



## Full Proposal Application Form

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<b>A.1. TITLE AND DATES</b>	
Project title	Economic Constraints and Demand-Led Solutions for Sustainable Sanitation Services in Poor Urban Settlements
Acronym if applicable	
Date of Start of project	01.03.2011
Date of End of Project	31.03.2014

<b>A.2. DETAILS OF LEAD ORGANISATION</b>	
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## B. SPECIFIC PROJECT INFORMATION

### B.1. Project abstract

According to the latest UN Report (2009), 2.5 billion people in developing countries still lack access to adequate sanitation. Given the slow progress made to date, Millennium Development Goal 7, in particular the objective to reduce the number of people without access to proper sanitation by 50%, will probably not be met by 2015. Inadequate sanitation is of particular concern in rapidly growing and densely populated urban settlements, which already host more than half of the world's population (UN, 2007), and which dramatically increase the health hazards generated by lack of hygiene and improper disposal of human waste (Konteh, 2009; Moore et al., 2003; Sclar et al., 2005).

As a result, there is a recognized need for facts-based evidence on the questions of how to sustainably expand sanitation coverage in urban agglomerates. From an engineering perspective on-site sanitation systems, such as pit latrines with a slab, are recognized to be the most preferable option for poor, water-scarce and fast-growing urban areas (Tremolét et al, 2010). Private investment in such facilities has, however, remained at very low levels. While this lack of private investment in sanitation should be particularly determined by economic factors such as the scarcity of income, both sociological and technological factors are likely to also play an important role in the adoption of sanitation technologies. However, surprisingly little economic and even less interdisciplinary research on the determinants of sanitation demand has been undertaken.

The proposed project aims at addressing this research gap by applying an inter-disciplinary approach, with a focus on economics, to study and enhance our understanding of the persistent lack of private investment in and use of sanitation facilities in poor urban areas in sub-Saharan Africa. We will investigate the key factors determining the degree to which demand-led and market-based solutions can be implemented in an urban Sub-Saharan African context to ensure sustainability of on-site sanitation systems. Our study will be located in the low-income areas in Uganda's capital, Kampala, a setting which we consider representative of many urban centers in sub-Saharan Africa and other regions not only because of low sanitation coverage, but also in terms of land title insecurity, credit constraints, and rapid population growth.

Given its strong empirical focus and inclusion of sanitation practitioners in our consortium, this project will not restrict itself to theoretical demand analysis but also implement targeted sanitation solutions in the study communities. Based on an initial in-depth economic constraint and sociological and technological preference analysis in a representative sample of 1,500 households in 50 poor communities of Kampala (mainly financed by other funds), we will implement a pilot project that is the main recipient of the aspired SPLASH funds. In this randomized field experiment we will offer innovative and demand-led sanitation solutions to about half of the interviewed communities (treatment group). Conducting a follow-up survey of all initially interviewed households after the pilot project (in both treatment and control group communities), we will be able to make robust causal inference regarding the effectiveness of the sanitation solutions in improving the take-up, use, and maintenance of sanitation facilities. Despite wide application in development economics and health research (Imbens and Wooldridge, 2009), randomized field trials have not yet been applied for the study of increasing sanitation demand.

To our knowledge this is the first empirical research project on sanitation demand and financing that combines the use of rigorous economic methodologies and sociological theory with know-how on existing on-site sanitation technologies adequate for the poor urban context. In addition, it has direct development relevance as possible solutions will not only be identified based on the target group's constraints and preferences but also be rigorously and empirically evaluated. This

study will not only yield robust insights on how to tackle urban sanitation in Uganda but should also be applicable to other sub-Saharan African countries.

## **B.2. Aims and Objectives of the Project, Relevance to Context of the SPLASH Call**

Due to high infrastructure costs, fast and unplanned urban growth, water scarcity, and unclear public sector responsibilities, centralized sewerage systems can generally not be considered a feasible option for most poor urban areas in sub-Saharan Africa. In the Kampala area, where this study will be located, less than 8% of the residents are connected to the city's sewerage network (KfW, 2009). From a civil engineering perspective, on-site systems appear today's best technological solution for poor urban settlements. The majority of these systems usually rely on private self-financing (Tremolét et al, 2010). Private demand for sanitation has, however, remained at very low rates, and insufficient coverage rates of improved sanitation still persist in most sub-Saharan cities (WSP, 2008).

In response to deficient sanitation, interventions have either focused on sanitation marketing coupled with hygiene education campaigns, or opted to provide fully subsidized public sanitation facilities. Neither approach seems to be particularly successful in sustainably raising demand for sanitation in urban settings. The reason for failure of sanitation campaigns might be that the economic constraints of the poor (i.e. credit constraints, insecure property rights) were not appropriately taken into account. On the other hand, public facilities often ignore their social and technological preferences to stimulate sustainable use. To ensure the sustainability of on-site technologies there is hence a need to better understand and foster demand-led and economically sound approaches adapted both to the poor's economic constraints and their social as well as technological preferences. Given this, the main objectives of the proposed project are:

- i) to analyze and understand the key economic constraints as well as social and technological preferences underlying the persistent low private investment and use of publicly provided sanitation facilities in Sub-Saharan urban settlements, using the case of Kampala.
- ii) based on the analysis in i) to design innovative and demand-based sanitation services and financing options to sustainably improve the sanitation take-up rate and use among the urban poor, taking into account both the economic feasibility of these potential sanitation solutions but also the end users' preferences for certain types of toilets and services. The effectiveness of the identified sanitation services and financing options (subsequently called sanitation interventions) will be tested and evaluated in a randomized pilot project.
- iii) to explore which role government policies, regulations and subsidies could play in facilitating demand-led sanitation solutions for a more effective provision of sanitation services (ranging from a purely regulatory function to a stronger responsibility in system provision or subsidies), based on the results of the analysis and pilot project interventions.

Our project will target low-income urban areas in the Ugandan capital city Kampala. Preliminary analysis suggests that at least 60% of residents do not have access to any form of improved sanitation. Despite extensive NGO educational and marketing interventions over the last years, very few private sanitation facilities exist and most public on-site facilities are not well-maintained. Given similar problems in many other African cities and the urgent need for scientific insights to design effective market-based sanitation solutions, we expect our research results to be relevant to many government and development agents in and beyond Uganda.

Our ultimate objective is to better understand the economic constraints as well as social and technological preferences of poor urban households in sub-Saharan Africa with regard to sanitation investment and use. Second, we want to find out if the provision of purely demand-led sanitation services and financing could lead to an increase of demand and self-financing of improved on-site sanitation systems, and to which extent public interventions have to complement these market-based solutions. These objectives go hand in hand with the aim of the

present SPLASH call to contribute to the understanding and implementation at scale of sustainable sanitation service chains in low-income urban areas in sub-Saharan Africa.

### **B.3. Degree of Innovation and Progress beyond Current State-of-the-art**

Research on the economics of sanitation barely exists beyond simple cost-benefit analyses. Between 1970 and 2008 only nine articles with a focus on sanitation were published in hundred top economic journals (including all development, health, urban and ecological economics journals). To our knowledge, this project comprises the first study looking at sanitation demand from an economic perspective, under the inclusion of sociological research and technological considerations. It is to our knowledge also the first research project applying a randomized-controlled trial (RCT) design to test the effectiveness of innovative sanitation interventions in the context of poor settlements in a large sub-Saharan city. We aim to complement existing sanitation studies and projects by specifically focussing on the household demand side, and by assessing the need for public sector interventions to stimulate this demand. In addition, our interdisciplinary approach is novel in itself, and will hopefully generate knowledge beyond the current state-of-the-art and obtain rigorous empirical findings that are relevant to both academics and practitioners.

Much of the existing literature on sanitation in developing countries has focused on the impact of sanitation on human health, particularly on child morbidity and mortality. Three meta-studies summarize the empirical evidence in developing countries (Esrey et al., 1991; Fewtrell et al., 2005; and Waddington et al., 2009), and all find a large reduction (of about 30%) in diarrhea incidence due to improved sanitation; and according to the World Health Organization (2009) diarrheal diseases account for more than 1.5 million children-under-five deaths annually. A recent study by the research coordinator of this project in collaboration with the Harvard School of Public Health and the World Bank estimates that one life year saved would cost less than 0.8 of GDP per capita in most sub-Saharan African countries if investments in proper water and sanitation infrastructure were made (Günther and Fink, 2010a, 2010b). Other cost-benefit studies on sanitation (e.g. Hutton and Haller, 2004; Hutton, Haller, and Bartram, 2007; WSP, 2007) suggest similar high estimates of economic returns of at least US\$5 on each US\$1 investment in improved water and sanitation. The large empirical evidence on the high returns of sanitation certainly raises the question why private investments in sanitation in developing countries remain at very low levels.

Surprisingly, little research and evidence is available that has addressed the analysis of the underlying factors that determine people's demand for hygienic sanitation solutions. Existing studies in this area usually focus on social or cultural aspects (e.g. Jenkins and Curtis, 2005; Jenkins and Scott 2007). Both studies find that prestige, family safety, cleanliness, convenience, and privacy play a major role in creating sanitation demand. Jenkins and Scott (2007) do, however, also find preliminary evidence for the importance of economic constraints in the access and provision of improved sanitation: private demand is not only constrained by limited space and competing priorities but above by lacking savings and binding credit constraints. Both studies were, however, undertaken in rural areas and might say little about poor urban areas. Another set of studies has focused on the choice of sanitation technologies that, from an engineering perspective, are appropriate for the particular conditions of rural and urban populations in developing countries (see e.g. Eawag, 2005; UN, 2009). The results of this particular research have formed our decision to focus on on-site sanitation solutions. Most engineers agree that conventional sewerage networks – that are common in industrialized countries - do not represent a feasible solution for most fast-growing and water-scarce cities in the developing world (Trémolet et al., 2010).

Despite the low number of micro-economic studies on sanitation demand, there is indeed one line of economic research on sanitation that is also important for this research project: Willingness-

To-Pay (WTP) studies. These WTP surveys among households in various developing countries apply contingent valuation methods (Fujita et al., 2005; Seraj, 2008; Whittington et al., 1992; Altaf, 1994; Arimah, 1995; Harapap and Hartono, 2007) and typically find that households are willing to pay around 2% of their yearly disposable income for sanitation services. An additional interesting finding for the purpose of this project is the stated preference of interviewed households for payments in monthly installments instead of one up-front payment (Seraj, 2008). The proposed research project will, however, go beyond the current state-of-the art of WTP literature. Instead of a bare measurement of households' willingness to pay for sanitation with contingent valuation methods, we aim at analyzing the underlying economic factors that influence the outcomes of these kind of studies (e.g. what are the determinants of a low WTP?), and to learn about which technological features or service provision of sanitation facilities are valued most by low-income households. In particular, we identify three innovations that will add high value to the current sanitation literature:

*Interdisciplinary and representative choice experiments:* We will conduct an in-depth constraint and demand analysis for sanitation, which will be representative of all low-income households in one major city in sub-Saharan Africa. The focus will be on economic constraints, but we will also take into account social and technological preferences for sanitation solutions. In addition to structured surveys, we will carry out a choice experiment, which minimizes the biases related to traditional contingent valuation methods (Louviere et al, 2001; Bateman et al, 2002) and which will also allow us to easily combine the different disciplinary perspectives of this project. In addition, choice experiments enable us to assign a price to technological and social features associated with a sanitation facility and thus identify households' preference for a certain type of facility, service or financing option (Work Package 2).

*Grounded in Economic and Social Theory:* Our research questions and possible interventions (see B.4) stem from theory-based economic and sociological hypotheses that so far have not been empirically analyzed for the sanitation "market." We conjecture that there are several fundamental causes of why market-outcomes might until now have led to a sub-optimal provision of private sanitation investments.

*Randomized Field Experiment:* The central objective of this project is to design and implement innovative sanitation interventions based on the initial demand analysis, and to evaluate their effectiveness in increasing household investment and use of sanitation facilities. Randomized experimental field studies are nowadays common in social research and are also increasingly applied in evaluation research (Duflo et al., 2006; Imbens and Wooldridge, 2009). They have become particularly popular in development and health economics over the last years (e.g. Cohen and Dupas, 2009; Duflo, Kremer and Robinson 2009; Banerjee et al., 2008). However, at least to our knowledge, no randomized experiment on urban sanitation in a developing country has been conducted until today. Most existing evaluations of sanitation programs were conducted ex-post, which makes it difficult to conclude about causality between program activities and changes in sanitation coverage rates (e.g. SDC, 2007). The proposed project will thus contribute to the literature on randomized field experiments by studying a good that is durable and expensive in an urban setting (Work Package 3 and 4).

## B.4. Project Description

### Project Summary:

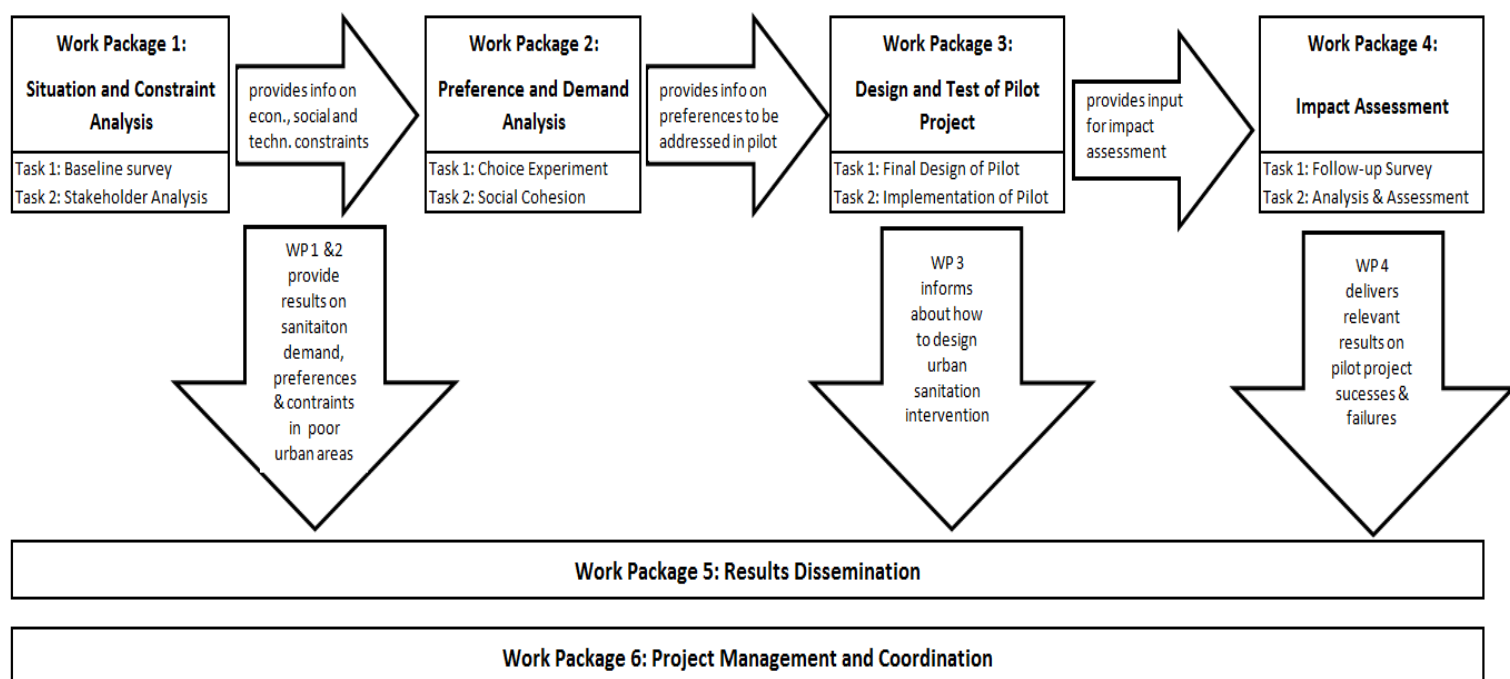
Objectives: The project's overall objectives are i) to analyze and understand the key economic constraints and social and technological preferences of the poor that lead to a persistent lack of private investment in sanitation facilities in poor urban settlements in sub-Saharan Africa, ii) to test innovative sanitation solutions to these constraints and preferences to sustainably increase household demand for improved sanitation in poor urban communities of Uganda's capital Kampala, iii) and explore the role of governments in facilitating demand-led sanitation solutions.

Target Groups: The direct target group of our project is the residents of selected poor communities in Kampala. Given the city's resemblance to many other larger sub-Saharan African cities in terms of very low sanitation coverage, land insecurity, imperfect credit markets, poor populations, and rapid population growth we think that Kampala is the ideal site for this study. Through successful dissemination activities (see Dissemination Plan in B.12) we hope to point the attention of more national and international practitioners and researchers towards market-based solutions in order to increase sanitation coverage and to stimulate the implementation of our results in other cities in sub-Saharan Africa.

Scientific Methodologies: The general scientific approach chosen for this project combines i) a representative household survey in Kampala (Work Package 1), ii) a choice experiment (Work Package 2), iii) a randomized pilot project with sanitation interventions (Work Package 3) and iv) a rigorous impact assessment based on Work Package 1 and 3 (Work Package 4).

Deliverables: The direct deliverables of the project are: i) a standard questionnaire to rigorously assess sanitation situations and constraints in sub-Saharan African cities; ii) a household panel data set with information on economic constraints and social and technological preferences that have an effect on sanitation decision-making of representative households from Kampala; iii) a discrete choice experiment design to identify the prices people in sub-Saharan African cities are willing to pay for certain technological and social features of sanitation services; iv) the implementation of pilot project interventions; and v) a rigorous impact assessment of its success. Moreover, the project will support the completion of two doctoral theses, one in Uganda and one in Switzerland, and is designed to lead to three academic publications in international journals as well as to at least two policy reports.

The project is structured in six Work Packages that are summarized in the following graph and that we outline in more detail below.



As shown in the diagram, the project is divided into four chronologically ordered Work Packages (Work Packages 1 to 4). The results of each Work Package will directly feed into the subsequent Work Package. In addition, Work Package 5 is based on the Dissemination Plan described in B.12, and Work Package 6 on Project Management and Coordination, as described in more detail in B.9-B.10, that will ensure the efficient and sound use of financial and personnel resources throughout the project.

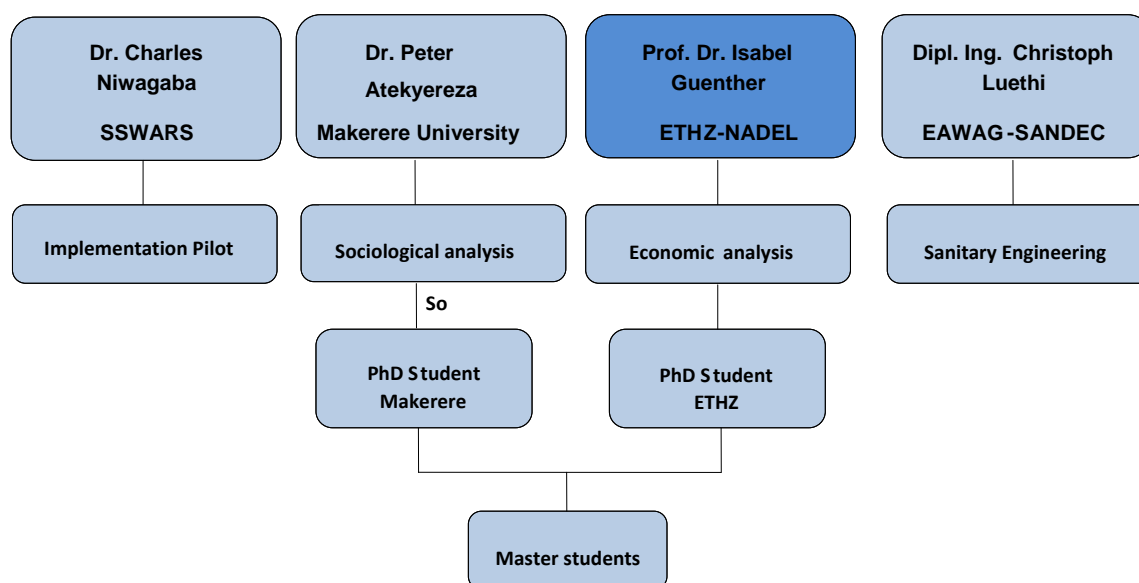
## B.5. Work Schedule

The diagram below displays the duration and time schedule for the Work Packages (dark blue) and respective tasks (light blue) as well as the major milestones to be achieved by the project. Please note that the pre-SPLASH financed activities already started in February 2010 and have already been financed by other funds or the project partners. The activities to start after January 2011 would depend on financing from SPLASH.

Work Package/Tasks/Milestones	Duration/ Due date	2010					2011				2012				2013			
		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Inception: Project Proposal Preparation</b>	<b>9 months</b>																	
Building of Consortium/Definition of Roles	3 months																	
Definition Project Objectives, Literature Review	3 months																	
Questionnaire Design, Sample Size Calculation	3 months																	
<b>WP1: Sanitation Situation &amp; Constraint Analysis</b>	<b>3 months</b>																	
Baseline Survey	2 months																	
Detailed Stakeholder Analysis	1 month																	
<i>Milestone #1: Questionnaire, Baseline Household Data Set</i>	Q2, 2011																	
<b>WP2: Sanitation Preference and Demand Analysis</b>	<b>3 months</b>																	
Choice Experiment	3 months																	
Social Cohesion and Beliefs Analysis	3 months																	
<i>Milestone #2: Dataset on Preferences and Social Cohesion</i>	Q2, 2011																	
<b>WP3: Design and Testing of Pilot Project</b>	<b>12 months</b>																	
Final Design of Pilot Project Interventions	1 month																	
Implementation of Pilot Project	11 months																	
<i>Milestone #3: Pilot Project Implemented</i>	Q2, 2012																	
<b>WP4: Impact Assessment of Pilot Project</b>	<b>9 months</b>																	
Follow-up Survey	2 months																	
Impact Assessment	7 months																	
<i>Milestone #4: Panel Household Dataset, Impact Assessment</i>	Q2, 2013																	
<b>WP5: Dissemination of Results</b>	<b>36 months</b>																	
Workshops, Conference	Q2/Q4,2011; Q1/Q2/Q3,2013																	
<i>Milestone #5: 3 Academic Publications</i>	Q4, 2011/12																	
<i>Milestone #6: 2 Policy Reports</i>	Q2, 2011; Q2, 2013																	
<b>WP6: Project Management &amp; Coordination</b>	<b>36 months</b>																	
<i>Milestone #6: Annual audits , Biannual Progress Reports</i>	36 months																	

## B.8. Project Coordination and Management

The aim of the consortium is to achieve the project objectives in time and within budget, making the most efficient use of each partner's capabilities and experiences. Through intensive preparatory work in 2010, we were able to agree on a shared research agenda with clear objectives and responsibilities as described in B.4. In terms of organisation, it is our conviction that the best strategy is to have a clear assignment of responsibilities for each consortium partner based on expertise and skill, but at the same time have a clear management structure to ensure an effective coordination of activities. The coordination and work within the research project will be carried out in compliance with the Swiss Research Commission Guidelines for Research in Partnership with Developing Countries (<http://www.int.uzh.ch/northsouth/KFPEGuidelines.pdf>). The general management scheme for the project is displayed in the organisational chart below:



Prof. Isabel Günther is the Research Coordinator of the proposed project. Throughout the project, Prof. Günther will closely cooperate with Dr. Peter Atekyereza from Makerere University and Dr. Charles Niwagaba from SSWARS. Dr. Atekyereza and Dr. Niwagaba will be leading the implementation on the ground, while Senior Scientist Christoph Luethi from Eawag will advise the team on suitable technology solutions. Furthermore, the project will be supported by a doctoral student in economics from Switzerland as well as a doctoral student in sociology from Uganda. The PhD students will be supervised by Prof. Günther and Dr. Atekyereza, respectively, and contribute to the survey design, data collection, and analysis of the household surveys, and use the results of this project for their doctoral theses. They will also be encouraged to publish at least one joint interdisciplinary paper on sanitation demand. Finally, the PhD students will also jointly select and supervise Master students from Makerere University (about 15) who will conduct the data collection and interviewing activities during the surveys.

Prof. Günther has extensive management experience in inter-cultural and inter-disciplinary collaborations through prior household surveys and field experiments in sub-Saharan Africa. She is currently leading a large-scale project titled “Water Impact Evaluation in Benin”, which involved over 4000 interviews per year, and a research team of 7 people from 4 countries (Benin, Switzerland, Netherlands, Germany), sponsored by the German and Dutch Development Cooperation. She is also the principal investigator of a project titled “Water, Sanitation and Child Mortality in Developing Countries”, with an analysis of 40 developing countries, which was sponsored by the World Bank and undertaken in collaboration with

Harvard School of Public Health. Together with CREPA (Centre Régional pour l'Eau Potable et l'Assainissement à faible coût), she has furthermore recently started to work on a randomized field trial, distributing improved water storages among randomly selected households in Benin.

## **B.9. Description of the Consortium**

Each of the four consortium partners has worked extensively on sanitation in developing countries but from various perspectives:

- i) **ETH-Zurich, Centre for Development and Cooperation: Prof. Günther** (Research Coordinator). The Centre for Development and Cooperation (NADEL) at the Swiss Federal Institute of Technology in Zurich (ETHZ) has long-term experience in conducting empirical research on relevant development issues from an inter-disciplinary perspective. Prof. Günther is a development economist with a special interest in health, water and sanitation and impact assessment of development interventions, and has experience with conducting large-scale household surveys in sub-Saharan Africa. She will take the technical leadership of the overall research design and the economic analysis in particular through the supervision of the PhD student from ETH-Zurich. Prof. Günther will also play a crucial role in the results dissemination, particularly among research and international audiences given her previous and ongoing collaboration with Harvard University, European development agencies, the World Bank, among others.
- ii) **Makerere University: Dr. Atekyereza** (Sociological Analysis and Survey Leadership). Makerere University is one of the most renowned universities of the region, providing quality teaching and research in Uganda and sub-Saharan Africa. Dr. Atekyereza is Associate Professor at the Sociology Department of the Makerere University College of Humanities and Social Sciences. He will be the main supervisor of the PhD student from Makerere and take the leadership of the sociological analysis. Given his experience in conducting research in Uganda, including Kampala's poor settlements, he will be responsible for the organisation and supervision of the study on the ground (especially with respect to the household surveys).
- iii) **SSWARS: Dr. Niwagaba** (Pilot Project Implementation Leadership). SSWARS is a non-profit NGO registered to operate in Uganda, with the mission to contribute to the MDGs by improving communities' living standards through the implementation of sustainable sanitation services. The Executive Director Dr. Niwagaba is a civil engineer with expertise in wastewater and excreta management. Given his operational experience in the sanitation sector of Kampala, Mr. Niwagaba will be responsible for the organisation, implementation, and supervision of the pilot project, including the coordination with local partners (e.g. sanitation service, product providers and community leaders). Given SSWARS being a widely known NGO in Uganda and Mr. Niwagaba's contacts in the Ministries and other development organisations, he will also be promoting and disseminating the project findings on the national level.
- iv) **Eawag-Sandec: Senior Scientist Christoph Lüthi** (Sanitary Engineering Expert). Sandec is the Department of Water and Sanitation in Developing Countries at the Swiss Federal Institute of Aquatic Science and Technology (Eawag). Eawag has the mandate to assist in developing appropriate and sustainable water and sanitation concepts and technologies adapted to the different physical and socio-economic conditions prevailing in developing countries. Dipl. Ing. Christoph Lüthi's expertise is in sanitation technology solutions that are adapted to the specific conditions of populations in urban and peri-urban settlements in Sub-Saharan Africa. He will provide the technical backstopping regarding choice and coordination of appropriate sanitation technologies for the study.

Another important responsibility of Mr. Luethi is the coordination of the cooperation between this project and the on-going Eawag study (SNF/SDC), as well as the dissemination of results among the international water and sanitation community.

### **B.11. Potential Impact, Potential for Large-Scale Application of the Results**

**Direct Impact on Target Group, Sustainability and Up-Scaling in Kampala:** The direct short-term impact of the project will be on the targeted households in the low-income areas of Kampala, as the pilot project interventions will directly provide them with an opportunity to improve their sanitation situation. However, even after the project is finalized we expect a long term impact as the consortium partner NGO SSWARS will continue to provide the successfully tested interventions to other Kampala low-income households, using the SPLASH funds like a revolving fund and using the insights gained from the project. Moreover, through well-established communication channels among the actors of Uganda's sanitation sector (e.g. the sanitation network UWASNET), we expect other NGOs but also private sector agents (e.g. microfinance institutions) to be interested in adopting fruitful and financially sustainable sanitation solutions, making them available to more and more households in Kampala. Similarly, our local partners will promote effective interventions among the relevant ministries and development agencies, which we expect to show high interest in sustainable market-based solutions for potential up-scaling.

**Potential Impact and Up-Scaling in other sub-Saharan African cities:** Given our project's novelty of sound economic analysis combined with sociological and technological backstopping to not only understand low sanitation coverage in a poor urban sub-Saharan African setting but also to evaluate potential solutions with a rigorous impact analysis in a pilot project, we consider the expected results to be of high international relevance to policy makers and development agencies:

- i. If proven successful, our pilot project approach of specifically focusing on finding demand-led solutions in consideration of the poor's' constraints and preferences will have a high potential for replication in other places in sub-Saharan Africa as effective responses to the low private demand for on-site sanitation systems are missing in almost all cities in developing countries. The focus on market-based solutions should furthermore lead to a more sustainable impact on the ground, making it an interesting case for up-scaling.
- ii. Given the sound methodological design for a rigorous evaluation through a randomized field experiment we can guarantee internal validity which is often not possible for qualitative case studies. The selection of a representative sample of Kampala's low-income households furthermore guarantees that the results are applicable to whole Kampala and not only for specific communities. Last, controlling for many observables will enable us to analyze if the interventions' success differs by specific factors, which makes our project findings also externally valid, i.e. they can be transferred to other development settings beyond Kampala.
- iii. Last, the expected project outputs -such as the baseline sanitation questionnaire formats or the choice experiment design for sanitation- will be available to be re-used and extended in other sanitation demand studies targeting countries in and beyond sub-Saharan Africa.

Despite the straightforward applicability of our project approach to different urban settings in sub-Saharan Africa and beyond, our consortium chose to focus on the case of Kampala only, in order to be able to engage in an in-depth stakeholder analysis and to make the most efficient use of the aspired SPLASH funds through a logistically challenging pilot

intervention. Also, the consortium partner SSWARS has high local capacity and offered us the opportunity to work with randomized pilot interventions throughout the city, an opportunity not often given by local NGOs.

**Research Impact:** From a social science perspective, sanitation investment is an important and at the same time under-researched topic, which should raise both interest and lead to further research, especially in the field of economics. Insufficient knowledge about the underlying incentives for investment in sanitation coupled with an urgent need of scientific insights to design effective strategies to increase sanitation coverage is the entry point for our research, through which we also aim to reassess the role of the public sector in providing sanitation to the poor. In addition, the project will also strengthen the Ugandan partners' skills in empirical social research techniques that will be promoted both among the faculty and the students at Makerere University, as around 15 Master students and one PhD student from Makerere University will be involved in the research. Last, through participation at international conferences, and promoted by the Swiss partners, and through joint publications, the Ugandan researchers will also increase their international visibility.

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