



Executive Summary

Sanitation in the Niger Delta Project

**An Outcome Evaluation of a Royal Roads
University Graduate Student Research Project**

Prepared by: Stephanie Jones, Brian Belcher,
Rachel Claus, and Rachel Davel



Cover photo: Typical better quality hanging toilet. Niger Delta, Nigeria. Photo: Nancy Gilbert

Any views expressed in this publication are those of the authors. They do not necessarily represent the views of Royal Roads University, the principal investigator, the principal investigator's institution, or financial sponsors.

Acknowledgements

The Sustainability Research Effectiveness Program is supported by Ashoka Canada, the Canada Research Chairs Program, and the Canadian Social Sciences and Humanities Research Council (SSHRC). We thank the principal investigator for their contributions to the Theory of Change and sense-making workshops, interviews, and feedback on the report. Finally, we extend thanks to all interview and survey informants who participated in the evaluation.

Produced by

Sustainability Research Effectiveness Program
Royal Roads University
2005 Sooke Road
Victoria, British Columbia
V9B 5Y2
Canada

Telephone: +1-250-391-2600 ext.4407

Email: brian.belcher@royalroads.ca

Website: researcheffectiveness.ca

© SRE 2020



This research was carried out by the Sustainability Research Effectiveness Program at Royal Roads University as part of a series of case studies of completed Royal Roads University graduate student research projects.

Executive Summary

Introduction

This report presents an outcome evaluation of a research project undertaken by a Royal Roads University (RRU) Doctoral of Social Sciences (DSocSci) student. RRU has a mission to teach and create research that contributes to transformation, both in its students and the world. RRU's focus on interdisciplinarity, blending academic and professional experience, and solution-oriented research situates RRU well to address real-world problems. The Sanitation in the Niger Delta Project (SNDP) intended to contribute to improved sanitation in the riverine communities of the Niger Delta by: identifying current water, sanitation, and hygiene (WASH) practices, attitudes, and beliefs; assessing sanitation technologies employed in riverine communities; assessing the appropriateness of technologies for the delta's geography; and identifying opportunities to sustainably improve sanitation. Approximately 50 million people currently practice open defecation in Nigeria, with little progress being made in addressing WASH in the Niger Delta (Gilbert, 2017). Unsafe WASH has significant implications for social and economic development, as poor management of water resources leads to pollution and destruction of ecosystems that in turn affect livelihoods and health. Although previous literature has focused on various aspects of the WASH sector, little to no research has examined the conditions specific to the Niger Delta. The SNDP intended to support developments within the Niger Delta's WASH sector and for its riverine communities; contribute to improved government policy and practice; and contribute to the professional development of the principal investigator (PI). The SNDP investigated current WASH practices, attitudes, and beliefs; sanitation technologies employed in riverine communities; appropriateness of technologies for the delta's geography; and elements needed to sustainably improve sanitation. This outcome evaluation assesses whether and how the SNDP contributed to the improvement of sanitation in the Niger Delta.

Methodology

The evaluation investigates whether and how the SNDP generated new knowledge, attitudes, skills, and relationships among key actors to improve sanitation in the Niger Delta region. The objective is to critically assess the SNDP by collecting and analyzing information about its activities, outputs, and outcomes to support learning for research effectiveness.

The Outcome Evaluation approach used within this evaluation is explicitly intended for application to transdisciplinary research projects (Belcher et al., 2020). The approach uses concepts from Outcome Mapping (OM), such as declining relative influence, presented as spheres of control, influence, and interest; actor-specific outcomes defined as behaviour change; and specific indicators defined per outcome (Belcher et al., 2020). The approach assesses whether and how a research project contributed to the realization of outcomes, using a theory of change (ToC) as the main analytical framework. The ToC is also used to define data needed and identify potential data sources to deductively test each change hypothesis (Belcher et al., 2020). A ToC provides a detailed description and model of why a change is expected to occur within a specific problem context. It models the causal relationships between a project's activities and results, and how these are expected to manifest in outcomes, giving particular attention to the impact pathways, actors, and steps involved in the change process. The underlying mechanisms of behaviour change are conceptualized as changes in knowledge, attitudes, skills, and/or relationships (KASR).

The evaluation team led a participatory workshop in March 2019 to define the scope of the evaluation, retrospectively document (i.e., make explicit) the implicit ToC for the SNDP (Figure 1), and identify possible sources of evidence to empirically test the ToC. The Outcome Evaluation method collects participant and stakeholder perspectives to identify and assess the contribution of factors within a change process (Belcher et al., 2020). To gather these perspectives, we conducted fifteen interviews, an online survey, and reviewed a series of relevant documents to answer the following questions for the outcome assessment:

1. Research Outcome Evaluation:

- a. *To what extent and how were outcomes realized?*
- b. *Were there any positive or negative unexpected outcomes from this project?*
- c. *Could the outcomes have been realized in the absence of the project?*
- d. *Were the assumptions pertaining to why these changes were expected sustained?*
- e. *Are the higher-level changes likely to be realized?*

Project design and implementation were characterized using Belcher et al.'s (2016) Transdisciplinary Research Quality Assessment Framework (QAF). The QAF was used to highlight elements of research design and implementation that contributed to the realization of outcomes. This assessed the degree to which the SNDP incorporated recognized quality criteria of transdisciplinary research¹, organized under the principles of *Relevance, Credibility, Legitimacy, and Effectiveness*. The project assessment was guided by the following questions:

2. Research Project Assessment:

- a. *What elements of the research design and implementation supported outcome realization, and how?*
- b. *To what extent and how did the project engage effectively with relevant stakeholders?*
- c. *To what extent were the research findings sufficiently relevant to achieve the stated objectives?*
- d. *To what extent and how are target audiences aware of and using the project outputs?*
- e. *How does RRU support student success in research?*
- f. *What lessons about effective research practice can be learned from this case study?*

Results were analyzed and grounded in the context of social change theories, including stakeholder theory and social capital theory, to explain the implications of outcome realization.

Project Overview

Open defecation in Nigeria remains a substantial issue with little progress having been made in addressing WASH in the Niger Delta (Gilbert, 2017). Nigeria was listed among countries 'not on track' to fulfill the sanitation objectives of the seventh Millennium Development Goal (MDG). As well as having a significant impact on health (e.g., improved access to WASH is effective in combatting diarrheal disease), unsafe WASH has a significant impact on economic development as poor management of water resources leads to pollution and destruction of ecosystems that in turn impact livelihoods. The Niger Delta region, with its low altitude coastal geography, high annual rainfall, high-water table, and frequent flooding, presents special challenges which require tailored technology options to address the WASH gap. The region also has challenging social conditions, including low levels of education, income, a general lack of resources, and cultural norms and attitudes that impede adoption of improved WASH practices. By gaining insights into the cultural, social, and economic context, the SNDP aimed to guide and inform approaches within the ASH sector, including technological options for sustainable sanitation in the riverine communities of the Niger Delta. The SNDP used an exploratory case study method with a quantitative survey of habits in two riverine communities (257 households participated), and a qualitative study including twenty-one in-depth semi-structured interviews with individuals working in WASH or living in this environment, as well as direct observation, participant observation, and field notes. The key outputs of the SNDP included: the WASH sector WhatsApp group; government and WASH actors low-level of WASH knowledge; knowledge of Niger Delta contexts (e.g., environment, hydrology, culture, communities, etc.); low level of WASH knowledge and current cultural practices in communities (including risks and challenges associated with poor WASH); the appropriateness of WASH technologies for communities' specific context including lack of available technology; evidence based recommendations and guidance for exploring safe sanitation options and ensuring their adoption into policy and practice; and, identified the need for capacity-building and consistency of WASH workers. The SNDP aimed to contribute to key intended outcomes such as: enhancing local government

¹ The QAF is not meant to be a measure of excellence, but rather characterizes the project design and implementation in terms of the degree of its transdisciplinarity.

capacity for improved policy and practice; enhancing capacity for knowledge sharing and learning within Nigeria’s WASH sector and supporting the implementation of SNDP recommendations; enabling Niger Delta communities to have access to appropriate, affordable and safe technologies to address WASH; and, supporting the PI to continue work in the WASH sector and beyond. Further detail regarding the SNDP ToC is included below.

Project Theory of Change

The overall purpose of the SNDP was to improve the health, social, and economic development of communities living in the Niger Delta. The research aimed to contribute to this aim through three interconnected pathways: a *WASH sector and community development* pathway, a *government policy and practice* pathway and a *professional development* pathway. The key steps in these pathways are illustrated in Figure 1. Each impact pathway intersects and complements the others to support the realization of outcomes. When the PI began the SNDP, there were no technological options available for safe sanitation practices appropriate for the high-water tables and frequent flooding experienced in the Niger Delta region. This led the PI to explore technological options for the context, along with an investigation of current WASH practices, attitudes, and beliefs, to identify potential solutions. The PI conducted a literature review of current sanitation technologies implemented in the Niger Delta, identified available WASH technologies and their suitability to riverine environments, and examined sanitation behaviour change approaches. Other activities included field observation, surveys, and interviews with stakeholders. The PI engaged relevant government, practitioner, and community actors in the research by leveraging the PI’s existing professional connections in the region. The PI shared knowledge and SNDP findings back to these groups to influence thinking, policy, and practice.

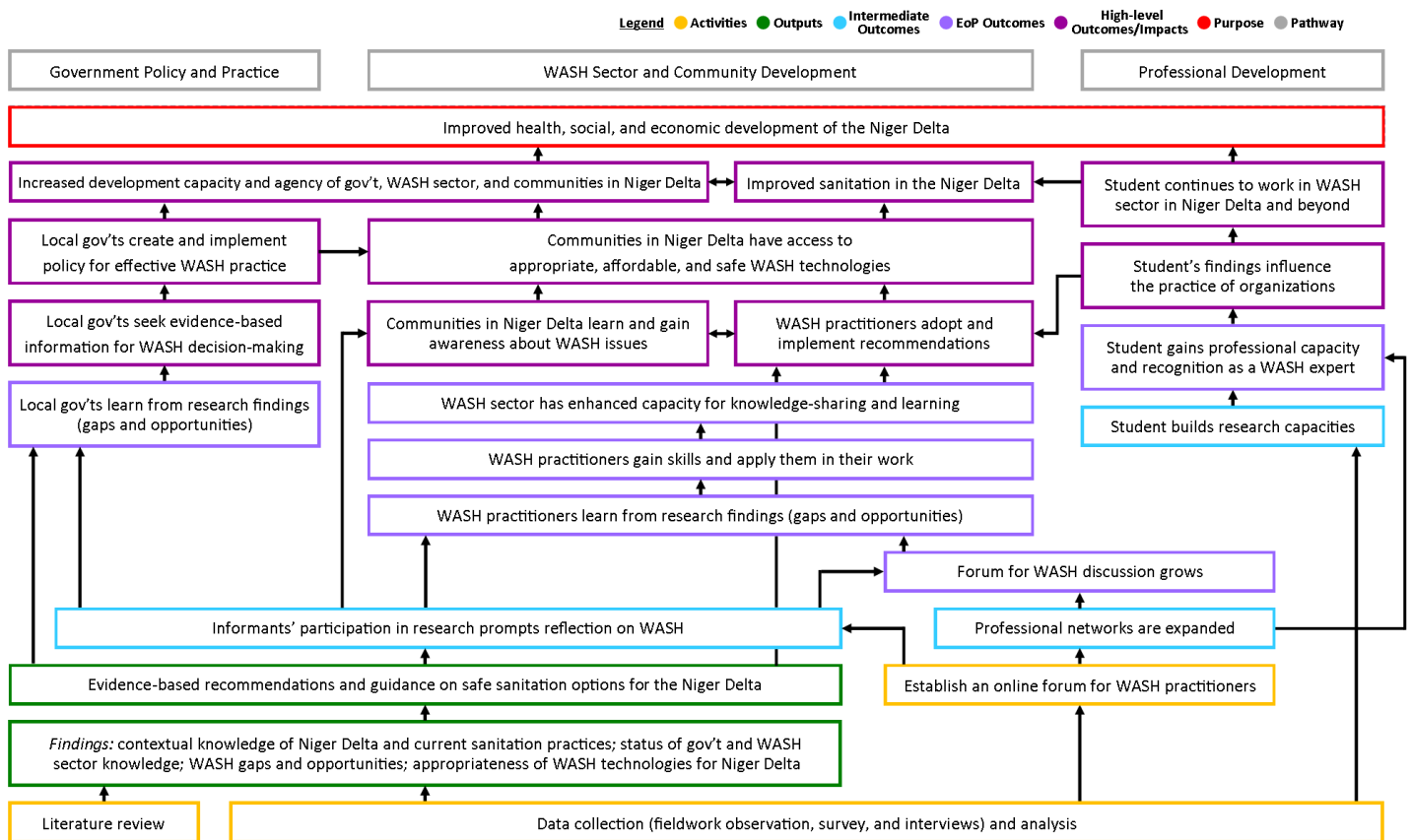


Figure 1. Simplified SNDP Theory of Change

The *WASH sector and community development* pathway was the main avenue of influence for the project. To support engagement activities with local WASH practitioners, the PI created an online forum for discussion, which also functioned as a community of practice, via a WhatsApp group. By participating in the research, it was

expected that new reflections about the Niger Delta's WASH situation would emerge. WASH practitioners were expected to critically reflect on their own ways of working, learn from the research findings, gain skills via training sessions, and subsequently implement the recommendations. With a greater local awareness of WASH issues and as WASH practitioners implement recommendations, communities in the Niger Delta would have greater access to appropriate, affordable, and safe WASH technologies in the long-term.

Influencing *government policy and practice* was not a main focal point of the research. However, by including WASH representatives from the government (including the Rural Water Supply and Sanitation Agency (RUWASSA)) within the data collection process, it was expected that these informants would reflect on their own ways of working and improve their WASH knowledge through the research findings. Moreover, it was expected that exposure through the SNDP would encourage government actors to seek evidence-based information and contextually appropriate solutions. With an improved knowledge base and awareness of WASH gaps, issues and solutions, it was expected that local government capacity to develop and implement effective WASH policy would be improved. Better informed policies and practices alongside access to appropriate technologies would lead to improved sanitation in the Niger Delta.

In addition, the research intended to provide a *professional development* experience for the PI to expand their expertise as a WASH practitioner and earn their doctorate. As a result, the PI would gain recognition as an expert in WASH. The PI was expected to apply learning from the research experience in the organizations they work with in the future to influence practice. By sharing and applying WASH knowledge to other contexts around the world, the PI was expected to contribute to the development capacity and agency of the WASH sector both in the Niger Delta and beyond. Overall, all activities, outputs, and outcomes were expected to support improved health, social, and economic development in the Niger Delta.

Results

Outcome Evaluation: *To what extent and how were outcomes realized?*

Table 1 summarizes the extent to which outcomes were realized. The SNDP leveraged multiple impact pathways and mechanisms to realize outcomes. Outcomes in the *WASH sector and community development* pathway were realized through the involvement of key stakeholders in the data collection process and by co-producing knowledge. As an exploratory piece of research, the SNDP identified key knowledge gaps and helped stakeholders become aware of WASH gaps, issues, and opportunities through targeted dissemination of the findings (e.g., including stakeholders in meetings and discussions). By leveraging the PI's professional position at WASH organizations (including Partnership Initiatives in the Niger Delta (PIND) Foundation), knowledge gained through the SNDP was transferred to the PI's colleagues to support staff effectiveness and increase capacities. The creation of a WhatsApp group comprised of 179 local WASH sector actors (e.g., RUWASSA, WASH practitioners, etc.) at the time of the evaluation contributed to increased knowledge and sharing of best practices across the Niger Delta WASH sector. *Government policy and practice* outcomes were partially realized and supported by outcomes in the *WASH sector and community development* pathway. For example, involving government actors in the data collection phase influenced their knowledge and capacities through participation, encouraging them to reflect on current WASH policy and practice. By inviting government actors to join the WASH sector WhatsApp group, the SNDP facilitated enhanced capacity for knowledge sharing and learning. Outcomes in the *professional development* pathway were realized as the SNDP provided an opportunity for the PI to develop their research capacities through the research process, and through new knowledge, skills, and understanding for future work on the topic. Other mechanisms include strengthening existing networks and coalitions by exposing the PI to new networks; leveraging and enhancing the PI's reputation; and supporting the PI's interest and motivation to continue working on the topic of WASH.

There were some unexpected outcomes that arose in connection to the SNDP, such as the establishment of a knowledge network of scholars and practitioners to share development knowledge and facilitate knowledge-to-practice in the form of Transform International (TI); further exploration of the topic in other parts of Africa; and the opportunity to support the revision of a national government protocol to establish communities as open

defecation free (ODF). The logic of the SNDP and its underlying assumptions appear to be sustained. However, the need for appropriate infrastructure appears to have not been fulfilled owing to corruption, the challenging landscape, embedded cultural norms, and a weak governance.

Table 1. Summary of outcome realization and SNDP contributions

<i>Outcome</i>	<i>Assessment</i>
Informants' participation in research prompts reflection on WASH [<i>intermediate outcome</i>]	Realized, clear project contribution
PIND staff gain knowledge and capacities and apply them in related work [<i>intermediate outcome</i>]	Realized, clear project contribution
Forum for WASH discussion grows [<i>end-of-project outcome</i>]	Realized, clear project contribution
WASH sector recognizes WASH gaps, issues and opportunities [<i>end-of-project outcome</i>]	Realized, clear project contribution
Nigeria's WASH sector has enhanced capacity for knowledge sharing and learning [<i>end-of-project outcome</i>]	Realized, unclear project contribution
WASH sector explores technologies in high water table contexts [<i>end-of-project outcome</i>]	Partially realized, unclear project contribution
Local governments have enhanced capacity for improved policy and effective WASH practice [<i>end-of-project outcome</i>]	Partially realized, unclear project contribution
PI's professional development enhanced by research experiences [<i>intermediate outcome</i>]	Realized, clear project contribution
The PI has deeper understanding of issues in WASH and how to approach working in challenging contexts [<i>end-of-project outcome</i>]	Realized, clear project contribution
Knowledge network of scholars and practitioners share development knowledge and facilitate knowledge-to-practice transformation (TI) [<i>end-of-project outcome</i>]	Realized, clear project contribution

Alternative Explanations of Outcome Realization

Some evidence indicates alternative explanations (i.e., processes external to the SNDP) for outcome realization. For example, national government initiatives such as declaring a state of emergency in WASH, the implementation of the National Action Plan for the Revitalization of the WASH sector (2018), and the recent prioritization to end open defecation have raised the importance of appropriate sanitation technology development and provision to achieve an open defecation free (ODF) Nigeria by 2025. This increased support by national government has led to the implementation of policy for effective WASH practice. Community-Led Total Sanitation (CLTS) has also been embraced by the Nigerian government and is part of the National Action Plan. For example, evidence suggests that CLTS has been implemented in some riverine communities of the Niger Delta which has supported communities to take ownership of local WASH initiatives. Local governments also have enhanced commitment to action on WASH through establishing WASH policies, laws, ODF road maps, and implementation guidelines as a result of national initiatives. The above initiatives have contributed to the biggest improvements in the Nigerian WASH sector over the past three years. The efforts by national and local government highlight the alignment of the SNDP with current initiatives and its social relevance as a research problem. However, contextual factors including corruption have proven a barrier to progress. Organizations such as USAID and UNICEF have also focused efforts on improving WASH with capacity-building programs and communities of practice. Increased communication and knowledge sharing within the WASH sector has begun to influence safe sanitation practices within the Niger Delta. UNICEF has focused attention on strengthening government efforts to end open defecation, as well as supporting governments to implement WASH policies, strategies and guidelines (UNICEF, 2019). Similar to the SNDP which focuses on sanitation value chains, the private sector is also a key element to UNICEF's work as they aim to ensure sufficient engagement and support

to enhance commitment to action on WASH. Other individual research projects have engaged with communities in the Niger Delta to understand persisting sanitation challenges and why communities may not currently be using improved sanitation options that are available. Lastly, media campaigns, including through radio and television, have been used to contribute to the gradual change in social norms around safe WASH. Overall, the SNDP reinforces and works towards similar goals as many initiatives also underway in the sector. However, few of these are discussed or built upon within SNDP documentation.

Project Assessment: *What elements of the research design and implementation supported outcome realizations, and how?*

The QAF assessment reveals that the SNDP's design and implementation aligns with some principles and criteria of relevant, credible, legitimate and effective research, and produced knowledge that is useful and used (see Appendix 7 for QAF results and justifications for the project assessment). However, in comparison to other TDR projects, the SNDP scored relatively low across all principles.

Under the relevance principle, the PI's previous experience and knowledge of the context was a key factor in supporting the completion of research in a sensitive topic. The research design was appropriate due to the little prior research on the topic of sanitation in the Niger Delta which enabled the SNDP to provide a base of understanding. The SNDP addressed a socially relevant research problem and effectively engaged with the problem context. Informants reflected on the relevance and value of the SNDP, and the practical application of the findings have been considered and discussed by system actors, particularly those who continue to work at PIND. However, the singular objective and lack of discussion of the communication process was a weakness under the QAF analysis; a set of objectives to support the research purpose and explicit discussion of communications would further situate the research within the social problem and contribute to transparency.

Regarding credibility, the PI had the adequate competencies to support the completion of the SNDP and collect a variety of perspectives. The exploratory design is appropriate to address the stated objective with a clear discussion on the inclusion of chosen methodologies and the collection of data from Niger Delta communities. However, the SNDP does not draw correlations between the qualitative and quantitative data to support findings and strengthen the argument. Further transparency regarding relationships and bias would have further supported the trustworthiness of SNDP findings (Belcher et al., 2016).

Under legitimacy, the SNDP maintained the anonymity of participants and highlighted the importance of reflexivity to ensure it was an ethical project. There was scope for the project to be more collaborative with informants and those not directly involved in the project to improve the uptake and use of findings and recommendations. Transparency could have been improved with more detailed discussions of relationships, biases, and positionality to build trust among possible users of the findings and recommendations.

Lastly, the SNDP clearly contributed to the partial or full realization of seven of the ten intermediate and end-of-project outcomes. The PI's capacity was developed with the successful expansion of their knowledge base to support their future work on the topic in the Niger Delta and beyond. Since completing the SNDP, the PI has continued to work with NGOs, governments, and communities to develop safe, contextually appropriate, and environmentally suitable toilets for the Niger Delta, as well as bring practitioners together to improve and share knowledge about best practices. Informants suggested that the SNDP was effective at bringing knowledge into action. Practitioners working in the sector were encouraged to focus their work on developing appropriate technology solutions for the contexts, with a number of the recommendations having been implemented on a regional scale. However, it is unclear to what extent the SNDP directly contributed to this. Most actors within the project's sphere of influence were aware of the project findings, benefitted from the process, and are using some learnings from the project. However, most survey respondents stated that they were unaware of the SNDP. The final thesis, a summary article, presentations at WEDEC, and a magazine article disseminated SNDP findings. More targeted dissemination and engagement would have supported further outcome realization in the *WASH sector and community development* pathway and the *government policy and practice* pathway to share knowledge of the SNDP beyond those directly involved in the project.

RRU programming supported the realization of SNDP outcomes in the *professional development* and *WASH sector and community development* pathways by supporting the PI to complete research that was relevant to their role as a WASH practitioner with the interdisciplinary environment supporting the SNDP to implement change. The nature of the DSocSci program at RRU is broad enough to allow flexibility for student-practitioners to undertake research that will inform their professional work. Key informants suggest that the interdisciplinary nature of the program was a key aspect to the project's success. The program structure, with a combination of on-campus residencies and distance learning, worked well with the PI's schedule while also allowing the PI to build collegial relationships with other students from a range of backgrounds, ages, and ideas. This subsequently fostered new professional relationships for the PI to continue working on the topic, and the PI has since established the non-profit organization, Transform International (TI), with a fellow RRU student.

Lessons Learned

Project Lessons

- Leveraging the PI's professional networks and social capital were effective strategies to collect data and to ensure knowledge-into-practice through dissemination.
- A transdisciplinary approach supported the blending of the corporate and community and practitioner worlds to ensure the usefulness of SNDP recommendations.
- To further support outcome achievement through research design and implementation, a discussion of project limitations is needed within the SNDP, and data collected should be fully leveraged (e.g., drawing correlations between qualitative and quantitative data). The research project assessment using the QAF revealed that theoretically, the appropriate project methodology is needed to support the transfer of findings to inform or design solutions to the research problem.
- Establishing respectful and positive relationships is necessary to increase trust in the PI, the research project, and the SNDP outputs.
- Further intentional collaboration and knowledge dissemination with system actors and organizations not directly involved in the SNDP would support the implementation of recommendations within the sector.

Contextual Lessons

- Further leveraging the PI's knowledge and experience of the Niger Delta WASH context would identify alignments with other projects underway in the sector, avoiding duplication, to ensure the research fills existing knowledge gaps.
- Engaging a cross-section of actors (including community members, experts in the field, and government actors) within the conversation supported research and progress around a 'taboo' and sensitive topic.
- Completing an in-depth review of current WASH policies and practices currently implemented in the Niger Delta provided useful insights for recommendations and supported the SNDP in influencing policy.
- Building further connections with and leveraging government informants who can champion the SNDP and solutions would support the SNDP in fostering political will for implementing the SNDP recommendations.

Evaluation Lessons

Limitations of the analytical framework: Retrospective documentation of the ToC can make the distinction between intended and unintended outcomes unclear. Subsequently, some outcomes that were identified in ToC workshop were not expected at project inception (e.g., *knowledge network of scholars and practitioners share development knowledge and facilitate knowledge-to-practice transformation (TI)*). In addition, having the PI identify informants to test the outcomes can also increase the risk of introducing bias into data collection as informants may be selected for their likelihood to reflect positively on the project's results and outcomes. To address this limitation, snowballing for additional perspectives and sources of information was undertaken. A survey of the WASH sector WhatsApp group was also completed to gather data more widely than the PI's direct sphere of influence which helped to reduce bias within data collection.

Limitations of the data and results: Assessments rely on informant perspectives. Interviews were conducted a few years after the project concluded, making recall of project details and processes difficult for informants. There was also some confusion in separating outcomes related to the SNDP from the PI's extensive work in the sector prior to and following the completion of the SNDP. This led to several outcomes being identified with unclear project contribution. However, it was observed that those closest to and more involved the project could recall more details of the project and its contributions. These individuals also perceived the project's influence to be higher than those more distant from the project. Despite efforts to reach government officials, community members, and WASH trainers (e.g., Delivering Effective WASH Training, DEWT), these informants were not interviewed. As a result, many of the outcomes in the *government policy and practice* pathway could have had richer data and analysis expanding on survey data.

Recommendations

Considering the results of the case study evaluation, we propose the following recommendations for the design and implementation of future research projects on sanitation issues in developing countries:

1. Be strategic in partnerships to leverage social networks and optimize opportunities for mutual learning, dissemination, and outreach.
2. Identify suitable boundary partners to support intended outcome realization.

We also recommend the following for research projects in *general*:

1. Use a ToC to plan and monitor progress and identify boundary partners that will support intended outcome realization.
2. Develop a clear problem statement, research question, and set of objectives to guide and support the purpose of the research project.
3. Fully leverage data collected to strengthen the argument and support the robustness of the research.