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A framework for co-developing conservation research projects with stakeholders: A Lake Victoria case study

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Abstract

Stakeholder engagement has increasingly gained popularity in conservation research since it promotes relevant research that has impact and can inform evidence-based policy. Lake basins can especially benefit from research co-created with stakeholders since these regions tend to face a multitude of conservation challenges while also dealing with many stakeholders that are directly dependent on a lake's resources. Particularly important for successful, co-created research is the first phase of stakeholder engagement, namely the co-development of the research agenda with stakeholders. This phase tends to determine whether or not projects will be funded and implemented, therefore providing a foundation for subsequent realization of a project, as well as the impact of the research findings. The present study provides a framework for the application of stakeholder engagement in co-developing a research agenda, as illustrated through a case study on Lake Victoria in East Africa, concluding with key lessons learned from this case study.

KEYWORDS
community-based participatory research, environmental management, impact, Lake Victoria, participatory action research, stakeholder engagement, stakeholder participation, transdisciplinary research

1 | INTRODUCTION

A trend has been unfolding within academia over the past few decades wherein the focus has been shifting from research that aims to further development of theory to research that aims to make an impact on societal problems. This impact-focus means research is increasingly focusing on investigating and providing solutions for conservation issues such as climate change, biodiversity protection, and ecosystem management. Further, current research funding is often contingent on the relevance and expected impacts of the research project (Phillipson et al., 2012), and policymakers increasingly consider research findings to develop evidence-based policy.

One approach to ensure research impact is through stakeholder engagement. Stakeholder engagement is the active involvement and participation of people directly or indirectly affected by a research project, including all individuals, agencies, and organizations with a substantial stake in a given issue (Durham et al., 2014; Narayan, 1996). Stakeholder engagement can consist of interactions at every stage of a research process, including shaping the direction of the research, participating in the research, collecting and/or analysing

data, communicating findings to relevant parties, and translating findings into actions. To make full use of the co-creation process, conditions must be created wherein all stakeholders are able to contribute their respective capacities and resources during all steps of the process.

Many different terms and approaches are used in previous literature to refer to engaging stakeholders in research. These terms include the following: (a) *indigenous research methodologies*, which emphasize understanding the perspective of the researched communities (Chilisa, 2019); (b) *participatory action research*, which emphasizes that stakeholders control every single step of a research project (Cornwall & Jewkes, 1995); (c) *co-production of knowledge*, which reflects the contribution of multiple knowledge sources, including science, policy, and society (Djenontin & Meadow, 2018; Lemos & Morehouse, 2005); (d) *socio-economic assessment*, which describes a process of learning about the social, cultural, economic, and political conditions of individuals, groups, communities, and organizations (Bunce et al., 2000); and (e) *transdisciplinary research*, defined as interdisciplinary research that actively involves multi-stakeholder perspectives (Roux et al., 2010), as well as many other terms (Pretty et al., 1995).

Although these approaches are underpinned by different research agendas, they all aim to involve diverse people with different interests, needs, and perspectives within the relevant community in order to increase the chances of the findings being used, by focusing on locally defined priorities (Narayan, 1996). Further, the approaches have the potential to elevate local perspective to a national or international platform of knowledge sharing (Chilisa, 2019). Thus, stakeholder engagement increases the relevance and usability of research by creating more relevant, appropriate, and tangible output because it fosters a direct collaboration between researchers and practitioners (Djenontin & Meadow, 2018; Howarth & Monasterolo, 2017; Lemos & Morehouse, 2005; Meadow et al., 2015).

This approach has gained popularity, especially in the environmental conservation domain, including environmental management (Reed, 2008), social corporate responsibility (Phillipson et al., 2012), biodiversity research (Fish et al., 2011), fishery management (Wiber et al., 2004), marine spatial planning (Pomeroy & Douvere, 2008), climate change (Lemos & Morehouse, 2005; Meadow et al., 2015; Shaw & Kristjanson, 2013; Wall et al., 2016), and climate adaptation (Gardner et al., 2009; Meadow et al., 2015).

The present study focuses on stakeholder engagement in lake basins, although the presented framework is not limited to applications in lake contexts. Lake basins particularly tend to cope with a multitude of conservation challenges and often constitute a shared resource among many different stakeholders directly dependent on the lake's resources. Due to the important role of lake stakeholders in lake conservation, lake basins can particularly benefit from research co-created with its stakeholders. Nevertheless, many research projects in these regions are developed by researchers and managers without consultation of local communities or other stakeholders. Failing to represent diverse resource users in the development stage

of a research project may result in the project not receiving necessary support, and the project outcomes may not be adopted by or even be relevant to the stakeholders.

Ample guidelines have been written for stakeholder analysis (Durham et al., 2014; Prell et al., 2009; Reed et al., 2009) and the literature provides a wealth of methods and tools to use in stakeholder interactions (Maine et al., 1996; Reed, 2008). The literature also offers several frameworks outlining all stages of stakeholder engagement, including planning a research project, collecting data, co-analysing the research, and dissemination (Bunce et al., 2000; White et al., 2004). Nevertheless, few guidelines focus on the crucial stage of the co-development of a research agenda that precedes implementation of a research project. This co-development process is of utmost importance, however, as implementation of a research project is often contingent on a successfully (co-)created research agenda. Further, this stage lays the foundation for subsequent realization of a project and will determine the impact of research findings.

Thus, the aim of the present study is to propose a framework for co-creating a conservation research project and illustrating its use in a lake basin context. It draws on stakeholder engagement literature (particularly literature relevant to conservation research, including biodiversity research, fishery management, and climate adaptation) and the experiences of the authors in establishing such a research project (the MultiTip project) at Lake Victoria, East Africa. Lake Victoria, the world's largest tropical lake, is shared by three riparian countries, which complicates co-management of the lake's resources. Many Lake Victoria conservation projects are designed without the input of its resource users or other key stakeholders. New projects often rely on recommendations of previous projects, without verification of their relevance or continued prevalence of a particular issue. Such approaches have resulted in a lack of support and adoption of various conservation projects in the region, thereby wasting both resources and conservation opportunities. However, because of the region's wide variety of stakeholders and challenges, this region is particularly suited to develop and test a stakeholder co-development framework. Thus, the presented framework will be illustrated with examples drawn from stakeholder engagement experiences in the MultiTip project.

Developed by an interdisciplinary research team of social scientists, MultiTip focuses on conservation practices and tipping points at Lake Victoria. This team received seed funding to develop a research proposal focusing on ecological tipping points in large lake systems. An important component for the development of this project was the participation of local stakeholders as a means of ensuring the research project's findings are relevant and can be applied to address important issues in society. Local stakeholders are those individuals that derive their livelihoods from Lake Victoria fisheries, (nongovernmental) organizations, as well as research and academic institutions directly or indirectly involved in governance of the lake. Hence, the stakeholders' role in project development was of utmost importance in order to better understand their views, ensure their support for the project and ensure the findings could be used to induce positive changes in the Lake Victoria region. Thus, the present

study illustrates how a stakeholder engagement approach can be employed in a meaningful way in a lake basin that encompasses a wide variety of stakeholders and challenges.

2 | THE PROCESS OF CO-DEVELOPING THE RESEARCH AGENDA WITH STAKEHOLDERS

Stakeholders can be involved in every step of the research process, and researchers should include stakeholders from the beginning (e.g. defining the research agenda) to the end (e.g. communicating and implementing research findings). The present study focuses on the first phase, namely the development of a research project. A ten-step stakeholder engagement framework was developed for this purpose (see Figure 1). The framework steps include the following: (a) establishing the framework of the project; (b) stakeholder analysis; (c) connecting with stakeholders; (d) problem analysis; (e) development of research concept; (f) updating stakeholders and gaining feedback; (g) testing methods; (h) revising the research concept; (i) final update
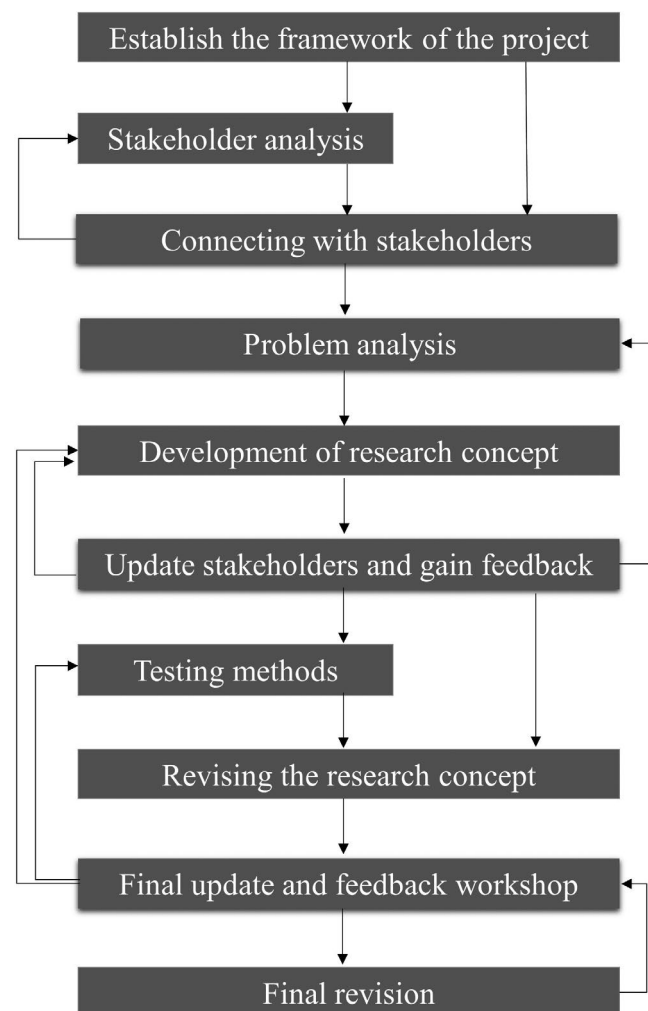

FIGURE 1 Framework for co-developing a research project with stakeholders

and feedback workshop; and (j) final revision phase. The framework includes pathways to incorporate flexibility, allowing the user to skip steps or loop back to previous steps when certain conditions of progress are not met (see Figure 1). Thus, the co-development process can be iterative, with steps being repeated until they yield the necessary outcomes to move forward. This framework should be taken as a guiding structure to help researchers during the course of the project development. It is important that this process is adapted to the needs of the specific research project and its stakeholders. The steps do not need to be followed in the specified order, for example, and some steps can possibly be skipped or added, depending on specific project needs.

2.1 | Step 1: Establish the framework of the project

Development of a conservation research project should begin with a clear definition of the project. Although there should also be sufficient opportunity for stakeholders to define a research agenda, a general framework within which a project can be developed should be established. This framework may be based on the requirements of a particular funding call or the expertise of the research team. Defining a specific geographical area (e.g. a lake basin) may help focus the co-development by identifying relevant topics for a research project and the stakeholders that might be involved in the project development. Once a framework has been developed, the research team can proceed to the stakeholder analysis phase, unless the stakeholders have already been selected or an existing network of stakeholders will be invited, in which case the stakeholder relations can be reignited.

In the case of MultiTip, the funding call from the BMBF (Bundesministerium für Bildung und Forschung—the German Federal Ministry of Education and Research) clearly stated the research project should focus on ecological tipping points. The research team at the time consisted of environmental and cognitive psychologists, as well as environmental and behavioural economists, noting that the framework of this research project focused on the economic and behavioural aspects of ecological tipping points. Lake Victoria was chosen as a case study because of the various ecological tipping points the lake has experienced in the past and is likely to experience again in the future.

2.2 | Step 2: Stakeholder analysis

Common guidelines on how best to conduct a stakeholder analysis as a first step in the stakeholder engagement process often consist of three steps, including the following: (a) identifying stakeholders and goals for engaging them; (b) categorizing stakeholders; and (c) understanding (relations between) stakeholders (Durham et al., 2014; Prell et al., 2009; Reed et al., 2009). It is crucial in this process that a relevant range of stakeholders are included in order to ensure diverse views are represented. The 'snowball sampling'

technique is often recommended in the first step of identifying stakeholders (Gilmour, & Beilin, 2007), wherein individuals are identified through current contacts, who subsequently identify further contacts until sufficient stakeholders are selected or no further stakeholders can be identified. One must be mindful of biased sampling, however, if these contacts have a network representing only 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 stakeholder contacts. The current study, for example, approached GIZ (Gesellschaft für Internationale Zusammenarbeit— German International Development Agency) that operates at Lake Victoria and was willing to share their contacts.

After this identification process, stakeholders can be categorized on the basis of their influence and their stake in a research project, which helps prioritize stakeholders and define their potential role. The Mendelow Matrix for stakeholder categorization (Mendelow, 1991) was adapted to develop a more inclusive stakeholder engagement framework that considers the power dynamics of different types of stakeholders (Figure 2). The matrix classifies stakeholders onto two dimensions: their influence in the region and the stake they have in regard to the research outcomes. Stakeholders can be rated on these dimensions to determine what type of engagement may be appropriate for a particular stakeholder in developing the research project. Stakeholders with high levels of influence in the region and high stakes in the research project (top right) should be involved in developing the research project since they might be in a good position to advise the research team on how to navigate any politics that may influence the research project. They may also be key in ensuring the ultimate impacts of the research findings because of their high level of influence. The stakeholders with a high stake in development of the (research project) and moderate levels of influence (middle right) may be the optimal partners with whom to collaborate since they are more likely than the more powerful

stakeholders to have time available for a project. In contrast to the original Mendelow Matrix, which suggests stakeholders with a high stake but little influence (bottom right), should merely be informed, a more active role for such stakeholders was advocated in the present study. These types of stakeholders, for example, local communities, should be well represented in developing a research project. Furthermore, they should continue to play an active role in the implementation and dissemination of the research since they are often the end users of policies informed by the research outcomes. It is also important to consider stakeholders with lower levels of stake in the research project outcomes since their support or approval may be crucial for the success of a project even though they may only exist at the periphery. Thus, stakeholders with low stakes and high, medium, and low influence in the region should be consulted, communicated with, and informed where possible to ensure they are not excluded and to ensure good relations are established with all relevant stakeholders.

A total of 44 stakeholder organizations and institutions that were directly or indirectly affected by developments in and around Lake Victoria were identified (van den Broek, 2019). Importantly, these stakeholders were from different geographical areas around the lake and represented a variety of stakeholders (e.g. NGOs; businesses; government institutions), levels of interest in the research project, and levels of influence. In collaboration with local contacts, stakeholders were projected onto the stakeholder categorization matrix, classifying them on the two dimensions. Individuals and institutions were then chosen to represent all combinations of levels of stakes and influence and these stakeholders were contacted first. If those were not interested in contributing to the development of the project, stakeholders representing similar types of stakeholders on the basis of the matrix were invited. The final list of stakeholders contributing to the project is displayed in the matrix (Figure 3). Their position in the matrix illustrates estimations of the stakeholder's influence and stakes and should not be taken as exact positions.
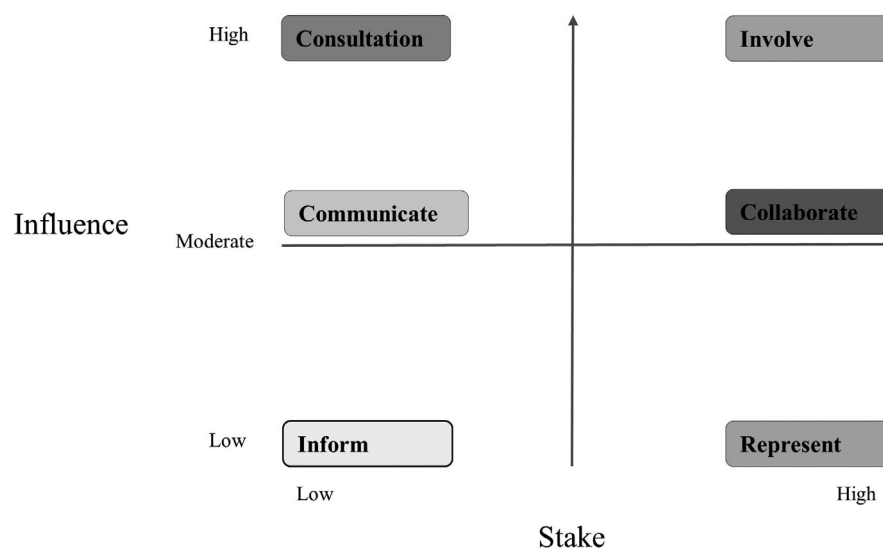

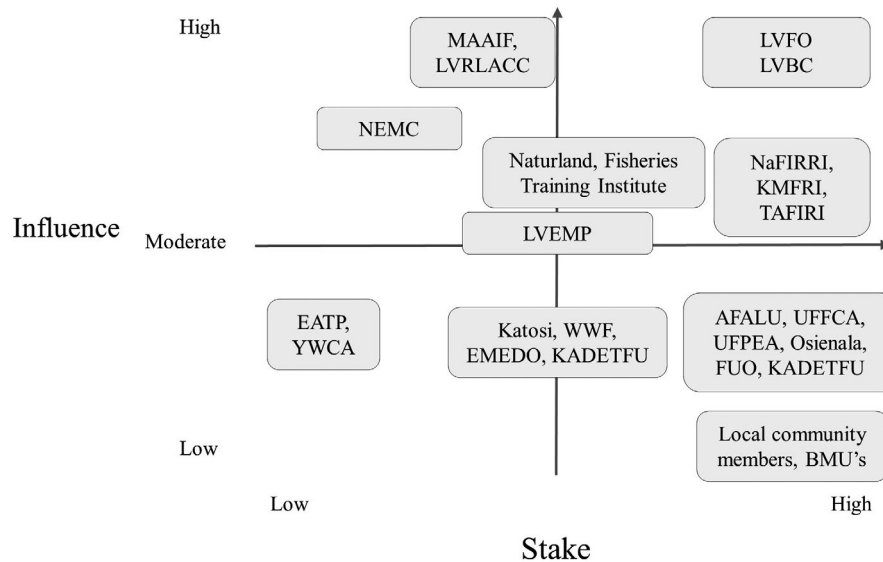**FIGURE 2** Stakeholder Categorization Matrix

FIGURE 3 MultiTip Stakeholders Categorized into Stakeholder Matrix. Stakeholder Abbreviations: MAAIF, Ugandan Ministry of Agriculture, Animal Industry & Fisheries; LVRLACC, Lake Victoria Region Local Authorities Counties Cooperation; NaFIRRI, National Fisheries Resources Research Institute; KMFRI, Kenya Marine and Fisheries Research Institute; AFALU, Association of Fishers and Lake Users of Uganda; UFFCA, Ugandan Fisheries & Fish Conservation Association; UFPEA, Ugandan Fish Processors & Export Association, TAFIRI, Tanzania Fisheries Research Institute; NEMC, National Environmental Management Council; LVEMP, Lake Victoria Environmental Management Program; KADETFU, Kagera Development And Credit Revolving Fund; BMU, Beach Management Unit; EATP, East Africa Tourist Platform; EAIFFPA, East African Industrial Fishing & Fish Processors Association, YWCA, World Young Women's Christian Association; LVFO, Lake Victoria Fisheries Organisation; LVBC, Lake Victoria Basin Commission.

2.3 | Step 3: Connecting with stakeholders

In order to develop a successful strategy for engagement, it is important to learn as much as possible about stakeholders' visions and aims before contacting them (Phillipson et al., 2012). For the MultiTip project, an information sheet was prepared that introduced the research team, summarized the research framework, what was expected of the involvement of stakeholders, and how they could benefit from participating in the project. 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 project. This approach demonstrates interest in the stakeholder and can encourage them to take part in the project development. As an important consideration, the first contact with stakeholders is often best done via telephone, rather than email, since this is a more personal approach, especially when working in developing countries where access to email may be more limited. When a stakeholder is interested in the project, a face-to-face meeting should be set up at a location where the stakeholder feels comfortable. An agenda should be provided ahead of the meeting to allow the stakeholder to prepare for the meeting and know what to expect. If selected stakeholders are not interested in participating, or if the stakeholder does not turn out to be a good fit for development of the research project, the research team should go back to the stakeholder analysis phase and update the (or develop a new) list of potential stakeholders with whom to collaborate. A total of 44 stakeholders around Lake

Victoria were contacted through email and telephone, and it was possible to set up meetings with 25 stakeholders interested in the project.

2.4 | Step 4: Problem analysis

This first meeting with stakeholders serves as a first step in the problem analysis phase. This meeting should start with the introduction of the research team, re-stating the scope of the research project, why they have been selected, and what is expected of them. Next, the stakeholders can be interviewed about what they perceive to be the most pressing issues in the area and why they are issues (Durham et al., 2014). For projects with limited flexibility in the selection of the research topic, this phase can be used to better understand the (perceptions of the) process of the particular issue on which the project focuses. The following step is to ask participants to explain the process of the issues by describing its drivers, consequences and mitigation strategies (Swart et al., 2004). This phase could also be used to explore stakeholder mental models, or internal representations describing an external environment, by eliciting visual representations of how stakeholders perceive causal relationships of socio-ecological systems or specific issues. A recently developed tool to assess mental models that was specifically designed to be inclusive for less literature stakeholders (M-Tool) may be particularly useful in this phase (van den Broek et al., 2020). Other participatory tools, such as fishbone

diagrams or force field analysis, may also be useful to discuss the issues by visualizing the process (Reed, 2008). The results can be entered into a matrix showing which challenges were discussed and prioritized by each stakeholder. The matrix will help select a specific issue for the research project, as well as further stakeholder selection and roles. In the case of the present study, this resulted in 12 different issues identified by stakeholders, including environmental conservation issues (e.g. water pollution; declining fish stock), social issues (e.g. increased HIV rates; gender inequality), and governance issues (e.g. land ownership; enforcement of fishing regulations; van den Broek, 2019).

The next step is to learn more about the relevant issues through site visits, expert consultations, and literature reviews. This will allow researchers to explore what has already been studied in relation to the issues and identify the gaps. Finally, one issue can be selected as the focus of the research project by considering what issue stakeholders perceived to be the most important, what gaps exist in previous research, and where the skills and expertise of the research team can have the biggest impact.

2.5 | Step 5: Development of research concept

After determining the focus of the research project, the research concept can be developed. Start with the main aim of the project and derive the research questions from this aim. When designing these questions, it is important to keep the funding considerations and the research team's skills and expertise in mind. At this stage, it is useful to have already developed a range of preliminary research designs to answer the research questions in order to make the research concept firmer. Before presenting the research concept to stakeholders, possible concerns and opportunities within the concept should be identified, especially in terms of implementation, in order to make maximal use of stakeholders' expertise. These considerations should be addressed in the next step in this process.

After carefully reviewing the issues and literature, the research team for the present study decided to focus on the declining Nile perch stock in Lake Victoria, since it was the most frequently discussed stakeholder issue, as well as being consistent with the funding call requirements and matching the skills and expertise of the research team. The Nile perch fishery is a significant source of revenue in the Lake Victoria region, but includes high levels of illegal, unreported, and unregulated fishing (Luomba et al., 2013, 2016; Onyango et al., 2020). Thus, the research concept focused on the economic incentives, institutional instruments, and stakeholder perceptions that may hinder the sustainable management of the Nile Perch fishery. Within this focus, research questions and hypotheses were developed, as well as research designs and methods. A list of questions and concerns specific to the MultiTip project was developed to be discussed with stakeholders. This list included practical issues such as logistics and research assistants, as well as opportunities such as use of existing data, networks, and platforms among stakeholders.

2.6 | Step 6: Update stakeholders and gain feedback

The next step is to organize a second meeting with the stakeholders to present the research concept and obtain feedback (Phillipson et al., 2012). If possible, it is beneficial to invite various stakeholders to one workshop so they can interact and discuss the research concept in a group setting (Durham et al., 2014), although it is also important to consider power dynamics (see "power dynamics" section below). In this second meeting, the findings from the previous stakeholder meetings should be presented, including the list of stakeholders and issues discussed by the stakeholders. It should also be explained which topic was selected for the research project and why and how this issue is understood. The research aims and research designs should be presented in an accessible way, minimizing the use of scientific jargon to ensure stakeholders get a good understanding of the research plan. This may mean leaving out methodological or theoretical details and instead focusing on the parts that resonate with the stakeholders.

The workshop should be as interactive as possible by stimulating the stakeholders to be critical in their discussions, and asking them specific questions (e.g. questions relating to implementation). This is a key moment for stakeholders to be able to highlight any issues they may foresee with the current research concept. Thus, it is of utmost importance that stakeholders feel free to voice such concerns. This is also a great opportunity to start discussing dissemination of the project findings and how stakeholders can assist (Phillipson et al., 2012). Moreover, it is important to discuss how stakeholders will be involved during the research project and to discuss expectations. Trained facilitators should conduct such workshops effectively, equitably and ethically.

The workshop will demonstrate if the problem analysis was conducted successfully and if the research concept is suitable to continue developing. If stakeholders do not recognize the outcomes of the problem analysis and the research concept presented, it is important to understand at which stage in the process such misunderstandings occurred, and how they could be resolved. This may require re-visiting the problem analysis or the development of the research concept. If the research concept is received positively by stakeholders, the team can move on to test research methods or revising the research concept based on the stakeholder feedback from this workshop.

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

2.7 | Step 7: Testing methods

It might be advantageous to use the field visits when meeting with stakeholders to try out methodology designed as part of the

research concept. Simple methods may be tested in the workshop with stakeholders, which has the added benefit of making the research methodology more tangible and giving stakeholders an opportunity to provide feedback on the methods. Moreover, this test trial will demonstrate the feasibility, validity, and appropriateness of the methods and identify practical limitations that may not have otherwise been anticipated (Reed, 2008).

The fuzzy cognitive mapping method was tested in the present study to assess mental models of Lake Victoria fishing communities (van den Broek, 2018). Piloting this method proved to be extremely valuable as it demonstrated that social dynamics strongly influenced the tasks and that many less literate fishers felt intimidated by the fuzzy cogntive method tasks. Thus, it became clear in the present study that it was necessary to develop an alternative methodology to assess the mental models.

2.8 | Step 8: Revising the research concept

Based on the feedback gained in the field and testing of methods, the research concept can be further revised and refined. It is important to seriously consider all stakeholder feedback, but at the same time be aware that some feedback may be more relevant to the research project than others. The stakeholder feedback (Step 6) may have required the research team to revisit the research questions or to select different methods to address the project objectives (Reed, 2008). It is important to stay in close contact with key stakeholders if fundamental changes are made to the research concept during this phase, in order to ensure that the revised research plan is consistent with stakeholder expectations.

The workshops demonstrated that the present study was on the right track. The stakeholders were enthusiastic about the research project and were convinced of the relevance and potential impact of the presented research concept. The concept was further developed on the basis of stakeholder feedback, including brainstorm sessions on possible intervention studies conducted during the workshop which were particularly fruitful and inspired new research designs. Moreover, the available data presented by stakeholders during the field visits allowed enhancement of the existing research designs, as well as generating more ideas on how to address the research questions by analysing this existing data pool. Particularly important was that the field visit demonstrated that a revision of the methodology was critical. During this revision phase, the research team developed a more inclusive tool to assess mental models involving less literate participants (van den Broek et al., 2020).

2.9 | Step 9: Final update and feedback workshop

A final feedback session should be conducted to give key stakeholders the opportunity to comment on any revised research concepts (Durham et al., 2014). The agenda of the meeting should include

a presentation of the research ideas and an interactive discussion with stakeholders of the research plan. In this phase, it is important to provide stakeholders with all the required details to assist the research team with useful suggestions and comments. Moreover, stakeholders need to be informed about how their feedback was incorporated in the revised research concept. Thus, it is recommended that stakeholders are sent a summary of the research plan prior to the workshop. It is again advised to ensure the final workshop is as interactive as possible by, for example, conducting a participatory SWOT analysis (identifying strength, weaknesses, opportunities, and threats) with stakeholders and providing a list of specific questions for stakeholders (Durham et al., 2014). The feedback received in this workshop determines whether or not the team can move on to the final revision stage, or whether they need to loop back to the development of the research concept or testing methods in the field.

During the final workshop of the present study, key stakeholders (by now partners!) consisting of two specialized institutions of the East African Community responsible for the sustainable management of the Lake Victoria Basin (LVBC) and the fisheries resources of Lake Victoria (LVFO) were invited to participate. The workshop was also attended by a German NGO that promotes sustainable fishing at Lake Victoria through certification (Naturland) and the research team's interdisciplinary academic advisory board. This workshop proved to be crucial for the quality of the research concept since the participants pointed out previously overlooked inconsistencies in the research plan. The participants also provided helpful suggestions for advancing the research plan. In fact, stakeholder knowledge of the lake's ecology proved to be indispensable for successfully finalizing the research plan.

2.10 | Step 10: Final revision

After the final feedback workshop, the research team must agree on a plan to incorporate the workshop feedback. Ideally, this step consists primarily of fine-tuning and editing, although fundamental changes in the project can still be made at this stage if stakeholders and researchers agree it is necessary to ensure the quality of the research project. If any changes are made at this stage, it is also important to stay in close contact with the stakeholders. In fact, if the research project has been substantially revised, the research team should go back to the stakeholders for any additional feedback before finalizing the research project. The final product (in the case of a research proposal) should be readily accessible and shared with all stakeholders, ideally in an easy-to-read format. This could be accompanied by a short survey to assess stakeholder experiences in developing the research project. Such feedback will be valuable for the implementation of the project and will also reduce the chances of possible future miscommunications or conflicts. Finally, it is necessary to inform stakeholders about the next steps in the project to ensure they know what to expect of the research team, as well as what is expected of them when the project is implemented.

3 | KEY LESSONS LEARNED

The stakeholder engagement process can be challenging, especially for international, intercultural, and interdisciplinary research projects, as is often the case in transdisciplinary research projects. Thus, the development of the present research project has been an enlightening process from which lessons learned have been drawn. These key lessons are shared in the following sections, serving as recommendations for future researchers planning to conduct stakeholder engagement processes to develop conservation research projects.

3.1 | Clear communication

Good communication with stakeholders is essential for successful collaboration, but also perhaps the most challenging part. Differences in educational background, language, culture, interests, and jargon between stakeholders and researchers are likely to hinder smooth communication. Moreover, different kinds of stakeholders require different communication styles and levels (Durham et al., 2014). Using simple language in emails, presentations, conversations, and reports can help avoid misunderstandings and miscommunications, or at least identify such issues at an early stage. In the present study, the research team experienced a misunderstanding among stakeholders in terms of employment opportunities for their organizations that might accrue from the research project. This situation resulted from unclear language on the part of the research team, noting they did not communicate well in regard to what the stakeholders could and could not expect in terms of employment opportunities.

Stakeholders should be continuously updated about the research project development, using communication instruments suitable for the stakeholder group. One technique to avoid miscommunications is to observe how certain terms are being used by stakeholders and then use these terms similarly when communicating with them (e.g. observe the jargon/lingo on their websites or in their emails). This will also prevent stakeholders from potentially feeling intimidated by the research team and benefit the relationship between the researchers and the stakeholders. This may mean writing reports for some stakeholder groups or phoning other groups. Project documents should also be translated in local languages when appropriate and communication styles should be adapted to ensure all stakeholders can easily understand the information. Simple and clear communication gives stakeholders an optimal opportunity to contribute to the research agenda.

3.2 | Stakeholder interaction

Stakeholders should be involved throughout the research process on a regular basis (Durham et al., 2014). Many stakeholders whom this research team met in the field reported they felt used by previous researchers because they failed to keep them informed about the development of a project. By keeping stakeholders informed (e.g. via a newsletter), stakeholders feel involved and able to contribute throughout the entire process. It is important that stakeholder interaction is a two-way street, meaning stakeholders can contact researchers throughout the research project. The stakeholders and researchers could jointly develop a communication plan, for example, that defines platforms and guidelines for communication.

3.3 | Power dynamics

It is important to be aware of the power dynamics that might influence the stakeholder engagement process. Power dynamics can influence who participates in the development process of a research project, the direction of the project, and the relative influence of stakeholders in the development of the project. In the stakeholder selection process, it is important to be aware of the dynamics between stakeholders since this may prevent inclusion of certain stakeholders. When there is a conflict between stakeholders, for example, some stakeholders may not be keen to include other stakeholders or may even actively try to prevent their inclusion in the research development. It also is important that the development of the research project has not only benefitted from the input from powerful or dominant stakeholders, but also from the less powerful or even silent stakeholders. The stakeholder categorization matrix in the stakeholder analysis section may help ensure stakeholders with all levels of influence and stake are included in the process.

The dynamics between stakeholders can also influence what issues stakeholders are, and are not, willing to discuss. In fact, inequalities between stakeholders can be experienced on the basis of gender, ethnicity, income, or authority. The influence of such power dynamics on project discussions, however, can be limited by conducting interviews individually or with homogenous stakeholder groups. Interviews with fishermen in the present study were conducted separately from interviews with managers and authorities, resulting in more open discussions. Consulting stakeholders separately has an added benefit in that stakeholders are not influenced by each other's discussions, and therefore, the interviews provide a clearer picture of the salient issues for each stakeholder (group).

Finally, stakeholders will inevitably play various roles in the research project, with different levels of involvement. Although this is not necessarily a problem, it is important to be vigilant of ethical concerns that may accompany the distribution of project roles and how this might influence the direction of the research project.

3.4 | Manage expectations

Managing expectations is of key importance in regard to both the expectations of the researcher and the stakeholder about the project

aims and what the project can realistically be expected to achieve. Stakeholders will also need to be informed about how they will (and will not) benefit from the project. Managing expectations can help avoid disappointments and dropouts. Further, guiding stakeholders on the scope of the project may make the co-production process more productive by ensuring their comments and suggestions are more realistic and beneficial for the development process.

In the first stakeholder meeting in the present study, many reported being uncertain of what they could expect from this project and what was expected of them, despite the information sheet that was previously shared with them. A subsequent discussion resulted in a mutual agreement and significantly benefited stakeholder contributions.

3.5 | The researcher attitudes

Interacting with diverse stakeholders from different backgrounds requires certain types of attitudes on the part of the project researchers. First, a researcher needs to be flexible since a stakeholder engagement process naturally implies a dependency on external sources that may re-shape the research process. This process can be unpredictable and dynamic, with a researcher having less control than in a regular research process. Therefore, it is important that the researcher is willing to adapt and remain responsive to stakeholders' points of view. Moreover, the researcher needs to be mindful of cultural differences and act appropriately when interacting with stakeholders from different cultural backgrounds.

East African countries tend to place a greater emphasis on hierarchies in society, compared to Western countries (Hofstede, 1983), and it is important to respect these values when engaging with local stakeholders. In the present study, for example, it became clear that consistently using appropriate titles was essential to demonstrate respect. Another important consideration is to dress appropriately, which typically translates into dressing formally when meeting with policymakers to demonstrate respect, but dressing less formally when meeting with communities in order to not intimidate the stakeholders.

Finally, it is important for the researcher to treat stakeholders as equals. Although stakeholders may not have enjoyed the same education as the researcher, they can provide a research project with invaluable knowledge and insights that can facilitate a successful project outcome. Accordingly, a researcher should appreciate the different, complimentary knowledge and skills, using them to advance the research to address the issue of interest.

4 | CONCLUSION

The stakeholder engagement process can be an enjoyable and fruitful process, although not without challenges and lessons to learn. Research addressing conservation challenges in lake basins can particularly benefit from adopting stakeholder engagement approaches, and here we have 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. Being sensitive to stakeholder perspectives can significantly enhance the relevance and impact of such research projects.

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