses on people marginalised by gender and disability as well as young children living in low income contexts with poor access to WASH and healthcare. As noted in Table 13 on VfM performance, all Phase II projects focus on equity by targeting vulnerable populations within their contexts. SHARE research characterises the situation using robust research methods and provides high quality evidence on the many links between WASH and health outcomes. For instance, our research highlighting the effect of WASH on child nutrition and vaccine efficacy can contribute to better health for young children living in low-income settings. This has the additional economic and social benefit of helping children to achieve their full potential later in life through fewer days lost from education. SHARE also contributes knowledge to improve hygiene in maternity wards, thereby reducing the risk of maternal and neo-natal mortality due to improved WASH and health practices.

The development of practical and useful toolkits and manuals also contributes to leaving no one behind. For example, SHARE contributes to improving the health and education of adolescent girls through the

ongoing use of its resources on good menstrual hygiene management in schools. SHARE's work has also highlighted discrimination against people marginalised by age and disability due to un-inclusive sanitation design and has suggested solutions for more equitable and appropriate sanitation hardware. Our research has highlighted the vulnerability of women in some contexts to gender based violence when using communal latrines or practicing open defecation. SHARE's toolkit on WASH and gender-based violence contributes towards protecting these groups.

Community meeting in Babati

K Digital

Digital technology

LSHTM operates a network of integrated financial, research and management applications for use by its staff and programmes; some of these such as secure data management services are also available to SHARE's partners. LSHTM's migration to more integrated services including cloud-based systems ensures secure accessibility for SHARE. SHARE's grant account is managed by LSHTM's finance office through Agresso, and costing is achieved through pFact, an approved TRAC programme used by many universities.

Additionally, SHARE partners use web-based technology for research data collection. For example, MEIRU/UNIMA use tablets with ODK (Open Data Kit) and GIS mapping for data collection and TeleForm systems for laboratory results to reduce paper-based data and time spent on inputting data. The systems also ensure data for households is linked and managed effectively to improve analysis. Other partners such as WaterAid also use ODK, and tablets for data collection to reduce time spent on inputting data and to improve analysis.

Using digital media for research uptake

SHARE's digital work continues to be a core component of its research uptake strategy. Four main types of digital platforms are used to communicate content to audiences: the SHARE website, newsletter, Twitter account and blog (embedded into the website). Information on SHARE's website can be found in Section C, Output 2.

Newsletter

SHARE's newsletter is produced every two months, and highlights major news, research updates, publications and events concerning the SHARE consortium. In the last reporting period, we have updated the template for the newsletter, giving it a fresh look to engage subscribers, and it can now be easily viewed on desktop or mobile devices, encouraging greater flexibility for readership.

Social media

SHARE continues to use social media, namely Twitter and blogs, to communicate content, engage in discussion and profile its work. The number of followers on Twitter has increased by 18.3% since the last reporting period, from 1,604 to 1,898. In addition, from July 2016 to April 2017, SHARE's tweets have had a combined estimated reach of 133,163 (defined on Twitter as the number of times 'a user is served a Tweet in timeline or search results'). SHARE's social authority figure on Twitter has also been maintained at 42.

SHARE ensures that social media is integrated into events, and this proved particularly successful for the Emergency Environmental Health Forum in November 2016. SHARE produced promotional content in the form of Twitter banners to promote the event, a hashtag used at the event (#EEHF2016) and a Storify to sum up the event's key takeaways. This Twitter engagement was very successful, and resulted in the hashtag trending on Twitter during the two-day event.

SHARE also has an active blog presence. In 2016, SHARE developed a guidance note for guest bloggers, a useful tool that has enabled others to contribute to our blog site. For example, for World Water Day, a former SHARE PhD student, Dr Prince Antwi-Agyei wrote a blog based on his research on wastewater use in Ghana. This piqued interest from a number of other outlets – LSHTM Alumni and WASHFunders requested to repost this article on their own blogs, and the Guardian also featured Dr Antwi-Agyei on an online panel for World Water Day. In addition, in early 2017, SHARE began to run a Q&A blog series called 'Researcher of the Month'. While serving as engaging reading for aspiring WASH researchers and practitioners, this series is a useful repository of information for the SHARE consortium.

SHARE's partners have also expressed an interest in using social media. WaterAid regularly uses social media channels and blogs to promote research. One partner (GLUK) has already set up a blog and Twitter account for the project, while another (MEIRU/UNIMA) has recently set up its own Twitter account with blog updates linked to the SHARE and WASHTED websites. Many partners have noted that social media could be a valuable tool for them to reach relevant stakeholders both within countries and internationally. However, challenges around the use of social media include the time required to curate engaging content, developing a consistent tone of voice and ensuring quality control.

Annex A: Logframe

Table 15: Programme logframe

<table>
<tr><th colspan="6">PROJECT TITLE Sanitation and Hygiene Applied Research for Equity (SHARE)</th></tr>
<tr><td>IMPACT</td><td>Impact Indicator 1</td><td>Targets</td><td>Baseline (2014 -2015)</td><td>Year 3</td><td>Assumptions</td></tr>
<tr><td rowspan="3">Accelerated progress towards universal sanitation and hygiene coverage in sub-Saharan Africa and South Asia</td><td rowspan="3">The annual number of people gaining access to improved sanitation in all SHARE focus countries.</td><td>Planned</td><td rowspan="2">Total: 10.9 million

India: 7.58 million
Bangladesh: 2.6 million
Malawi: 271, 601
Tanzania: 501, 990</td><td>Total: 75.8 million

India: 64 million
Bangladesh: 5.8 million
Malawi: 1.2 million
Tanzania: 4.8 million</td><td rowspan="8">Baseline for Impact Indicator 1 is the number of people gaining access to improved sanitation from 2014-2015 according to Joint Monitoring Programme data. The Year 3 target is based on WASHwatch's data on the total number of people in each country who would need to be reached annually to meet the SDGs relating to universal access by 2030. While these figures are ambitious, it is important for SHARE to align with global targets.

The original goal for impact in SHARE Phase I was to reduce the number of child deaths in the four focus countries by an annual amount, reaching 100,000 by 2015. In fact, under 5 deaths fell by about 459,000, roughly 4.5 times greater. This original goal has been taken as a starting point, and the 'planned' mortality rate adjusted to give similar rate reduction for the three years of the extension i.e. Phase I 100,000 in five years; Phase II, 60,000 in three years.

We do not expect research in Phase II to have immediate impact on child mortality, but we expect work from Phase I to have a continuing and increasing influence. For that reason, we maintain the original four focus countries and do not include Zambia and Kenya.

*Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to age-specific mortality rates of the specified year.</td></tr>
<tr><td>Achieved</td><td>This will be reported on in Year 3</td></tr>
<tr><td colspan="3">Source: Annual number of people gaining access to improved sanitation in each SHARE focus country according to data from UNICEF/WHO Joint Monitoring Programme. Targets based on global targets captured at WASHWatch.org</td></tr>
<tr><td></td><td>Impact Indicator 2</td><td>Targets</td><td>Baseline (June 15)</td><td>Year 3</td></tr>
<tr><td></td><td rowspan="3">Child (<5) mortality rate in all SHARE countries (# deaths/year)*</td><td>Planned</td><td rowspan="2">Bangladesh: 37.6
India: 47.7
Malawi: 64
Tanzania: 48.7</td><td>Bangladesh: 36
India: 46.1
Malawi: 60.4
Tanzania: 46.7</td></tr>
<tr><td>Achieved</td><td></td></tr>
<tr><td colspan="4">Source: Analysis of data from www.childinfo.org</td></tr>
</table>

OUTCOME	Outcome Indicator 1	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
National and global sector partners change the way they plan, implement or monitor in order to increase i) equitable access, ii) sustainability, and iii) cost-effectiveness of sanitation and hygiene	a) Amount of funds invested by other donors in research (£) b) invested in sanitation and hygiene projects influenced by SHARE (£)	**Planned**	a) £6.4 million in SHARE research b) £80.8 million in WASH investments	a) 0.25 million b) 0.5 million	a) 0.5 million (cumulative to Year 1) b) 2.5 million	a) £1.5 million (cumulative to Years 1 and 2) b) £7.5 million	a) Based on % of total investment calculated in targets for Phase I
		Achieved		a) £50,689 b) £703,254	**a) £904,000** **b) £5.6 million**		
		Source: Quarterly reporting, discussions with colleagues					
	Outcome Indicator 2	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	• Research into Use (RIU) activities influence progress markers. • Externalities, e.g. changes to national government policies are not viewed to be attributable to the project's interventions.
	Percentage of progress markers met by recipients of funding, as indicated in the outcome mapping document developed by each partner (number of progress markers may vary).	**Planned**	Unknown	20%	40% (cumulative to Year 1)	70% (cumulative to Year 1 and 2)	
		Achieved	N/A	15%	**33%**		
		Source: Partner reporting on outcome mapping activities; qualitative interviews with key boundary partners					
	Outcome Indicator 3	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	
	Percentage of capacity development outcomes met by recipients of funding, as indicated in the capacity building strategy documents prepared by partners.	**Planned**	Unknown	20%	40% (cumulative to Year 1)	70% (cumulative to Year 1 and 2)	
		Achieved	N/A	Information not available	**43%**		
		Source: Capacity development plans (agreed), capacity development matrix and qualitative partner interviews.					
INPUTS (£)	DFID (£)		Govt (£)	Other (£)	Total (£)	DFID SHARE (%)	
	£5,890,000		0	0	0		

OUTPUT 1	Output Indicator 1.1	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
SHARE builds new evidence and synthesises existing knowledge	1.1.1: Number of peer-reviewed publications on SHARE research 1.1.2: Number and percentage of first authors are from institutions in low and middle income countries (LIMCs) 1.1.3: Number and percentage of first female authors	**Planned**	1.1.1: 60 1.1.2: 27% 1.1.3: 35%	1.1.1: 65% 1.1.2: 40% 1.1.3: 40% (All cumulative to baseline)	1.1.1: 87 1.1.2: 30% 1.1.3: 45% (All cumulative to baseline + Year 1)	1.1.1: 106 1.1.2: 35% 1.1.2: 50% (All cumulative to baseline + Years 1 and 2)	• Assuming a basis of 60 publications from inception as baseline. • Year 2 and Year 3 targets build on the actual number of publications from Year 1: 77. • Publication targets for Year 2 and Year 3 are based on publication plans presented by partners in December 2016 and pending Phase I publications. • Publications and % of authors from low and middle income country (LMIC)/female authors will be reported against Phase I and Phase II. • 1.1.2 revised because it was not possible to meet previous targets unless an extremely high number of new publications produced; disaggregation for Phase I and Phase II will demonstrate progress on this. • Baseline for % of female authors and authors from institutions in LMICs calculated as mean of % from the last three annual reports (June 2013, 2014 and 2015).
		Achieved		1.1.1: 76 1.1.2: 20% 1.1.3: 43%	1.1.1: 91 1.1.2: 30% 1.1.3: 56%		
		Source: SHARE M&E systems and reporting from Principal Investigators and researchers					
	Output Indicator 1.2	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assuming an average increase of 40 views annually, based on Year 1/2016 data.
	1.2 Average number of cumulative views per SHARE journal paper from Research Online	**Planned**	Unknown	230	270	310	
		Achieved	**N/A**	230	**271**		
		Source: SHARE website data and Research Online data					
	Output Indicator 1.3	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Year 1 target is based on total number of citations in June 2015 (669) divided by total number of articles (59). Actual data in Year 1 was 13, Year 2 and 3 targets are based on an increase by 2 each year.
	Citations of SHARE I and II publications (expressed in average number per paper)	**Planned**	11	11	15	17	
		Achieved	N/A	13	**17.7**		
		Source: Bibliometrics, used by SHARE M&E Officer to get an overall average for full set of SHARE papers					

IMPACT WEIGHTING : 25%						
INPUTS (£)	DFID (£)		Govt (£)	Other (£)	Total (£)	DFID SHARE (%)
	£3,419,339		0	0	0	

OUTPUT 2	Output Indicator 2.1	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
SHARE disseminates and communicates research to encourage uptake of policy and programming	Percentage of RIU activities completed by funding recipients in their outcome mapping documents	**Planned**	Unknown	30%	50%	80%	• Outcome maps are agreed and fully understood by research partners with appropriate time horizons. • RIU activities are appropriate. • Research timelines move according to schedule • Relevant stakeholders are identified and prioritised in the outcome map.
		Achieved	N/A	62% (3 partners)	**55%**		
		Source: Partner reporting on outcome mapping activities; qualitative interviews with key boundary partners					
	Output Indicator 2.2	**Targets**	**Baseline (June 15)**	**Year 1**	**Year 2**	**Year 3**	Assumptions
	2.2.1: Number of attendees at SHARE knowledge sharing events (including disaggregated at gender level) 2.2.2: Number and percentage of attendees of those events that report they found them to be useful in improving their knowledge 2.2.3: Number of external events using SHARE resources	**Planned**	2.2.1: 848 (of which female 268; 52%*) 2.2.2: Unknown 2.2.3: Unknown	2.2.1 300 2.2.2 30% 2.2.3 No target	2.2.1: 600 2.2.2: 80% 2.2.3: No target	2.2.1: 600 2.2.2: 90% 2.2.3: No target	• Enough events will be convened and attendance at these events can be feasibly tracked. • Relevant, practical and insightful event monitoring processes can be put in place. • Enhancing knowledge is core to the purpose of the event(s) for which attendee numbers are monitored. • No target is set for 2.2.3 as this is not something that SHARE is trying to influence but is a positive externality of the project that SHARE will aim to monitor and measure. *This percentage represents events for which gender disaggregated data was available (it was not available for all events).
		Achieved		2.2.1 657 2.2.2 98% 2.2.3 1	**2.2.1: 2,629 (37% women)** **2.2.2: 100%** **2.2.3: 3**		
		Source: List of attendees of SHARE events; event feedback forms/ interviews with attendees; information from SHARE partners about external events, word of mouth					

	Output Indicator 2.3	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
	Number of recipients of SHARE technical assistance;	**Planned**	29	10	10	10	• The information can be analysed and aggregated. • This will be supported by a qualitative analysis of the applications of any technical assistance and any feedback given by recipients will be captured.
		Achieved		7	**10**		
		Source: Log of requests for technical advice in SHARE M&E systems, qualitative analysis of recipient feedback/application of technical advice					
	Output Indicator 2.4	**Targets**	**Baseline (June 15)**	**Year 1**	**Year 2**	**Year 3**	**Assumptions**
	2.4.1: Number of translational outputs arising from SHARE research, as indicated in the list of content types on the resource pages of SHARE website. (Translational outputs include: policy briefs, reports, toolkits, posters, presentations, podcasts) 2.4.2: Average monthly number of views of SHARE website	**Planned**	2.4.1: 80 reports and manuals, 83 media outputs 2.4.2: 2,666	2.4.1: 10 2.4.2: 3,000 (annual target)	2.4.1: 64 (cumulative to Year 1) 2.4.2: 3,000 (annual target)	2.4.1: 94 (cumulative to Years 1 and 2) 2.4.2: 3,000 (annual target)	• In 2017 Year 2 and Year 3 targets for 2.4.1 2 were revised and increased based on the Year 1 number of translational outputs which was 34. • SHARE can effectively track and monitor webpage views.
		Achieved		2.4.1: 34 2.4.2: 3,261	**2.4.1. 69 (cumulative)** **2.4.2: 3,395**		
		Source: Website data, reported by SHARE RIU Officer					
IMPACT WEIGHTING: 25%							
INPUTS (£)	**DFID (£)**		**Govt (£)**	**Other (£)**	**Total (£)**	**DFID SHARE (%)**	
	£870,752		**0**	**0**	**0**		

OUTPUT 3	Output Indicator 3.1	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
SHARE develops the capacity of key stakeholders in the WASH sector and other related sectors	3.1.1: Number of attendees at SHARE training sessions (disaggregated at gender level) 3.1.2: Number and percentage of those attendees that report using at least one aspect of the training in their day-to-day work at least one month after completing the training	Planned	3.1.1: 491 (SHARE 1) 3.1.2: Unknown	3.1.1 - 50 3.1.2 - 15%	3.1.1: 80 (cumulative to Year 1) 3.1.2: 40%	3.1.1: 110 (cumulative to Years 1 and 2) 3.1.2: 70%	• SHARE can effectively follow up with individuals/ organisations after events. • There will be a high number of non-replies and courtesy replies, and that we will not always have contact details for all attendees. • Assumption that there will be a level of responder bias.
		Achieved		3.1.1 - 43 3.1.2 - Data not available	**3.1.1: 234 (42% women)** **3.1.2: 83%**		
		Source: Event register and qualitative survey/interviews with training attendees					
	Output Indicator 3.2	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	
	Number and percentage of research partners reporting that their experience working with SHARE has developed their research capacity	Planned	Unknown	45%	65%	80%	
		Achieved	n/a	Data not available	**100% (4/4)**		
		Source: Interviews with principal investigators and researchers about capacity development.					
	Output Indicator 3.3		Baseline (June 15)	Milestone 1	Milestone 2	Target (date)	
	Number and percentage of SHARE-supported postgraduate students who gain employment in a WASH-relevant role sector post-graduation	Planned	Unknown	20%	60%	80%	
		Achieved	n/a	67% (4/6)	**83% (5/6)**		
		Source: Follow up with alumni by email					
IMPACT WEIGHTING: 25%							
INPUTS (£)	DFID (£)		Govt (£)	Other (£)	Total (£)	DFID SHARE (%)	
	£999,972		0	0	0		

OUTPUT 4	Output Indicator 4.1	Targets	Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
The SHARE consortium is efficiently and effectively managed.	Percentage satisfaction of SHARE executive group member engagement in planning and decision making.	Planned	Unknown	50% (annual target)	70% (annual target)	80% (annual target)	• A relevant feedback instrument (survey) can be designed, analysed and reported against. • Partners will feel comfortable providing feedback to SHARE Secretariat. • The contents of the survey is relevant to partners.
		Achieved	N/A	67%	**80%**		
		Source: Annual Survey to representatives of partner organisations and SHARE national coordinators and qualitative discussions.					
	Output Indicator 4.2		**Baseline (June 15)**	**Year 1**	**Year 2**	**Year 3**	**Assumptions**
	Number and percentage of research coordinators attending SHARE executive group meetings	Planned	89%	90% (annual target)	90% (annual target)	90% (annual target)	• Full/high participation is deemed relevant at executive group meetings. • Audio/video conferencing systems are effective.
		Achieved		81%	**91%**		
		Source: Minutes of meetings					
	Output Indicator 4.3		**Baseline (June 15)**	**Year 1**	**Year 2**	**Year 3**	**Assumptions**
	Percentage of agreed Consortium Advisory Group (CAG) recommendations that are addressed within 3 months	Planned	Unknown	100%	100%	100%	• Recommendations are captured in CAG meeting minutes. • Follow-up actions and responses are documented and the M&E Officer is able to get this information from the SHARE Management Group and partners.
		Achieved		76%	**100%**		
		Source: Dissemination of CAG minutes, recommendations, decision log, email correspondence					

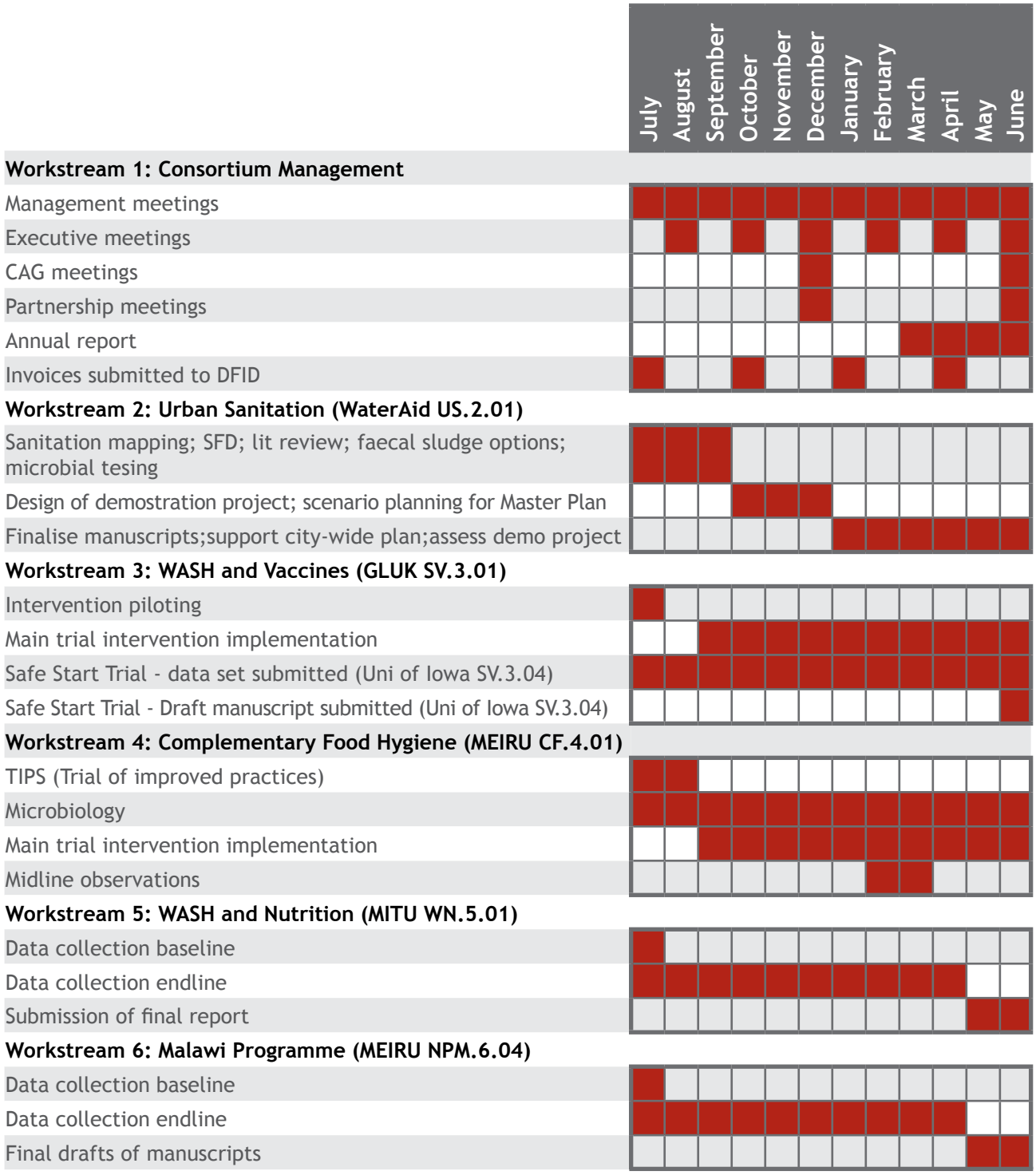
	Output Indicator 4.4		Baseline (June 15)	Year 1	Year 2	Year 3	Assumptions
	% of invoice expenditure against forecast programme expenditure	Planned	Unknown	25%	29% (cumulative target)	33% (cumulative target)	
		Achieved	N/A	No data - new indicator	**29%**		
		Source: Data from LSHTM finance system: Agresso					
IMPACT WEIGHTING: 25%							
INPUTS (£)	DFID (£)		Govt (£)	Other (£)	Total (£)	DFID SHARE (%)	
	£999,972		0	0	0		

Annex B: Financial documents

The audited financial statements for LSHTM are available on the SHARE website.

Annex C: Forward work plan

Figure 4: Workplan July 2017 - June 2018



Workstream 7: Tanzania Programme (MITU NPT.7.01)	
Data collection baseline	
Data collection endline	
Submission of final report	
Workstream 9: Capacity Development	
Unicef Evidence based WASH practice course	
Delivery of partner capacity building plans	
SHARE Fellows contribution and support	
Workstream 9.01: Monitoring and Evaluation	
Quarterly reporting	
Outcome mapping/RIU workshops with partners	
Develop Stories of Change	
Annual report development	
Workstream 10: Research Into Use	
Dissemination at conferences	
Policy brief and report development and dissemination	
Website updates, Twitter, newsletter	
Workstream 11: Rotavirus Vaccine (CIDRZ SA.11.01/SA.11.06)	
Analysis of Baseline	
Intervention roll out and monitoring	
Endline Data Collection and analysis	
Dissemination	
Final Report	
Publications	

Annex D: Asset register

SHARE's asset register has been submitted directly to DFID.

Annex E: List of outputs

Research outputs in brief

Table 16: Research outputs in brief

Indicators and definitions	N	Notes
Published research outputs	36	Please see Section C, Output 2 for extensive detail on SHARE's translational outputs.
Peer reviewed publications	13	
Peer reviewed publications which comply with DFID Open Access policy	12	One publication is currently not open access and this is being addressed.
Peer reviewed publications with a Southern researcher as the primary author	10	Of these Southern researchers, five were men and five were woman.
Peer-reviewed publications explicitly addressing gender issues or women/girls	4	This includes one paper on an intervention to improve food hygiene behaviours among mothers of young children in rural Nepal, one on women's participation in sanitation decision making in rural India and one on incontinence that pays specific attention to the needs of women and girls. The Tanzania national sanitation campaign process evaluation also covers the specific sanitation needs of adolescent girls in schools.
Data sets made openly and freely available to external researchers	0	No data sets are finalised yet.
Provide detail on the uptake of publications	n/a	Please see Section C, Output 2 for extensive detail on the uptake of SHARE's research.

Technologies

Table 17: Technologies

Indicators and definitions	N	Notes
New technologies/products released or, where required, achieving regulatory approval	0	Not applicable to SHARE
Technologies halted during development stages	0	Not applicable to SHARE

Annex F: Downstream partner mapping

Table 18: Downstream partner mapping

Tier 1 Partners: signatories of a funding arrangement with DFID										
Project Code	Project Name	Programme Summary	Project dates	Country	Total programme budget	Total DFID budget	Partner name	Partner role	Partner allocated funds	Partner risks
ITDCHA23	SHARE PHASE I	SHARE seeks to contribute to achieving universal access to effective, sustainable and equitable sanitation and hygiene by generating, synthesising and translating evidence to improve policy and practice worldwide.	20/01/10 - 19/01/15	Multiple countries	£10,000,000	£10,000,000	London School of Hygiene & Tropical Medicine (LSHTM)	Consortium lead		
ITDCHA23	SHARE PHASE II	SHARE seeks to contribute to achieving universal access to effective, sustainable and equitable sanitation and hygiene by generating, synthesising and translating evidence to improve policy and practice worldwide.	20/01/15 - 31/12/18	Multiple countries	£5,890,000	£5,890,000	London School of Hygiene & Tropical Medicine (LSHTM)	Consortium lead	£3,535,756	Moderate: Challenges come from the lack of resources within many of the partner institutions, as well as the research sites. While many difficulties can be anticipated and alternative plans made, political, institutional and geographical risks are likely to impede one or more of the parter projects at some time. First hand knowledge of the partners and the research sites helps in responding appropriately to exogenous events.

Tier 2 Partners: partners who receive funding directly from Tier 1 partners									
Project Code	Project Name	Project Summary	Project dates	Country	Partner name	Partner role	Partner allocated funds	Partner risks	Project risks
SA.11.01	Rotavirus vaccine & Environmental Enteric Dysfunction	Comprehensive evaluation of diarrhoea among child populations in Zambia who have been immunized with the rotavirus vaccine.	11/05/15 - 31/12/18	Zambia	CIDRZ	CIDRZ are the principal investigators leading the project.	£179,568	Minor: The partner has good expertise for this project.	Moderate: Potential exogenous issues for sample analysis and supplies.
SA.11.06	SanDem	Study to determine how far a state-of-the-art approach to behaviour change can enhance demand for & acquisition of improved toilets in peri-urban informal settlements in Bauleni Compound, Lusaka.	11/05/15 - 31/12/18	Zambia	CIDRZ	CIDRZ are the principal investigators leading the implementation of the project.	£181,476	Minor: The partner has good mechanisms for buying expertise where needed, and managing projects.	Moderate: Working with multiple external teams can lead to increased time costs.
SA.11.06	SanDem	Study to determine how far a state-of-the-art approach to behaviour change can enhance demand for & acquisition of improved toilets in peri-urban informal settlements in Bauleni Compound, Lusaka.	11/05/15 - 31/12/18	Zambia	LSHTM	Co- PI plus a small team of specialist behaviour change researchers based outside SHARE.	£78,936	Minor	Moderate: Issues from working with creative agencies has led to re-budgeting of time and travel.
SV.3.01	Safe Start	Design, implement & evaluate the impact of a novel hygiene intervention targeting caregivers of children at six months of age on enteric infections & growth faltering in low-income settlements, Kisumu.	26/06/15 - 31/12/18	Kenya	GLUK	GLUK are the principal investigators leading the research and implementation of the project.	£328,169	Moderate: Partner is under resourced at the university level. Support given by SHARE CEO.	Moderate: Recent exogenous delays are being resolved. Project being supported by LSHTM resesarchers.
SV.3.02	Safe Start	Design, implement & evaluate the impact of a novel hygiene intervention targeting caregivers of children at six months of age on enteric infections & growth faltering in low-income settlements, Kisumu.	26/06/15 - 31/12/18	Kenya	LSHTM	Co-PI plus a small team of specialist social science researchers based outside SHARE.	£92,146	Minor	Moderate: Use of community health workers has advantages and disadvantages. Issues of working in resource poor, peri-urban areas have to be managed daily.

SV.3.04	Safe Start	Design, implement & evaluate the impact of a novel hygiene intervention targeting caregivers of children at six months of age on enteric infections & growth faltering in low-income settlements, Kisumu.	01/03/17 - 31/12/18	Kenya	University of Iowa, USA	Supervision of environmental & microbiology analysis. Advising on establishment of a basic permanent lab at GLUK.	£136,676	High: Contract negotiation was a protracted process and nearly collapsed. Difficulties of contracting USA universities is not unusual.	High: Samples to be stored and shipped to the USA. Multiple exogenous issues can arise. Mitigation for key delays points have been agreed with GLUK.
CF.4.01	WASH and Hygiene of Weaning Foods	Study to determine relative effectiveness of food hygiene & WASH interventions in preventing diarrhoeal disease in under-fives in Chikwawa District.	17/12/15 - 31/12/18	Malawi	MEIRU/ UNIMA	MEIRU are the principal investigators and leading the implementation of the project.	£526,647	Moderate: Difficulties can arise when internal experts or services become unavailable due to demands from other projects. The SHARE Research Director supports when required.	Moderate Mitigation of issues has been effective over the past seven months.
WN.5.01	Mikono Safi	Study to assess the effectiveness of a behaviour change intervention promoting hand washing with soap, in reducing both prevalence and infection intensity of Soil-Transmitted Helminths (STH).	27/05/15 - 31/12/18	Tanzania	MITU	MITU are the principal investigators and leading the implementation of this project	£371,757	Minor: MITU is supported by NIMR and LSHTM.	Moderate: Earthquake in Oct 2015 caused structural damage to one study site increasing time and internal costs. Sufficient reparation has taken place to support the project.
WN.5.02	Mikono Safi	Study to assess the effectiveness of a behaviour change intervention promoting hand washing with soap, in reducing both prevalence and infection intensity of Soil-Transmitted Helminths (STH).	27/05/15 - 31/12/18	Tanzania	LSHTM	Specialist social science researcher based outside SHARE. Formative research and intervention analysis	£34,512	Minor	Moderate: General issues of working in schools, with limited resources. Mitigation carried out to prevent theft of handwash stations.
WN.5.03	Mikono Safi	Study to assess the effectiveness of a behaviour change intervention promoting hand washing with soap, in reducing both prevalence and infection intensity of Soil-Transmitted Helminths (STH).	01/06/16 - 01/05/17	Tanzania	Sarah Rockowitz, 1150 E Placita Rana, Tucson, AZ 85718, US	Consultant. Social scientist working on formative research and intervention.	£15,125	Moderate: Young researcher working with limited resources in the field.	Moderate: General issues of working in schools, with limited resources. Mitigation carried out to prevent theft of handwash stations.

US.2.01 & US.2.02	Babati Project	Produce a town-wide sanitation & hygiene plan to inclusive & sustainable sanitation services for all; understand how to achieve universal access to sanitation in urban area; demonstrate conditions under which municipalities & citizens co-produce & implement inclusive & sustainable town-wide sanitation plan.	08/05/15 - 31/12/18	Tanzania	WaterAid Tanzania	WaterAid are the principal investigators and leading the implementation of this project.	£215,290	Minor: Well-resourced international charity with considerable experience in the field.	High: The research is primarily being driven by NM-AIST putting the partner at risk. Mitigation was discussed and is in place. Support provided by the SHARE Research Director and WaterAid UK.
NPM.6.01	Malawi National Programme	Support for the National Coordinator in Malawi.	17/12/15 - 31/12/18	Malawi	University of Strathclyde, UK	Support for the role of national coordinator to manage RIU, and to support research in country.	£76,000	Minor	Minor: Experienced international senior researcher.
NPM.6.01 & NPM.6.04	Malawi National Programme	Programme to support WASH sector activities within Malawi and provide role security to develop the programme.	17/12/15 - 31/12/18	Malawi	MEIRU/ UNIMA	Develop a programme to support WASH sector research& activities within Malawi and provide role security for sustainability.	£350,000	Moderate: Partner is supported through WASHTED.	Moderate: Time delays caused by contracting and research priorities.
NPT.7.01 & NPT.6.03	Tanzania National Programme	Programme to support WASH sector activities within Tanzania and provide role security to develop the programme.	27/05/15 - 31/12/18	Tanzania	MITU	Develop a programme to support WASH sector research& activities within Tanzania and provide role security for sustainability.	£330,000	Minor: MITU is supported by NIMR and LSHTM.	Moderate: Delays due to very small pool of suitable candidates for key roles. Recently resolved and being monitored.
NPT.7.04	Tanzania National Programme	Gendered WASH vulnerabilities in southern Tanzania: Psychosocial stress in Iringa.	01/09/16 - 30/06/18	Tanzania	LSHTM	Social science formative research.	£21,865	Minor	Moderate: General issues of working in resource poor settings.
NPT.7.06	Tanzania National Programme	Gendered WASH vulnerabilities in southern Tanzania: Psychosocial stress in Iringa.	01/09/16 - 30/06/18	Tanzania	Johns Hopkins University, USA	Social science formative research.	£24,059	Moderate: USA university, contract negotiation.	Moderate: General issues of working in resource poor settings.
CD.9.02b & CD.9.08	CIDRZ Capacity Development	Capacity development plan	11/05/15 - 31/12/18	Zambia	CIDRZ	Support for development projects and activities.	£44,760	Minor	Minor: Activities well progressed.
CD.9.02d & CD.9.07	GLUK Capacity Development	Capacity development plan	26/06/15 - 31/12/18	Kenya	GLUK	Support for development projects and activities.	£40,000	Moderate	Moderate: Time pressures may delay completion.

CD.9.02e & CD.9.05	MEIRU/UNIMA Capacity Development	Capacity development plan	17/12/15 - 31/12/18	Malawi	MEIRU/ UNIMA	Support for development projects and activities.	£40,000	Moderate	Moderate: Progressing but experience time pressures.
CD.9.02e & CD.9.05	MITU Capacity Development	Capacity development plan	27/05/15 - 31/12/18	Tanzania	MITU	Support for development projects and activities.	£40,000	Minor	Moderate: New staff may create short term delays.
RIU.10.18	GLUK Outcome Mapping	Capacity development for RIU including outcome mapping	26/06/15 - 31/12/18	Kenya	GLUK	Support for development of RIU/OM activities	£27,270	Moderate	Moderate: Progressing but experience time pressures.
RIU.10.19	CIDRZ Outcome Mapping	Capacity development for RIU including outcome mapping	11/05/15 - 31/12/18	Zambia	CIDRZ	Support for development of RIU/OM activities	£15,560	Minor	Minor: Activities progressing.
RIU.10.21	WaterAid Outcome Mapping	Capacity development for RIU including outcome mapping	08/05/15 - 31/12/18	Tanzania	WaterAid Tanzania	Support for development of RIU/OM activities	£19,984	Minor	Moderate: Progressing with support.

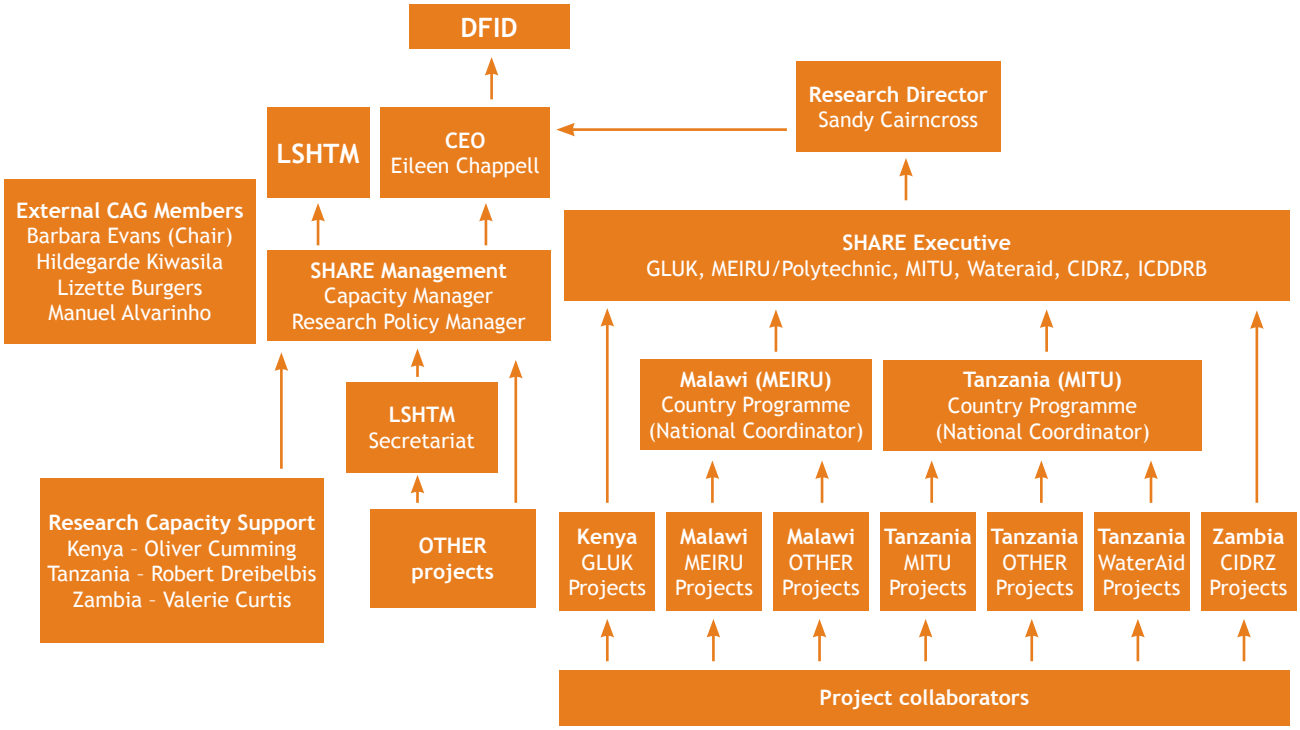
3rd Tier partners: partners who receive funding from Tier 2 partners									
Project Code	Project Name	Project Summary	Project dates	Country	Partner name	Partner role	Partner allocated funds	Partner risks	Project risks
CF.4.01	WASH and Hygiene of Weaning Foods	Study to determine relative effectiveness of food hygiene & WASH interventions in preventing diarrhoeal disease in under-fives in Chikwawa District.	17/12/15 - 31/12/18	Malawi	College of Medicine, University of Malawi	Laboratory and data management services	£40,688	Moderate	Moderate: Mitigation of issues has been effective over the past seven months.
WN.5.01	Mikono Safi	Study to assess the effectiveness of a behaviour change intervention promoting hand washing with soap, in reducing both prevalence and infection intensity of Soil-Transmitted Helminths (STH).	27/05/15 - 31/12/18	Tanzania	National Institute for Medical Research, Dar es Salaam, Tanzania	Dr Safari Kinunga is a co-investigator on the project	£16,884	Moderate	Minor: Senior researcher with specialist sector and local knowledge, well known to the research team at MITU.
US.2.01	Babati Project	Produce a town-wide sanitation & hygiene plan to inclusive & sustainable sanitation services for all; understand how to achieve universal access to sanitation in urban area; demonstrate conditions under which municipalities & citizens co-produce & implement inclusive & sustainable town-wide sanitation plan	08/05/15 - 31/12/18	Tanzania	Nelson Mandela African Institute of Science and Technology, Tanzania	Nelson Mandela are providing researchers and methodological expertise	£288,384	Moderate	High: Potential for delays due to lack of some technical expertise. Specialist support and capacity development is on-going to secure the research activities and institutional management.

Annex G: Governance

The governance structure was agreed by the Consortium Advisory Group on 15 December 2016. This section summarises eligibility for inclusion in the main governance groups, and key responsibilities:

- **Consortium Advisory Group (CAG):** The CAG currently has four external experts from the WASH and international development sectors. It also includes SHARE's DFID Adviser Anna Nileshwar and the Research Director Sandy Cairncross. The CEO is an *ex officio* member.
- The CAG reviews progress against milestones, and advises on research, financial and governance issues, and provides a panel of experts to support partners as required, for example, Barbara Evans of Leeds University is currently helping WaterAid Tanzania with research methodology.
- **Management Group:** The Management Group consists of the Policy Research Manager, Capacity Development Manager, Research Director and Chief Executive Officer (CEO). They are responsible for daily management and delivery of all aspects of SHARE plus final sign-off on the key budgets. They receive reporting from the partners and support their research, research-into-use, capacity development and management. The group currently has a London School of Hygiene & Tropical Medicine (LSHTM) faculty member observer.
- **Executive Group:** The Executive Group has one voting representative from each partner plus the Management Group and is responsible for decision making on research and management. The CEO or Research Director can vote on decisions as the representative of LSHTM. Meetings are also attended by key partner staff and the LSHTM Secretariat.
- **Secretariat:** The Secretariat is made up of SHARE LSHTM staff who support the partners and the Management Group, they are the Monitoring and Evaluation Officer, Research Uptake Officer, Finance Officer and Administrator. The Secretariat also includes the CEO, Research Director, Policy Research Manager and the Capacity Development Manager.
- **Research Capacity Support:** This group consists of three academic specialists from the Environmental Health Group in LSHTM who are working with CIDRZ, MITU and GLUK. All provide research capacity support on demand by working with the partners through their projects. The Research Director is supporting MEIRU/UNIMA and WaterAid Tanzania.

Figure 5: Governance diagram



Annex H: Infographics

Cities of Tomorrow: Universal Access to Sanitation and Hygiene Services in Tanzania

Achieving universal access to adequate, sustainable and equitable sanitation and hygiene services in Babati, Tanzania.

The situation
More than half of Tanzania's urban population do not have access to improved toilets

What we want to know
How can universal access to sanitation and hygiene be better achieved in urban areas?

Research: Phase 1
Qualitative and quantitative data collection

What we'll study
1. Motivations & drivers for urban households
2. Motivations & drivers for policymakers, donors & private sector
3. Main economic, social & political determinants of success
4. Risks for sanitation & hygiene behaviour change

Research: Phase 2
Participatory planning process
Identify scenarios to be included in town-wide plan

Outputs
Policy briefs; Peer-reviewed papers; Town-wide sanitation and hygiene plan

Relevance
Identifying pathways to town-wide sanitation and hygiene, and conditions for scale up

Find out more
www.shareresearch.org

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The Sanitation and Hygiene Applied Research for Equity (SHARE) consortium contributes to achieving universal access to effective, sustainable and equitable sanitation and hygiene by generating, synthesising and translating evidence to improve policy and practice worldwide.

WaterAid

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Mikono Safi: Reducing Helminthic Infections through Handwashing in Tanzania

Integrating sustainable hygiene behaviour change with deworming to control soil transmitted helminths in schools in Kagera, Tanzania.

The situation

25% of school children in Kagera have soil-transmitted helminths (STH)

What we want to know

How effective is a school-based behaviour change intervention in changing handwashing behaviour to reduce infections?

Research: Phase 1

Formative research

Design intervention

What we'll measure

1. Effect of intervention on STH infection
2. Prevalence of infection after deworming
3. Self-reported hand-washing behaviour
4. Prevalence of worm eggs retrieved from hands
5. Prevalence of hookworm infection

Research: Phase 2

Cluster RCT:
7 primary schools receiving intervention and 7 acting as a control

Outputs

Information on efficacy, acceptability & sustainability of intervention;
Protocol for subsequent trial

Relevance

Positive results could lead to rolling out the intervention in other schools in NW Tanzania

Find out more

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MITU

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Safe Start Trial: Preventing Enteric Infections in Young Children in Kenya

Assessing how effective an early childhood hygiene intervention is on enteric infections and growth faltering in Kisumu, Kenya.

The situation
Children living in areas with poor WASH infrastructure are at risk from repeated enteric infections, which are also associated with poor growth

The context
High-density informal settlements in Kisumu, Kenya

What we want to know
How effective is a household intervention targeted at caregivers of young infants in improving healthy hygiene behaviours?

Research: Phase 2
Cluster RCT: children enrolled at 3 months and followed until 18 months in 2 informal neighbourhoods

Research: Phase 1

Evaluation/Trial
Design and testing of candidate interventions

Formative/Design
Understanding infant exposures, infant caregiving practices and Community Health Volunteer routines & capacity

What we'll measure
1. Prevalence & intensity of enteric infections in infants
2. Self-reported hygienic behaviour

Outputs
Training guidance for health extension workers; Policy & practice briefing notes; Journal papers

Relevance
Generate local and globally generalisable evidence about how to design infant health interventions for unplanned urban settlements

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San-Dem: Creating Demand for Sanitation in Zambia

Assessing whether behaviour change approaches can increase demand for improved toilets without improving supply in peri-urban informal settlements in Lusaka, Zambia.

The situation
70% of the urban population live in informal settlements, where hygiene is poor

What we want to know
Can behaviour change enhance demand for and acquisition of improved toilets in peri-urban informal settlements?

Research: Phase 1
Design intervention (Behaviour Centred Design methodology)

What we'll measure
1. Proportion of households that improve motivation to acquire a toilet
2. Proportion of households that acquire an improved toilet

Research: Phase 2
Cluster RCT: 916 households recruited (50% intervention, 50% control)

Outputs
Journal papers; Policy brief on urban sanitation demand creation

Relevance
Offers a creative sanitation intervention that can be scaled nationally

Find out more
www.shareresearch.org

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The Sanitation and Hygiene Applied Research for Equity (SHARE) consortium contributes to achieving universal access to effective, sustainable and equitable sanitation and hygiene by generating, synthesising and translating evidence to improve policy and practice worldwide.

CIDRZ

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Sanitation-Related Psychosocial Stress: Women's Sanitation Vulnerabilities in Southern Tanzania

Understanding the gendered impacts of inadequate water and sanitation services on women and girls

1. The situation

Contrained or insecure access to sanitation and water infrastructure can compromise women's safety, privacy and dignity, resulting in acute and chronic **stress and reduce mental and physical well-being.**

2. The context

Urban and rural settlements in **Iringa, Tanzania**.

3. What we want to know

What is the **impact of inadequate and/or constrained access to water and sanitation** on psychosocial stress, and well-beling?

5. Testing and Ranking Phase

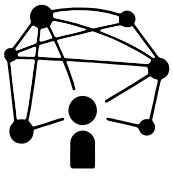
The emerging conceptual model will be tested among the research population through a survey of 500 women and girls aged 14-65.

4. Conceptual Phase

Qualitative data will be gathered on household stress, sanitation practices and challenges and water security through **60 in-depth interviews**, to understand context-specific determinants for sanitation-related psychosocial stress (SRPS).

6. What we'll measure

Through the integration of in-depth qualitative research & survey methods, we propose to adapt standard measures of sanitation-related psychosocial stress and water insecurity and assess relationships with international standard measures of psychosocial stress and quality of life.



7. Relevance

This research will shed light on how sanitation and water vulnerabilities **experienced by women and girls in southern Tanzania** and will be published in a peer-reviewed journal and in accessible policy briefs.

WASH and Vaccines: A Comprehensive Evaluation of Diarrhoea Among Rotavirus Immunized Child Populations in Zambia

Understanding the role of pathogens on oral vaccine failure

1. The situation

Diarrhoea is the second leading cause of child deaths globally, and rotavirus is known to be the single most important cause. However, routine immunisation against rotavirus has had relatively poor performance in high-burden countries, where successful vaccination is needed the most.

2. The context

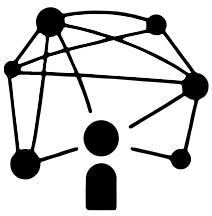
CIDRZ is situated at the forefront of diarrhoeal surveillance research in Zambia, and will be conducting laboratory tests with samples from children under 5 in Lusaka Province.

3. What we want to know

How effective is the rotavirus vaccine in reducing rotavirus prevalence? How does environmental enteric dysfunction (EED) affect rotavirus vaccine immunogenicity?

4. Study Design: cross-sectional study

The study will test over 2000 stool samples of Zambian children under 5 years old who presented to health facilities with diarrhoea and use 142 stored serum samples. First, we will chart the aetiology of diarrhoea following introduction of the rotavirus vaccine, and the prominence of Rotavirus within that. Second, we will measure the prevalence of stool and serum markers of EED and evaluate how these affect rotavirus immunogenicity.



5. Relevance

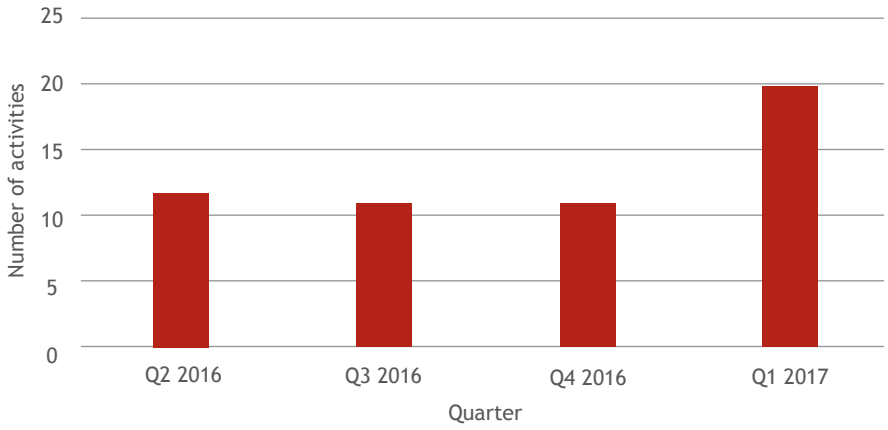
Improving vaccine efficacy is of vital importance for communicable disease control. This study will improve the global evidence base on live oral vaccine performance and contribute towards a greater understanding of the role of gastro-intestinal health as a driver of vaccine efficacy.

Annex I: Outcome mapping

During the reporting period SHARE partners have been working from their respective outcome mapping documents as an RIU planning and monitoring tool. We have seen strong and continually improving progress towards meeting the Year 2 target of 40% of progress markers met, with some delays due to changes in the research timeframe and resourcing of RIU staff (MITU).

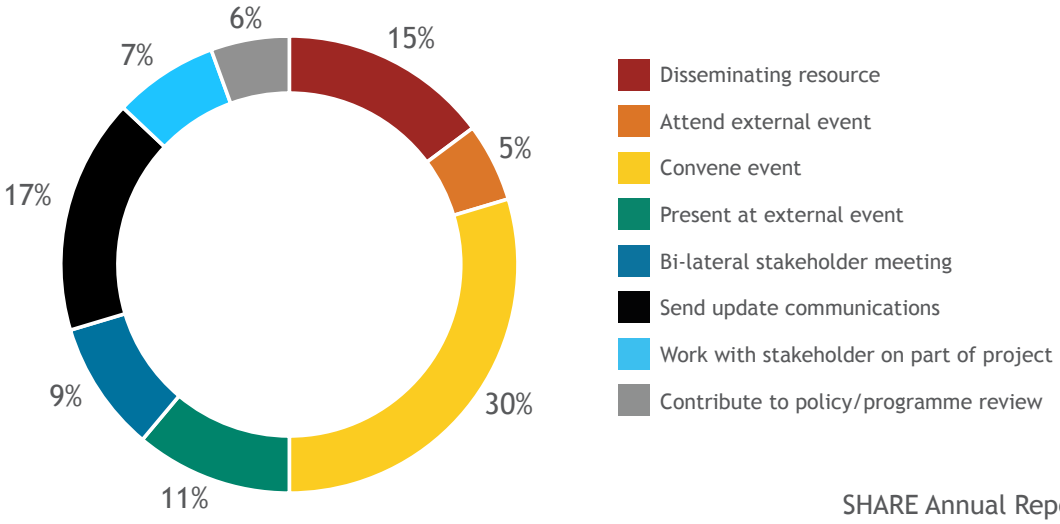
Figure 6 demonstrates that RIU activities have increased over the year since June 2016, as formative research findings have been finalised. Engagement of stakeholders for uptake is of course inseparably linked to research progress. With the research projects now continuing to progress at pace, this upward trend is likely to continue, as some of the partners begin to publish their formative work and engage national stakeholders further on their findings. Presentation of findings is also planned at several global conferences.

Figure 6: SHARE RIU activities, Q2 2016 to Q1 2017 (n=54)



SHARE partners completed 55% of their planned RIU activities for 2016 and 2017. Figure 6 shows the range of activities carried out during the year, with the most frequent being convening events, sending updates to stakeholders and disseminating resources.

Figure 7: SHARE RIU activities by type, 2016 (N=54)



Partner highlights include:

- CIDRZ shared formative research results with stakeholders including the Ministry of Health, who is particularly interested in the approach to behaviour change and how this might feed into its strategies. It also engaged closely with the area member of parliament for Lusaka Central who assigned a representative from the constituency office to work closely with CIDRZ on the project.
- GLUK has had ongoing engagement with stakeholders at the county and national level. It has developed excellent relationships with local government, UNICEF and NGO stakeholders. A highlight was being asked to lead the Kisumu County Policy and Research Working Group. This was a direct result of its engagement of key decision-makers at the local government level and the role staff carved out for their institution as convenors of stakeholders interested in sanitation research. GLUK has led several successful meetings.
- MEIRU/UNIMA has continued to maintain strong relationships with government ministries and has established a Research Advisory Group that includes government, parliament, academic, donor, NGO and sector representatives. Staff have also participated in regular national WASH events and technical working groups. They were recently asked to submit a technical proposal for the review of government open defecation free and hand-washing with soap strategies. Through WASHTED, MEIRU/UNIMA continue to strengthen its relationship with NGOs and has provided technical support such as providing an advisory role in grant applications and inviting NGOs to research uptake training.
- MITU has worked closely with local, district and national-level Ministry of Education stakeholders. Staff are in the process of engaging officials from the education sector and teachers from Kagera in developing an amendment to the teaching curriculum using behavioural change communication on hand hygiene.
- WaterAid has engaged closely with existing WASH fora and networks in Tanzania to engage a wide range of stakeholders from across the sector including the Ministry of Water and Ministry of Health. Staff have worked with their partner, Nelson Mandela African Institute of Science and Technology, to establish an African Centre of Excellence in Water Infrastructure and Sustainable Energy. They are now working with a consultant hired by the government on a spatial master plan for Babati.

Outcome mapping continues to provide a useful framework and approach for partners to map, engage, influence and work with stakeholders as the research projects progress.

Annex J: Gender in SHARE

Introduction

Phase II of SHARE has an increased focus on collecting gender disaggregated data and using this data for analysis and decision making. However, measuring gender equality in capacity development, research uptake and knowledge translation activities in institutions in low and middle income countries (LMICs) presents challenges. While SHARE's programme logframe reflects this focus on gender equality, our analysis to date has focused on quantitative indicators. The definition of gender equality has been limited, looking mainly at the representation of men and women at different levels.

This annex seeks to deepen our understanding of gender in SHARE by highlighting some challenges with our current approach and using a theoretical framework (the four powers approach) to look at gender in more detail. It looks at the context of SHARE's focus countries, what existing data tells us, and analyses qualitative data on gender equality collected through a survey of staff working on SHARE projects. This is in direct response to a request from DFID for further reflection on gender. At this advanced stage in the SHARE project, which has well-established projects and monitoring systems, we are not proposing any structural changes.

Gender in SHARE

Challenges with quantitative data in SHARE

SHARE aims to meaningfully integrate gender into its programme and to better understand what quantitative data around event attendance/female authors on academic publications tells us. At present, SHARE has three indicators that specifically monitor gender.

Table 19: SHARE indicators that monitor gender

Indicator	Target
1.1.3: Number and % of female first authors of peer-reviewed publications	50%
2.2.1: Number of attendees at knowledge sharing events (disaggregated by gender)	No gender target
3.1.1: Number of attendees at training events (disaggregated by gender)	No gender target

Our targets focus on achieving gender parity, i.e. 50/50 authorship of publications. We also monitor the number and percentage of authors from LMICs, although this data has not previously been further disaggregated by gender.

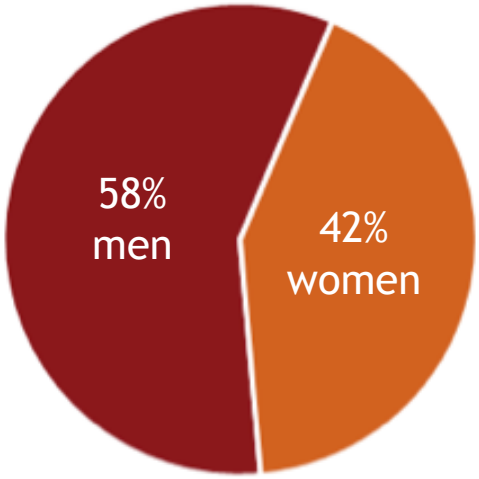
At present, these figures do not provide rich information about what it means to have more women attend events or access training, and whether this contributes towards any longer-term change in the WASH sector or in institutions. Data currently collected does not inform adaptive management practices to allow SHARE to better promote gender equality at an institutional or sectoral level.

Further analysis on existing quantitative data

Quantitative data can inform us about women's participation in academia, their career development (i.e. through becoming first author or co-authoring papers) and new skills they develop such as scientific writing. This section provides further analysis of SHARE's existing data to better understand the role of women in academia in SHARE.

Figure 8 illustrates that 42% or 237/561 authors on SHARE Phase I papers are women. It's positive to note that 51 SHARE publications, or 56% of Phase I publications have a lead female author.

Figure 8: Percentage of SHARE paper authors by gender (n=561)



However, most of these lead female authors (35%) are from high income countries. Female authors from LMICs make up 16% of lead authors on all of SHARE's publications. In total 27 publications, or 30% of Phase I publications have a lead LMIC author.

Figure 9: Percentage of lead authors by gender and country income (high income country or LMIC) (n=91)

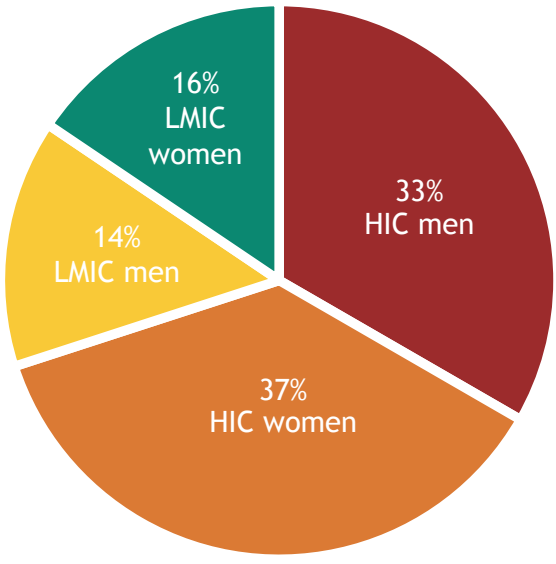


Figure 9 illustrates that the biggest gap in SHARE's papers does not fall along the lines of gender but is actually between high income country and LMIC lead authors. Most lead authors of Phase I publications (70%) are from high income countries. This may be explained by the fact that Phase I consisted of many projects across a range of countries in sub-Saharan Africa and South Asia and many international collaborations.

This is something that SHARE has committed to address in Phase II. SHARE's strategy to partner mainly with LMIC institutions should help us to close the gap for Phase II papers.

Figure 9 shows there is a fairly even split by gender of lead authors with a difference of around 6% in favour of female authors. This suggests that SHARE's efforts to support and include female academics in Phase I have been successful – although more needs to be done for LMIC female academics.

Measuring empowerment and gender equality

Empowerment and gender equality is not easy to measure. One theoretical framework which can assist us in better conceptualising empowerment is the four powers approach (Rowlands, 1995). This approach conceptualises four dimensions of power. *Power-over* refers to structural power relationships in society and in institutions. *Power-to* refers to individual agency. *Power-with* refers to the possibility of individuals acting collectively to influence or shift structural power relations. *Power-within* refers to resilience or the psychological strength of individuals.

Traditional MEL indicators often refer to the number of women participating in project activities, monitoring women's *power-to* learn a new skill, gain new knowledge or do something differently (Carter et al, 2014). Context is often missed; an Overseas Development Institute (ODI) review of 70 evaluations on women's economic empowerment found that less than 25% of the studies included a thorough contextual gender analysis (ODI, 2014). Interestingly, research on what women in development projects valued found that they most valued *power-within* and they valued qualitative data over numbers (Carter et al, 2014). Open-ended research methods can play an important role in capturing expected and unexpected outcomes for women's empowerment by directly asking those involved (Carter et al, 2014). Monitoring *power-within* is generally more challenging than monitoring women's participation in events and typically requires the use of qualitative methods.

SHARE's MEL indicators around gender generally monitor *power-to*, for example women with the *power-to* write publications and gain a new skill from training. SHARE's existing qualitative MEL around capacity development may also enable us to better understand p*ower-with* if people are collaborating or sharing knowledge. This annex intends to add to SHARE's existing work by looking at *power-over* through better understanding the context, as detailed in the next section. SHARE also intends to add to its existing tools by better understanding *power-within* through a gender survey and annual qualitative interviews with partners as part of our capacity development monitoring.

Gender in context

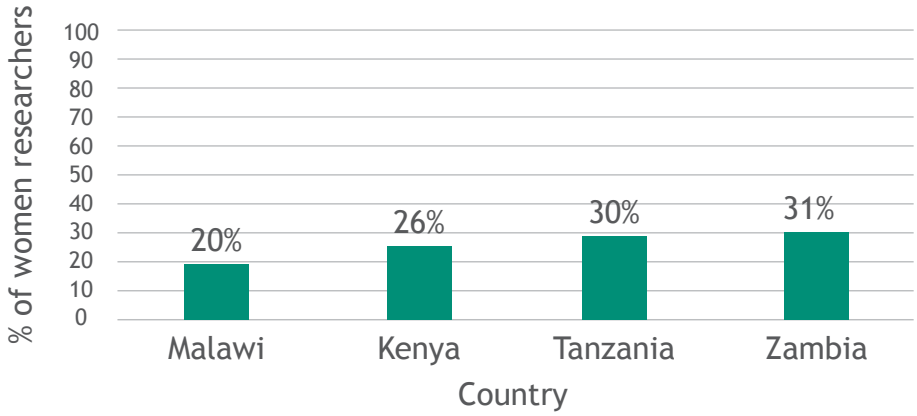
Monitoring gender in context may help us to better understand power-over and the structural context that women researchers in SHARE live and work in. This section will provide some more in-depth contextual analysis using global and national data.

It is important to note there is a gender gap in academia on a global level. Globally only 28% of researchers are female (UNESCO, 2017). An analysis of over 5.4 million research papers found that women account for just under 30% of authors on collaborative papers across disciplines (Sugimoto et al 2013). For every paper published with a woman as first author, there are almost two papers published with a man as first author (Sugimoto et al 2013). The gender gap is exacerbated for particular subjects; for example, there is a stronger bias towards men working in science, technology, engineering and mathematics subjects (UNESCO, 2017). This may apply to the WASH sector, which while multi-disciplinary draws strongly on these subjects.

At the sectoral level there are often institutional barriers for women working in science, technology, engineering and mathematics. There are no studies that specifically discuss African gendered publishing but there is an existing body of research on issues that may contribute to gender inequality in academic spheres. Given the global relevance of these issues, it is likely that some of those mentioned may be relevant to women researchers working on SHARE projects.

All four countries in Phase II of SHARE are in the bottom 30 of the UN Development Programme's Gender Inequality Index (UNDP, 2016). Additionally, each country has low percentages of women working in academia in general as illustrated in Figure 10.

Figure 10: Percentage of researchers who are women in SHARE focus countries



Gender norms, expectations and stereotypes

Gender norms, expectations and stereotypes differ according to context and could include factors such as societal perceptions that women have limited capability to do research or an expectation that women in academia also need to do household work and manage all childcare responsibilities (INASP, 2015). These social norms are held by both men and women, and can lead to unconscious bias in recruitment/promotion practices.

Structural barriers

Gender norms can help shape and create structural barriers. Structural barriers could include inflexible working conditions or women being overlooked for recruitment or promotion. Global data describes 'leaks in the academic pipeline', meaning that the representation of women generally decreases as seniority increases (Sugimoto et al, 2013). There are many contributing factors to this including structural barriers that make it more difficult for women to progress in academia than men.

Access to networks and role models

Another common challenge is lack of networks with other women researchers, particularly in LMICs (INASP, 2017). Often women report a lack of female mentors/role models at senior levels. This links into the structural barriers preventing women from reaching senior levels in academia, and may also perpetuate gender norms.

Sexual harassment

Sexual harassment is unfortunately a global issue in higher education institutions and may be something that prevents women from pursuing academic careers (Morley, 2011). Research in Tanzania found there was a perception that women progress in academia because they have used their sexuality to influence male colleagues (Morley, 2011). In this external research study, women noted being taken less seriously than their male counterparts and being concerned about their reputation if they progressed in academia.

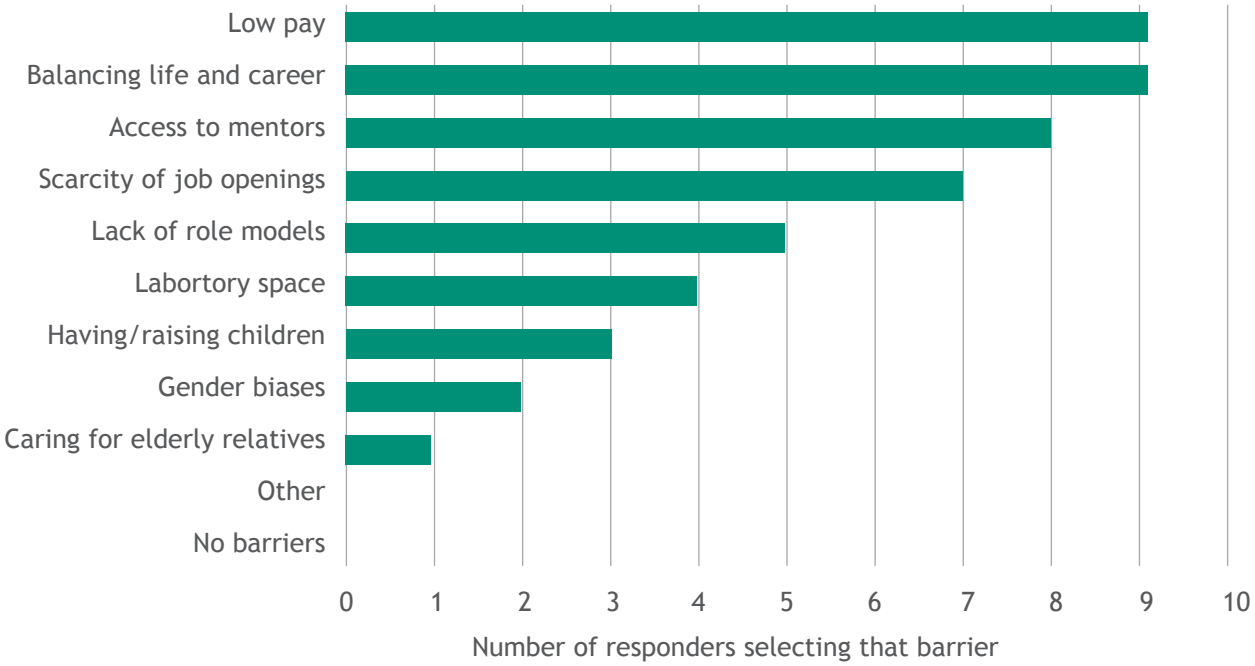
Analysing gender in SHARE

In May 2017 SHARE carried out a qualitative survey on gender among its partner institutions. This survey sought to understand how partner staff (both men and women) perceive the structural barriers to working in academia and to capture specific challenges and opportunities experienced by staff working on SHARE projects in LMICs. It was undertaken by seventeen people: nine academic staff (some in senior positions), two MSc students/recent MSc graduates, one PhD student, three Research Fellows and two members of administrative staff. The demographic by gender was twelve women and five men. There was representation from Malawi, Zambia and Kenya, but there were no survey responses from Tanzania. This report presents a snapshot on perceptions of gender within the SHARE consortium; it is important to note that the small number of responses does not provide us with

enough evidence to draw consortium-wide conclusions. Nonetheless the results offer an interesting snapshot of perceptions around gender in science.

Figure 11 depicts the answers that respondents gave when asked to disclose the barriers (if any) that they have personally experienced to working in science.

Figure 11: Barriers to working in science



It shows that the key barriers related to balancing life and career (n=9) as well as low pay in the academic sector (n=9). Another barrier is access to mentors (n=8) and lack of role models (n=5; this is something that SHARE seeks to support through its capacity development work but is clearly still a challenge. Practical challenges such as access to laboratory space and appropriate scientific equipment were also mentioned, with one responder adding a comment about the logistical challenges of acquiring research supplies in low income contexts (n=5). Some participants mentioned balancing the challenges of responsibilities such as childcare and looking after elderly relatives, which link into the theme of work-life balance (n=4). Two participants, both women, felt that gender bias was a barrier to their careers in science.

The majority of respondents stated that they felt their gender has had no impact on their career as a scientist (71%, n=12). Most said that they would be equally likely to advise men or women to pursue a career in science (88%, n=15).

One female respondent interestingly commented that her gender might have helped her progress her academic career, perhaps making reference to increasing interest and focus on women in science. Other women answering the survey highlighted challenges around the societal perceptions of women working, limited opportunities for career development and not being treated the same as male counterparts.

Individual responses on how gender has affected their careers as scientists were only given by women (perhaps suggesting that the men surveyed did not see gender as a factor in their careers) and included the following examples:

- A female academic staff member stated that she believes her gender may have increased her chances of becoming a part of SHARE. This is perhaps related to SHARE's explicit focus on including women in science.
- A female academic staff member stated that lack of respect from male counterparts affects her work as a scientist.
- A female academic staff member stated that she does not think she would have progressed differently had she been a man.
- A female research fellow stated that while gender has not had an impact on her career thus far, she feels pressure and judgement from society about pursuing higher education while also wanting to start a family. She noted that women pursuing PhDs or post-doctoral careers in her context often experience work-life balance struggles.
- A female MSc graduate stated that there should be more opportunities made available to advance the scientific careers of women.

The survey results are being shared with the Management Group and all SHARE partners in order to collate their ideas, insights and responses. This process of sharing and discussion may result in some recommendations or actions for next steps around this important topic.

Actions and recommendations are limited by the facts that SHARE will run only until December 2018 and all funding is currently allocated. This means that any recommendations must be practical, cost effective and fit into current workplans. A potential next step is to repeat a gender survey later in SHARE to capture recommendations or next steps for SHARE's legacy and for other research consortia that wish to better address gender in their work.

Conclusion

The contextual data available raises questions about how realistic it is to achieve a 50/50 gender balance in LMIC contexts. SHARE's targets align with the SDGs and the concept of gender equality, but future DFID research programmes may wish to consider aligning their targets with women's current participation in academia in their focus countries, and seeking to improve on this reality.

Monitoring female authors on publications provides a good proxy indicator for understanding the extent of the gender gap in the sciences in our focus countries. It is important to remember that monitoring publications can help us understand the challenge of progression in academia but increasing representation in publications alone will not solve this broader issue. It is positive to note that SHARE has achieved greater gender parity on publications than is typical globally. While SHARE has exceeded the national average percentage of women engaged in academia globally (of 28%), there remains an uneven split between LMIC and HIC authors and Phase II therefore has an increased focus on including LMIC female authors.

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