A Stakeholder Engagement Framework for Developing Sustainable Behaviour Research: A Lake Victoria Case study

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Abstract—**Stakeholder engagement has increasingly gained popularity in sustainability research. The approach promotes research that is relevant, that has impact and that can inform evidence-based policy. Nevertheless, little social science research investigating sustainable behaviours has been developed with this bottom-up approach. This paper provides guidelines on how stakeholder engagement can be applied in this field, illustrated through an example of stakeholder engagement at Lake Victoria, East Africa. The paper concludes with key lessons learned from this case study.**

Keywords— Stakeholder Engagement, Impact, Sustainable Behaviour, Developing Countries

I. INTRODUCTION

In the past few decades, a trend has been unfolding in the academic sphere in which the focus has shifted from theoretically interesting research to research that has a real-world impact. This impact-focus means that research is increasingly employed to investigate, and provide solutions for, societal issues such as climate change, social inequality and wellbeing. These days, research funding is often contingent on the relevance and expected impact of the research project[1], and policy-makers increasingly use the findings of research to develop evidence-based policy.

One approach to ensuring research impact is stakeholder engagement. Stakeholder engagement is the active involvement and participation of people who are directly or indirectly affected by the research project[2]. This could mean involvement in shaping the direction of the research, participation in the research, or the communication of the research findings to relevant parties. Stakeholder engagement should be mutually beneficial through a process of knowledge exchange[1]. This approach has especially gained popularity in the environmental domain including environmental management [3], social corporate responsibility [1], biodiversity research [4], marine spatial planning [5], climate change [6] and climate adaptation [7]. However, little research investigating environmental conservation *behaviour* has employed such a bottom-up approach. This is despite social sciences being a perfect candidate for stakeholder engagement

given its rich methodology and socially relevant research agenda. This field could therefore strongly benefit from adopting such approaches that will further ensure the application of social sciences to relevant societal issues and the application of the findings beyond the scope of the research project.

This paper will present a framework for involving stakeholders in the development of a sustainable behaviour research project. This framework has been developed by the author for the development of a conservation research project at Lake Victoria, East Africa. This research project focused on conservation practices at the lake and was developed by an interdisciplinary research team of social scientists. This team had received seed funding to develop a research proposal focused on ecological tipping points in large lake systems. What was important for the development of this project was the engagement of local stakeholders to ensure that the outcomes of the research project are relevant and can be applied to address real issues in society. Hence, the stakeholder's role in the development of the project was of utmost importance to assure their support for the research project and that the findings could be used to induce positive changes in the region. This paper therefore illustrates how a stakeholder approach can be used in a meaningful way and which challenges one might encounter. The following will discuss the stakeholder engagement process, and the lessons learned, using the development of the research project at Lake Victoria as a case study.

II. THE STAKEHOLDER ENGAGEMENT PROCESS

The stakeholder engagement process is a dynamic, non-sequential process for which no fixed template can be designed. Stakeholders should be involved from start (defining the research agenda) to finish (communicating and implementing the research findings). However, this paper will only report on the first phase: the development of the research project. A unique 10-step stakeholder engagement plan was developed by the author and will be presented here. These steps include: 1) establish the framework of the project, 2)

stakeholder analysis, 3) connect with stakeholders, 4) problem analysis, 5) development of research concept, 6) gain feedback from stakeholders, 7) testing methods in the field, 8) revise research concept, 9) final feedback workshop, 10) final revision phase. These should be taken as a guiding framework to help the researcher along the way, but it is important that this process is adapted to the needs of the individual research project and the stakeholders.

A. Step 1: Establish the Framework of the Project

The development of an applied social research project should always start with a clear project definition developed by the research team. Although enough room should be left for the stakeholders to define the research agenda, a general framework within which the project can be developed should be established. This framework may be based on the requirements of a particular funding call and the expertise of the research team.

In our case, the funding call from BMBF (the German Federal Ministry of Education and Research) clearly stated that the research project should focus on ecological tipping points, should be a collaboration between social and natural scientist, using local data where possible. Our team consisted of environmental and cognitive psychologist as well as environmental and behavioural economists. The framework for the development of this research project therefore focused on economic and behavioural aspects of ecological tipping points. Lake Victoria was chosen as a case study due to the various ecological tipping points that the lake had undergone and is likely to experience again.

B. Step 2: Stakeholder Analysis

Handbooks provide guidelines on how best to conduct a stakeholder analysis as a first step of the stakeholder engagement process. This process often consist of three steps: 1) identification of stakeholders, 2) categorization of stakeholders and 3) understanding (relations between) stakeholders [2], [8]. What is of crucial importance in this process, is that various types of stakeholders are included to ensure that diverse views are represented. The 'snow sampling' technique is often recommended in the first step of identifying stakeholders [9], [10], in which individuals are identified through current contacts, who then identify further contacts until enough stakeholders are selected or no further stakeholders are identified. However, one needs to be mindful that such an approach may result in biased sampling if these contacts only tend to have contacts in their network that represent a certain type of stakeholder. Where possible, it would be best to have an unbiased partner on the ground that can help with such a stakeholder analysis and can serve as a 'way in' to establish contact with the stakeholders. For example, in our project we approached GIZ (the German International Development Agency) that operates at Lake Victoria and was willing to share their contacts with us.

After this identification process, the stakeholders need to be categorizes in terms of priority and role (e.g. businesses, NGO's, communities, government) to select the stakeholders to be contacted. Finally, it is important to learn as much as possible about the stakeholders to understand their vision and aims prior to contacting them [1].

C. Step 3: Connecting with Stakeholders

Before the stakeholders are contacted, it is useful to develop a strategy to engage the stakeholder. We drafted an information sheet that introduced the research team, summarized the research framework, what we expected of the involvement of the stakeholders in the project and how they can benefit by participating. When approaching each stakeholder, it is important to emphasize why they have been selected to take part in the project, by linking their unique expertise and interest to the research project. Not only does this help encourage the stakeholder to take part in the development of the project, this also demonstrates interest in the stakeholder. First contact is often best made through phone rather than email contact, as this is a more personal approach, especially when working in developing countries where access to email may be more limited. When the stakeholder is interested in the project, set up a face-to-face meeting and provide an agenda ahead of this meeting to allow the stakeholder to prepare for the meeting and know what to expect.

D. Step 4: Problem Analysis

This first meeting with the stakeholders will serve as a first step in the problem analysis phase. Start this meeting by introducing the research team, re-stating the scope of the research project, why they have been selected and what is expected of the stakeholders. Next, interview the stakeholders about what they perceive to be the most pressing issues in the area, and why [2]. Follow-up by asking participants to explain the process of the issue, by describing its drivers, consequences and mitigation strategies [11]. Participatory tools (e.g. fishbone diagram, force field analysis) can be particularly useful for this [3]. Take notes and develop a coding scheme to identify recurrent issues discussed by the stakeholders. This analysis will result in a matrix of issues discussed across stakeholders (see Table 1), and what particular aspects of the issue were discussed by each stakeholder. This overview will demonstrate which issues were most often discussed and perceived to be the most important issue by certain stakeholders, which will help the further selection of stakeholders. In our case, this resulted in 19 different issues that were discussed by the stakeholders, ranging from environmental conservation issues including water pollution and declining fish stock to social issues such as increasing HIV rates, gender inequality and governance issues including land ownership and enforcement of fishing regulations.

Table 1: Problem Analysis Matrix

	Stakeholder 1	Stakeholder 2	Stakeholder 3
Issue 1			
Issue 2			
Issue 3			

The next step is to learn more about the issues brought up by the stakeholders through site visits, consultation of experts

and through literature reviews. Explore what has already been studied in relation to the issues, and where the gaps are. Finally, select one issue that will be the focus of the research project by considering which issue stakeholders perceived to be most important, what the gaps are in the research and where the researcher-team's skills and expertise can have the biggest impact.

After carefully reviewing the issues and literature, our research team decided to focus on the declining fish tock at Lake Victoria as this was the most frequently discussed issue by stakeholders, was in line with the funding call requirements, and matched the skills and expertise of the research team.

E. Step 5: Development of Research Concept

Now that the focus of the research project has been determined, the research concept can be developed. Start with the aim of the project, and derive the research questions from this. When designing these questions, it is important to keep the funding call's requirements in mind, as well as the research team's skills and expertise and how the research can have the highest impact on the issue to be addressed. At this stage, it is useful to already develop a range of preliminary research designs to answer the research questions to make the research concept more concrete. Before presenting the research concept to the stakeholders, identify possible weaknesses and opportunities in the research concept, especially in terms of implementation. These considerations should be addressed in the next step and are particularly important when conducting research in developing countries, as was the case for our research project. Specific concerns for this project included practical issues such as logistics, research assistants as well as opportunities such as existing data and networks and platforms among the stakeholders.

F. Step 6: Gain Feedback from Stakeholders

Organise a second meeting with the stakeholders to present the research concept and obtain their feedback [1]. If possible, invite various stakeholders for a workshop so that stakeholders can interact and discuss the research concept in a group setting [2]. In this meeting, present the findings from the previous stakeholder meetings including the list of stakeholders and issues that have been discussed by these stakeholders. Explain which topic has been selected for the research project and how this issue is understood. Present the research aims and research designs in an accessible way without using academic lingo to ensure stakeholders have a good understanding of the research plan. This may mean leaving out methodological or theoretical details and focusing on the parts that resonate with the stakeholder.

Ensure the workshop is as interactive as possible, by stimulating stakeholders to be critical, asking them specific questions (e.g. questions in relation to implementation). This is a key moment for stakeholders to highlight any issues that they may foresee with the current research concept and it is therefore of utmost importance that stakeholders feel free to voice such concerns. This is also a great opportunity to start discussing the dissemination of the findings, and how the

stakeholders can assist in this through their networks[1]. Moreover, it is important to discuss with the stakeholders how they will be involved in the implementation of the research project and to discuss expectations.

We organized various workshops across the three riparian countries to present our research concept and gain feedback from stakeholders. These meetings were particularly helpful to capture the excitement of the stakeholders for the project, to fine-tune the research topics and to get practical advice for the data collection phase of the research project.

G. Step 7: Testing Methods in the Field

It might be advantageous to use the field-visits to try out methodology that has been designed as part of the research concept. Simple methods may be tested in the workshop with the stakeholders, which has the added benefit of making the methodology of the research more tangible to the stakeholders. This provides stakeholders or other participants the opportunity to provide feedback on the methods. Moreover, this test-trial will demonstrate the feasibility, validity and appropriateness of the methods as well as practical limitations that may not have been anticipated otherwise [3].

We tested a methodology to assess mental models and tested this with fishing communities at Lake Victoria (see Figure 1). This was extremely valuable experience as it demonstrated that 1) social dynamics strongly influenced the task 2) many fishers who were less literate felt intimidated by the task. Therefore we learned that we had to develop an alternative methodology to assess the mental models in developing countries.

Figure 1: Testing Methodology at Lake Victoria

H. Step 8: Revising the Research Concept

Based on the feedback gained in the field, the research concept can be further revised and refined. It is important to take all the feedback from stakeholder seriously, but at the same time be aware that some feedback may be more relevant to the research project than others may. The feedback from stakeholders may mean having to go back to the drawing board, revisiting the research questions, or selecting different types of methods to answer the research questions [3]. If fundamental changes are made to research concept during

this phase, it is important to stay in close contact with key stakeholders to ensure that the revised research plan is in line with the expectations of the stakeholders.

The workshops had shown us that we were on the right track: stakeholders were enthusiastic about the research project, and believed in the relevance and impact of the concept presented. The research concept was further developed based on the stakeholder's feedback. Specifically, brain storm sessions conducted during the workshop on possible intervention studies had been particularly fruitful and inspired new research designs. Moreover, the available data that was presented by our stakeholders during the field visits allowed us to enhance the existing research designs and generate more ideas on how to address the research questions by analyzing this existing data pool. Importantly, the field visit had demonstrated that a revision of the methodology was imperative. During this revision phase, a mental model elicitation tool was developed for illiterate populations to resolve the issues encountered in the field.

I. Step 9: Final Feedback Workshop

A final feedback session should be held to provide key stakeholders with the opportunity to comment on the revised research concept [2]. A similar agenda as the previous meeting can be employed in which the research ideas are presented and stakeholders are invited to share their thoughts. However, in this stage, it is important to provide stakeholders with all the details that they require to assist the research team with useful suggestions and comments. Moreover, in this stage, stakeholders need to be informed how their feedback has been incorporated in the revised research concept [2]. It is therefore recommended to send the stakeholders a summary of the research plan ahead of this workshop. Again, it is advised to make such a workshop as interactive as possible, for example by conducting a participatory SWOT analysis with the stakeholders and having a list of specific questions for the stakeholders [2].

For this workshop, we invited our key stakeholders (by now partners!) that consisted of two specialized institution of the East African Community that are responsible for the sustainable management of the Lake Victoria Basin (LVBC) and the fisheries resources of Lake Victoria (LVFO) respectively. The workshop was also attended by a German NGO that promotes sustainable fishing at Lake Victoria through certification (Naturland) and our interdisciplinary academic advisory board. This workshop has proven to be crucial in the success of the project as the participants pointed out inconsistencies in the research plan that had previously been overlooked. The participants also provided helpful suggestions to advance the research plan. In particular, stakeholder's knowledge on the lake's ecology proved to be indispensable to finalize the research plan successfully.

J. Step 10: Final revision

After the final feedback workshop, the research team should agree on a plan to incorporate the feedback from the workshop in the research project. Ideally, this stage mainly consists of fine-tuning and editing, but do not hesitate to make fundamental changes in this stage if the stakeholders and researchers agree that this is necessary to ensure the quality and impact of the research. Again, it is important to stay in close contact with stakeholders if this is necessary. The final product (in case of a research proposal) should of course be shared with all the stakeholders. This could be accompanied with a short survey to assess the stakeholder's experience in the development of the research project. Such feedback will be extremely valuable for the continuation of the project and reduces the chances of possible future miscommunications or conflicts. Inform the stakeholders about the next steps, to ensure that they know what to expect of the research team and what is expected of them.

III. KEY LESSONS LEARNED

The stakeholder engagement process can be challenging, especially with international, intercultural and interdisciplinary research projects, as is often the case for research projects nowadays. Hence, this process has been an enlightening process, from which lessons has been drawn. These key lessons will be described below and serve as recommendations for future researchers planning to conduct stakeholder engagement processes to develop sustainable behaviour research projects, especially in developing countries.

A. Clear Communication

Good communication with the stakeholders is the most important determinant of a successful collaboration, but perhaps also the most challenging one. Differences between the stakeholders and the researcher in educational background, languages, cultures, interest and jargon are likely to hinder a smooth communication flow. Moreover, different kinds of stakeholders require different communication styles and levels [2]. By using simple language in emails, presentations, conversations and reports, many misunderstandings and miscommunications can be avoided, or at least identified in an early stage. In our project, a misunderstanding was created among the stakeholders in terms of employment opportunities that might accrue from the research project for their organizations. This was a result of unclear language used from our side that did not spell out what the stakeholders could and could not expect in terms of employment opportunities.

One technique to avoid such miscommunications is to mirror the stakeholders communication style by identifying the specific lingo and styles that are adopted by stakeholders and using this style in your communication to the stakeholders (e.g. observe the lingo on their websites or emails). This also avoids stakeholders potentially feeling intimidated by the researcher team and eases the relations. Importantly, when communication is simple and clear, this gives stakeholders the optimal opportunity to contribute to the research agenda.

B. Stakeholder Interaction

Stakeholders should be involved frequently throughout the research process [2]. Many stakeholders met in the field reported having felt used by previous researchers because the

researchers failed to keep the stakeholders informed about the development of the project. By keeping the stakeholders informed, for example through a newsletter, the stakeholders feel involved and are able to contribute throughout the entire process. It is important here that the stakeholder interaction is a two-way street, meaning that stakeholders can contact researchers throughout the research project. The stakeholders and researchers can develop a communication plan that lay out platforms for communication.

C. Manage Expectations

Throughout the process, managing stakeholder's expectations is of key importance. This refers to both the expectations of the researcher and the stakeholder in relation to the aims of the project and what the project can realistically expected to achieve. Moreover, stakeholders will also need to be informed about how they will (and will not) benefit from the project. Managing expectations avoids disappointment, dropouts, and makes the process more productive by guiding stakeholders on the scope of the project, thereby making their comments and suggestions more realistic and beneficial for the development process.

In the first meeting with the stakeholders, many reported being uncertain of what they could expect of the project and what was expected of them, despite the information sheet that had been shared with them. Once this was further explained to the stakeholders, this cleared the air and significantly benefited the discussions and contributions of the stakeholders.

D. The Researcher's Attitude

Interacting with diverse stakeholders with different backgrounds requires certain attitudes on the researcher's end. First, the researcher needs to be flexible as the stakeholder engagement process naturally implies the dependency on external sources that will shape the research process. With this comes a sometimes unpredictable and dynamic process and less control on the researcher's end. It is important that the researchers are willing to adapt to this and are open to the stakeholder's point of view. Moreover, when interacting with stakeholders from different cultural backgrounds the researchers need to be mindful of cultural differences and adapt accordingly.

East African countries tend to place a greater emphasis on the hierarchies in society compared to western countries [12] and it is important to respect this while engaging with local stakeholders. For example, through the communication with the stakeholders it became clear that using the appropriate titles is a necessity in order to demonstrate respect in East Africa. Another important consideration is dressing appropriately, meaning dressing formally when meeting with policy makers to demonstrate respect, but less formally when meeting with communities in order not to intimidate.

Finally, it is important for the researcher to be humble and treat stakeholders as equal. Stakeholders may not have enjoyed the same education as the researcher but provide the research project with invaluable knowledge and perceptions.

Researchers should appreciate that the researcher and stakeholders hold different, complimentary knowledge and skills and use this to advance the research to address the issue of interest.

IV. CONCLUSION

The stakeholder engagement process can be an enjoyable and fruitful process but is never without challenges and lessons to be learned. Research addressing sustainable behaviours would strongly benefit from adopting stakeholder engagement approaches and this paper has attempted to provide guidelines for such projects. Using a stakeholder engagement process at Lake Victoria as an illustrative example, the process and key recommendations have been presented. By being sensitive to the stakeholder's point of view, the relevance and impact of the research project can be significantly enhanced.

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