

OPTIMISING RESEARCH UPTAKE

The success conditions for research
uptake toward NGOs

The case of coral reef management

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Elisavet Diamantopoulou

Supervisor: dr. Frank van Laerhoven

Second reader: dr. Tatiana Acevedo Guerrero



**Utrecht
University**

Summary

The notion of research uptake is an emerging term that refers to the dynamic process through which scientific knowledge is transmitted to plausible users of that knowledge. It is considered to be a solution to the phenomenon of **science-practice divide** that has been observed in the field of conservation. Considering the high decline in coral reefs, applying successful research uptake could be: (1) an advantageous way to increase the success of conservation and restoration efforts and (2) an attempt to sensitise governments, local communities and civil society over the importance and urgency on the conservation of coral reefs globally.

Preliminary study on the topic, identified that NGOs appear to play critical roles both on the conservation of coral reefs but also on the transmission of scientific knowledge. The central question posed for this research is: *What are the conditions for optimal uptake of scientific knowledge by NGOs in the specific context of coral reef management?*”. This question was answered through the lens of relevant NGOs’ experiences with the process of research uptake. Twenty-five interviews were conducted with NGOs that are active in almost all coral reef locations globally. To explore their experiences, the framework provided by the *Department for International Development* of the United Kingdom government was used. The data gathered through the interviews were transcribed, coded, and further delineated during the research.

The findings of this research suggest that the conditions for optimised research uptake should be addressed in two different categories: (1) conditions related to the process of research uptake, (2) conditions not related to the process of research uptake. Concerning the process-related category, four main propositions are made. Firstly, the use of clear agreements between the collaborators. Secondly, the pre-existence of internal academia capacity building on research uptake. Thirdly, the customisation of communication needs based on each individual case and lastly, the establishment of a simple, low resource usage monitoring framework. At

the same time significant importance is suggested to be given to conditions not related to the process directly. Firstly, it is suggested to adopt a same-level-approach between academia and NGOs at the core of which will be respect and mutual acknowledgement. Secondly, it is proposed as necessary to customise the research uptake approach based on the different types of roles and collaborations that align with the needs and objectives they entail. Thirdly, it is essential for academia to understand the multiple benefits that capacity building toward NGOs can have for both parties and to act in accordance with that. Finally, this process should be approached in a long-term-partnership mindset rather than a one-time exchange. Those conditions as well as other significant findings and interesting points of discussion are further delineated in the present report.

Keywords: Research uptake, NGOs, academia, Stakeholder engagement, Communication, Capacity building, Monitoring, Evaluation, Coral reef management

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List of Abbreviations

DFID	Department of International Development
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
MOU	Memorandum of Understanding
NGO	Non-Governmental Organisation
RU	Research Uptake
TMC	Tailor-Made Course
UK	United Kingdom
USA	United States of America

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1. Introduction

1.1. The transmission of scientific knowledge in conservation

In the field of conservation and management, numerous studies have identified that the scientific information produced by the academic world usually does not reach the stakeholders that could utilise it for a variety of reasons. In previous years, the number of documented conservation assessment cases in academic literature was minimal (Ehrenfeld 2000; Maddock & Benn 2000), and the existing ones often failed to be adjusted into effective action (Jepson et al., 2002; Knight 2006). Conservation organisations also prefer to create their own techniques and experiences (Hopkinson et al., 2000). Furthermore, many studies have shown that the practitioners utilise the existing scientific information to base their conservation management decisions only to a minimal extent, but they usually rely on their experiences, evidence, and external advice (Pullin et al., 2004; Cook et al., 2010, 2012; Seavy & Howell, 2009; Bayliss et al., 2012; Young & Van Aarde, 2011; Matzek et al., 2013; Cvitanovic et al., 2015).

Many scholars and practitioners have recognised and tried to understand better the phenomenon of the science-practice divide in conservation (Knight et al., 2008; Sunderland et al., 2009; Arlettaz et al., 2010; Esler et al., 2010; Habel et al., 2013). The literature suggests that the lack of use of scientific information in the decisions and activities of the practitioners can often lead to failure or less effective conservation efforts (Walsh et al., 2014).

Multiple scholars have tried to elucidate the reasons behind this phenomenon. Dicks et al. (2014) argue that the infrastructure needed to create a flow of information from academia to practitioners' decision-making is heavily missing. Other scholars have identified a lack of access to scientific information (e.g., Bayliss et al., 2012, Matzek et al., 2013, Bainbridge,

2014). Another argument indicates that scientific publications are produced in a way that end-users cannot be expected to use. (Balmford & Cowling 2006; Knight et al. 2006; Arlettaz et al., 2010). On the other hand, Habel et al. (2013) argue that the problem is multifactorial. Specific gaps were identified as the reasons: (1) a gap between holding the knowledge and doing, (2) a gap between the themes researched in the academia and the problems faced in the conservation and (3) a gap in communication between different disciplines responsible for the creation and use of this information.

Coral reefs constitute a critical ecosystem type, and there is an urgency and increasing interest in their conservation. Coral reefs are valuable for biodiversity as they provide habitat for at least one-fourth of the discovered marine species even though they account for only about 0,1% of the oceanic floor (Fisher et al., 2015). The rising interest in the specific ecosystem is also justified by the fact that their overall value is estimated to be around 1\$ (USD) trillion (Hoegh-Guldberg, 2015), while their benefits are impacting more than 500 million people in about 90 countries (Burke et al., 2011; Gattuso et al., 2014).

A high decline in coral reefs has been recorded as the global human population and GDP increase (Bellwood et al., 2019). Characteristic examples include coral bleaching and other highly spreading diseases that affect marine biodiversity and dependent societies and economies (Hoegh-Guldberg, 2017). Bellwood et al. (2019) identified that the governance and management frameworks used in the field are not enough well-equipped to cope with the changes that are happening rapidly.

The divide between science and practice impacts heavily, among others, the coral reef conservation and management field. The literature on the use of scientific knowledge in the

field of coral reef conservation and its effect is minimal and its focus is fairly generic. For example, scholars have identified the need to create a better connection between conservation and development actors in the case of the Coral Triangle Initiative (Foale et al., 2013; Fidelman et al., 2014). Similarly, other scholars have proposed the notion of better connectivity in broad terms but with no particular focus on the use of science and the academic world (e.g., Bellwood et al., 2019; Aswani et al., 2015). General statements on the provision and use of scientific knowledge have been mentioned in cases where established initiatives were examined, such as the Coral Triangle Initiative (Fidelman et al., 2014) and the Transnational Red Sea Centre (Kleinhaus et al., 2020).

1.2. The notion of research uptake

The idea of aligning the process of creating new scientific knowledge with the individual needs of the stakeholders that are supposed to use it in practice is recently gaining attention among academia and practitioners. The idea of research uptake is being developed to achieve this alignment. **Research uptake** is a term that can be used to refer to the dynamic process through which scientific knowledge is transmitted to different prospected end users of that knowledge, such as policymakers, practitioners, and the general public. Several strategies have been identified that the transmitters of information can follow to achieve that. In the present study the central transmitter of information is academia which for this research is defined as *“universities and independent research institutions along with the scholars, teachers and researchers that constitute those institutions”*.

Concerning research uptake in the specific context of marine conservation, much effort has been put into research on the transmission of scientific information to the general public and

to policymakers (Bremer et al., 2019; Hyder et al., 2015; Kelly et al., 2020; McRuer & Zethelius, 2017, Eelderink et al., 2020; Edelenbos et al., 2011). Less attention seems to have been given, though, to the specific relation between science and non-governmental organisations (NGOs). NGOs play a significant and often crucial role in marine conservation (Fitzgerald & Roper, 2000). Therefore, their role in research uptake strategies – i.e., both as the target of and as agents in research uptake strategies – should be analysed more carefully than it currently is.

1.3. The role of NGOs

In the past decades there has been an increase in the number and objectives of organisations that differ from government and commercial sectors (Salamon et al., 2003). Based on that, multiple definitions for the term “non-governmental organisation” have been given influenced by legal, economical, functional approaches and more. For the sake of this research, a definition provided by Kuruvila (2015) is adopted to cover the broad spectrum of organisations included under this term. Based on that study, NGOs are *“formal, self-governing, voluntary organisations involved in helping individuals and communities to achieve their social, economic, and cultural goals. They are institutionally separate from government and commercial organisations and do not distribute profits but are accountable to their stakeholders.”*

NGOs approach the issue of coral reef degradation through a variety of different perspectives and can be seen to perform multiple roles. Their objectives can vary from conservation, restoration, and science creation to advocacy, fundraising brokerage and more (Diamantopoulou, 2021). Regarding research uptake, NGOs can also play different roles.

Firstly, they can be the end-users of scientific information they require for their conservation-related work. They can also perform a brokering role by helping to transmit scientific knowledge to other actors such as policymakers and the general public. Finally, they can collaborate with academics and other organisations to co-produce scientific knowledge. These three broad-stroke roles can be interrelated. Stevens et al. (2013) indicated that NGOs are essential in transmitting knowledge from the scientific community to practitioners. In a case study examining brokerage in Caribbean coral reef governance networks, Turner et al. (2020) also provided evidence that marine NGOs were the most functioning brokers. The case study referred to brokers as the boundary actors connecting and transmitting knowledge and information between different stakeholders.



Figure 1 Separate and overlapping roles between academic institutions and NGOs (Source: Aniekwe et al., 2012)

Finally, Aniekwe et al. (2012) provided an overview of the NGO-academic interface (figure 1) and showed how both actors have separate and overlapping roles and responsibilities. Academia is more focused on theory building and publication as well as educating new scientists. NGOs represent the processes of action and implementation of current policies and plans.

1.4. Research objective and research questions

This research aims to improve the uptake of scientific research results by NGOs in the specific context of coral reef management. The study conducted focuses on the issues of coral reef conservation due to the urgency of the problems of coral reef degradation (Bellwood et al., 2019), the frequency of presence of NGOs in the field, and to achieve alignment of the thesis objectives with the SEALINK project (see [here](#)). The central research question is formulated as follows:

What are the conditions for optimal uptake of scientific knowledge by NGOs in the specific context of coral reef management?

SQ1: What research uptake activities are currently occurring in the different stages of NGO – academia collaboration?

The first sub-question aims to map the research uptake activity observed toward NGOs in the field of coral reef conservation in the different stages of NGO-academia collaboration from the perspective of the NGOs. Through this question, an overview of the RU activities that target NGOs was created.

SQ2: What is the perceived success of those activities by NGOs in the field, and what is yet to be improved based on the NGOs' perspectives?

The second sub-question aimed to identify how NGOs perceive these activities as well as how and if they engage with them. This sub-question further aimed to collect the opinions of the

NGOs on the perceived success or failure of those activities and what needs to be improved in their opinion.

SQ3: How are the variations in NGO roles influencing the research uptake process?

To pursue the conditions beyond objectives related to the process of research uptake, the third sub-question aims to incorporate the factor of the different roles that NGOs can perform both as framed for coral reef conservation and the process of research uptake. It also explores how other factors apart from the process and strategy followed can influence positively and negatively the uptake of scientific information by NGOs.

SQ4: Based on the findings of this research, what recommendations can be made for successfully implementing research uptake toward NGOs in coral reef management?

The final sub-question aimed to provide an integrated answer on how research uptake for NGOs should be formulated in coral reef management to achieve successful transmission of knowledge, long-term relationships and win-win situations for the two stakeholders.

2. Theoretical framework

This chapter overviews the existing scientific literature used to base this research. Furthermore, the conceptual model of this study is presented.

2.1. Identifying the activities of the research uptake process

To map the activities that are conducted by academia towards NGOs to achieve research uptake, it is important to identify the different stages of research uptake as well as the types of activities that can exist during that process. The framework provided by the Department for International Development (DFID) of the UK government is used as guidance to search for the activities that are trending in the field of coral reef conservation. The DFID framework approaches the topic of research uptake by defining four strands of work related to it, as shown in figure 2. The strands represent different sets of activities that research programs should consider for the research uptake to happen. They point out that even though this categorisation of strands has been established, their boundaries do not strictly exist. The four strands are stakeholder engagement, capacity building, communication, and monitoring and evaluation of the uptake. Each strand encompasses activities that serve the purpose of each of the four categories.

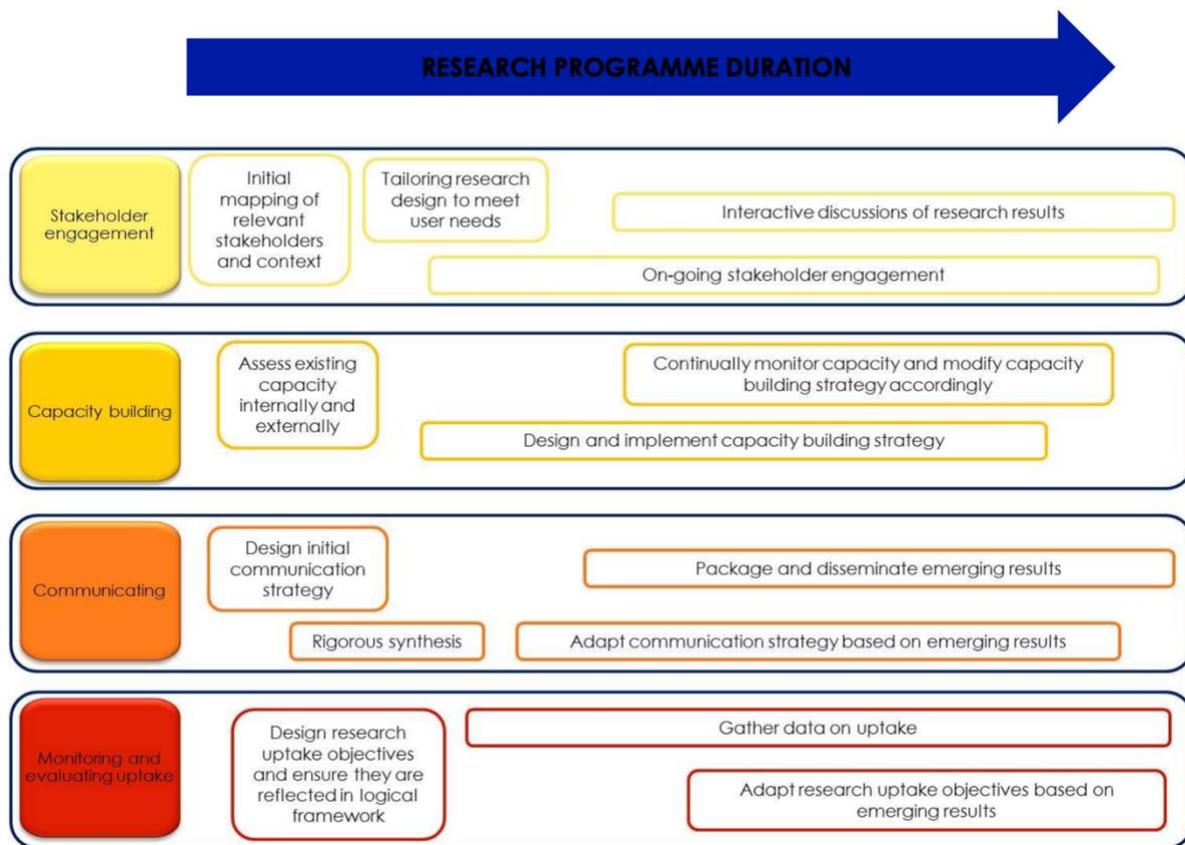


Figure 2 The four strands of research uptake and the activities throughout the duration of a program (Source: DFID, 2016)

The first strand is called **stakeholder engagement**. This category of activities includes, as a primary step, the identification of the relevant stakeholders and their potential interests and the best way for them to be engaged. This procedure is advised to occur more than once during the process since new stakeholders can emerge as the research progresses. The needs and timescales of the relevant stakeholders need to be considered in the research design process. After identifying the different stakeholders' interests, needs and timescales, it is essential to align the research design accordingly. The latter action can increase the inclusion of stakeholders in this process. However, engagement needs to be maintained throughout the research. In that way, it is possible to receive their perspective and advice during the process. It also creates a sense of accountability, increasing their potential interest in the results. Furthermore, it can create engaging conversations that could provide alternative approaches and constructive criticism to the research. The DFID guide provides some examples of

engagement, such as establishing occasional advisory board meetings and social media updates. Finally, the research results need to be communicated to the stakeholders, be accessible to specialists and non-specialists and encourage practitioners to use all available information on the given topic. DFID encourages researchers to position their results in the context of all existing information on the topic of research to provide a holistic picture of the results to the stakeholders. For example, this can happen by inviting other researchers who work on similar topics to present their points of view and findings.

The second strand refers to **capacity building**. This category can be further split into two main themes. DFID encourages the researcher to assess the existing capacity internally and externally first. *Internal capacity* is the knowledge, skills and attitudes needed to access, use, create and communicate research information. In contrast, *external capacity* includes the knowledge, skills and attitudes needed to understand and use research information. While assessing the current internal capacity, DFID proposes investigating areas such as information literacy, knowledge about research methodologies, communication, knowledge management, academic writing and summarising, and the ability to communicate with non-specialists. Assessing the external capacity is equally important as a lack of the ability to use the research outputs can lead to the research having no significant impact. Some important qualities to investigate in main stakeholders are the understanding of research, critical assessment of evidence, existing knowledge on the research topic, and the incentives to consider the evidence. Once the current capacity state is understood, creating a capacity-building strategy related to the given research program is possible. DFID urges researchers to think beyond one or two workshops and create a more sophisticated capacity management and development strategy that would include individual and organisational capacity development.

Communication is the following strand. In this category, researchers are advised to first aim to create research based on existing literature and design their study accordingly. They propose the search and use of existing rigorous literature reviews or the creation of one in case there is no such piece of work available. This contributes to the creation of research outputs that are framed in the full body of existing literature. Furthermore, in this way, the receivers of the outputs can easily place them in the existing body of research evidence and use them accordingly. In the next step, planning the communication activities of the research is suggested. On a primary level, it is important first to understand the potential stakeholders interested in the research outputs. Moreover, they are encouraged to publish their results in academic journals. This is suggested to achieve the credibility that a peer-reviewed article creates. DFID programs aim to the creation of open-access-only publications. Finally, DFID proposes to summarise the results and present them in an accessible way for non-specialists than peer-reviewed journal articles. Some propositions on creating a relevant for non-specialists' evidence include a visually appealing document, an easy, quick, and understandable text, including only directly relevant and useful information, and visual additions such as maps and diagrams that complement the results and make them more comprehensive. In terms of context, it is proposed to include a concrete “key messages” section, pinpoint references and position the results in the spatial context.

The final strand refers to **monitoring and evaluation**. This is considered one of the most critical elements for DFID. Researchers are asked to create a “results framework” at an early stage of the research using clear, simple but carefully crafted research uptake indicators. The framework can aim for multiple outputs such as high quality and relevance of the research, accessibility of the results and initiation of relevant discussions, and the successful creation of capacity to do research uptake. Thus, the indicators need to correspond to the pre-decided

desired outputs. In terms of evaluation, creating a theory of change is suggested while sharing good and bad practices with the network to monitor and evaluate research uptake. It is acknowledged that it might be difficult to realise and measure the changes that the research might cause; however, this is not considered a reason not to put effort into tracking the outcomes of the research to the extent that it is possible. Outcomes can include all intended and unintended positive and negative effects observed. Recording and documenting the outcomes could significantly contribute to that.

The framework proposed by DFID appears to be useful for the specific research as it constitutes a practical way to frame the process of research uptake while pointing out the necessary fields in which the processes' success conditions need to be searched. It is important to point out, though, that the framework is intended to be used by academics to create and track their research uptake action. Furthermore, it is not specialised in any type of stakeholder but rather corresponds to the receivers of the scientific information in an academia-practice collaboration. In the given research, the points provided to the researchers by DFID will be used to examine their (non) existence in the experiences of NGOs while collaborating with academia. This part of the theoretical framework presents the core categories of variables influencing the success of research uptake by NGOs.

2.2. Conceptual design

Figure 3 summarises the conceptual framework proposed to identify the conditions to encourage research uptake by NGOs. The dependent variable is defined as the uptake of scientific knowledge by NGOs. The conditions for optimisation are being searched in the different elements of the process of research uptake. The terms used in the DFID framework are being adopted to describe

the four main objectives of this process. The framework was chosen due to its practical approach. It also explores how this researchers-versed process framework is connected to NGOs' experiences. The strands of stakeholder engagement, capacity building, communication, monitoring, and evaluating incorporate other recommendations and propositions of research uptake activities identified in the existing literature (e.g., Roper 2002). The four strands are further delineated in specific categories of activities to increase the detail of the analysis of the conditions. The strands provide a representation of the process followed to achieve the uptake of information by NGOs. However, this research does not assume that the success of research uptake is only influenced by the process followed but leaves the possibility for other elements to be elucidated.

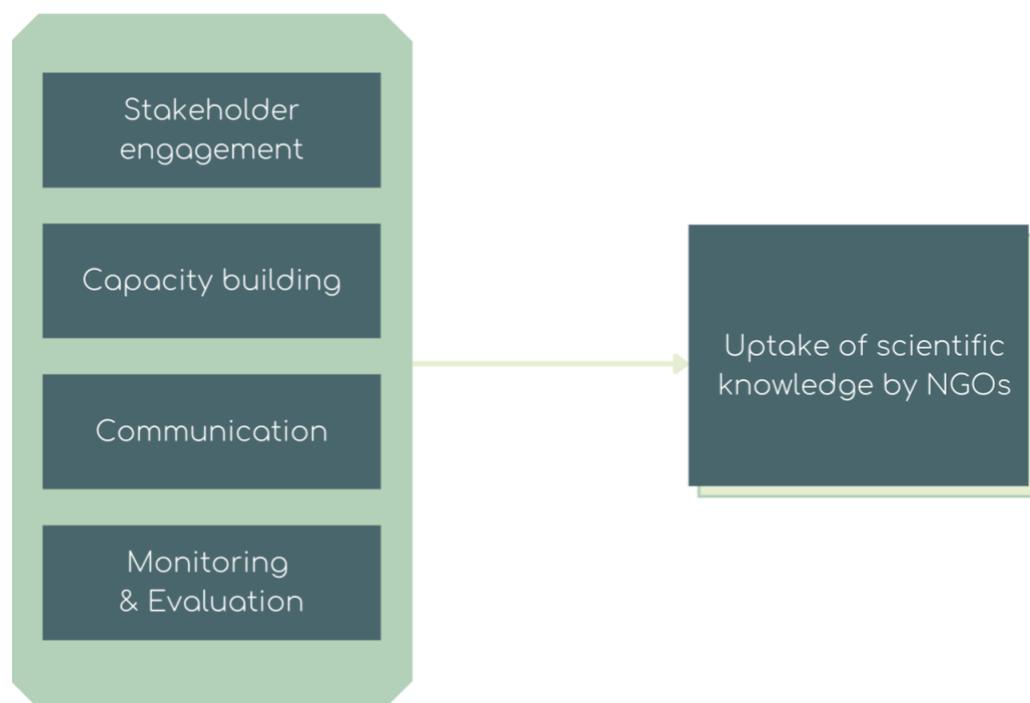


Figure 3 Conceptual model (on the left: independent variables, on the right: dependent variable).

3. Methods

This chapter includes an overview of the methodology used to collect and analyse the required data to answer this research's questions. A combination of deductive and inductive approaches was used. Firstly, by observing the current theoretical information, the main themes of the investigation were deducted. In the second stage, an inductive approach was used to observe and analyse the data from specific cases to identify patterns and draw general conclusions.

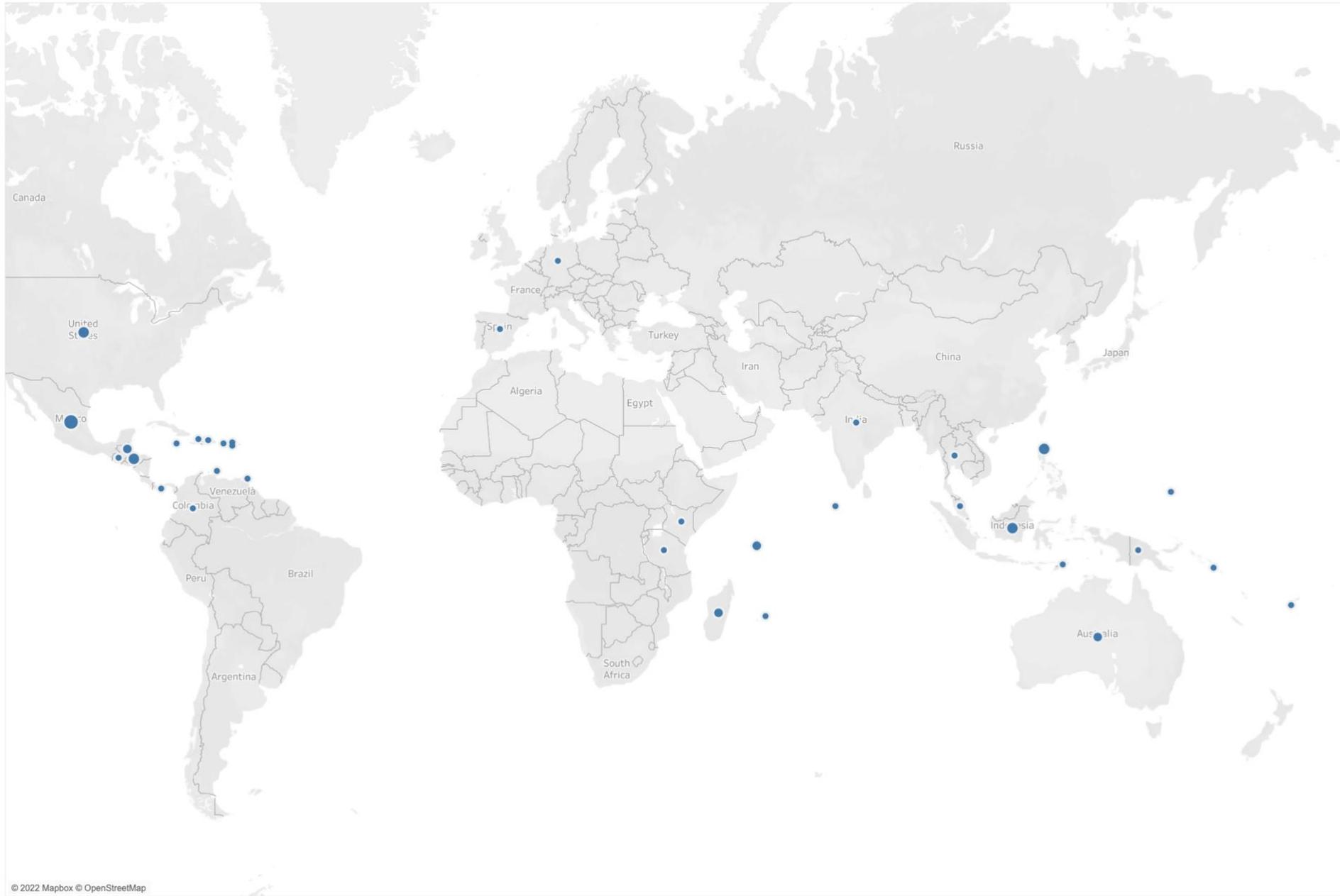
3.1. Study areas

Considering that this research tries to increase the amount of available information in the developing field of research uptake, the decision was made to not include any restriction in the geographical location under examination. On the other hand, all research uptake activities happening globally in the field are considered to contribute to the creation of reliable results. Based on the information provided by the tailor-made course (TMC) of this M.Sc. program with relevant research topic (Diamantopoulou, 2021), about 190 NGOs are present in the field of coral reef conservation globally. This broad pool of possible cases was utilised to provide the desired number of cases to be examined. The selected cases represent as many countries as possible to increase the diversity of circumstances. Figure 4 shows an overview of all the locations where the NGOs that participated in this research are active or have their offices (European locations). The size of the map dots indicates the number of NGOs interviewed in these geographical locations. Considering the geographical distribution of the coral reef habitats, the figure showcases a representation of most coral reef locations. Appendix I provides the full table from which the figure was extracted.

Locations of activity of NGOs

Number of NGOs

- 1
- 2
- 3
- 4
- 5



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Figure 4 Geographic representation of the countries in which the NGOs participating in this study are active. The size of the circle is indicative of the number of NGOs per country.

3.2. Research strategy

An explorative approach was used to identify the conditions that can optimise NGOs' uptake of scientific knowledge. The NGOs constitute the core of this study, are the main focus and are used to gather the majority of the data. The study started by mapping the existing RU activities in the field to get a first idea of the current state. On a second level, the elements of success, as perceived by the participants, were taken into consideration, along with exploring other factors that can influence the process of RU. Finally, combining the evidence generated along with the existing literature, the response was provided to the central research question, and concrete recommendations were given.

An overview of the research framework followed is provided in figure 5. To achieve the steps described above, first, the existing literature was explored which led to the creation of the conceptual framework. The main conceptual themes identified were further divided into practical research uptake actions and were operationalised to measurable variables. In the second phase, the cases were further specified, and the data collection procedure took place. This included the communication with the prospect interviewees, the creation of an interview guide and the conducting of the interviews. In the next step, the data analysis took place which entailed the transcription and coding of the interviews. Finally, the last phase included the construction the report and formulation of answers and recommendations.

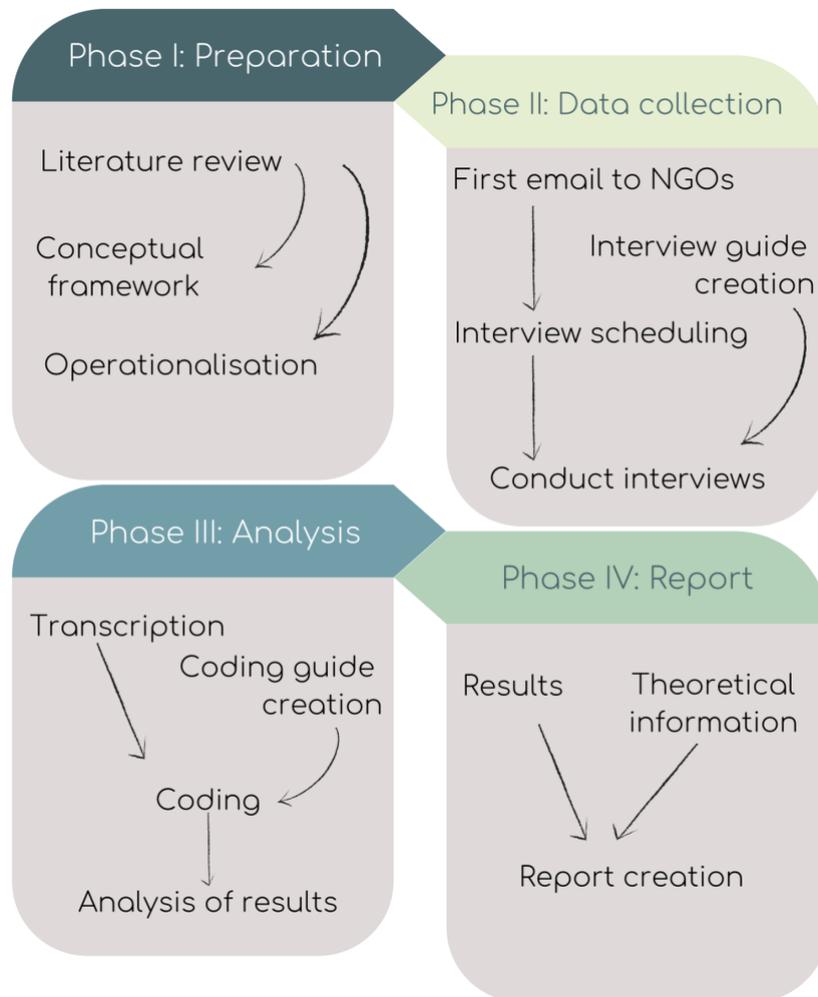


Figure 5 Research framework

3.3. Data collection

3.3.1. Cases selection

Most of the data used for the analysis was created through semi-structured interviews with NGOs in the field globally. The initial information on NGOs was extracted from the database on NGOs in the field of coral reef management that was created during the TMC project. A funnelling process was used to select the most relevant for the scope of the research NGOs. Firstly, from the database, one hundred and ninety (190) NGOs were contacted in the form of an email (Appendix II) where information about the study was given. They were kindly asked to reply to a small questionnaire that included a question about *if they have interacted or collaborated with universities, research institutes or individual researchers/scientists in the past five years*, as well as *if they are willing to participate in an interview*. The two questions constituted the only requirements for selecting the NGOs to be interviewed. Forty-three (43) NGOs responded positively to both questions, and invitations for further interviews were sent to all.

3.3.2. Ethics and privacy

Concerning ethics and GDPR, the participants' and organisations' names remain anonymous throughout the research. Furthermore, all documents that include personal information, images and conversations which are accountable to GDPR law, are accessible exclusively by the researcher and are stored in a safe space. Therefore, quotes presented in the results section do not include personal information. The interviewees, before the initiation of the interview, were asked for consent to record the interviews and use the information they provided. Moreover,

publish the results as a thesis report and a summary that will be distributed to the participants anonymously. All 25 participants accepted the conditions and requests regarding ethics and GDPR.

3.3.3. Overview of the participating NGOs

In total, 25 interviews were conducted in the period between February and March 2022. A semi-structured approach was used to ensure the provision of relevant information from the interviewees with a variety of realities, experiences, and ways of collaboration with the scientific world. Table 1 provides an overview of basic descriptive information regarding the participants of the research. The information presented in that table was extracted from the database that was created as part of the TMC project and it was cross-checked through the conversations with the interviewees. Firstly, wherever possible all geographical locations in which the NGOs have projects are presented. In case no information was available, the location of the offices was used instead. Next to that, it is possible to observe the general geographical region of action to easily compare the geographical locations that the participants cover. The second piece of information refers to the level in which the direct outcomes of the organisation's activities aim.¹ Based on that definition 4 levels were defined:

- (i) **Local:** Refers to actions on communities regarding educational and social activities and specific marine geographic regions regarding conservation and restoration activities.

¹ The categorisations provided in these pages were originally crafted during the TMC project and are only adopted here to serve as an integrated description of the NGOs that participated in the research and are not used in the analysis of the results in any way.

- (ii) **Regional:** Refers to actions in a wider geographic region within a country and includes nearby coral reef locations or communities.
- (iii) **National:** Refers to actions that include coral reef locations in a country and its citizens.
- (iv) **International:** Refers to actions that target locations and people in multiple countries.

It is important to mention that the level of action is not always related to the physical presence of the organisation. Finally, the last column includes information on the extent to which the NGOs' focus lies on coral reefs. Three labels can be observed in the table:

- (i) **Of central importance:** If the organisation's main goals as provided in their mission statement, vision and objectives are related to coral reef ecosystems, then the importance of coral reefs for the organisation is central.
- (ii) **Of secondary importance:** If the organisation's main goals as provided in their mission statement, vision and objectives are not directly related to coral reef ecosystems but are related to marine or ocean conservation, then the importance of coral reefs for the organisation is secondary.
- (iii) **Of minimal importance:** If the organisation's main goals as provided in their mission statement, vision and objectives are not directly related to neither coral reef ecosystems nor marine and ocean conservation but are related to biodiversity and the environment, then the importance of coral reefs for the organisation is minimal.

Due to privacy reasons the names of the NGOs and representatives are not provided, however information regarding geographical locations of activity, levels of action and centrality of coral reefs in the mission aim to give a broad perspective on the types of organisations that participated in the research.

Table 1 Overview of descriptive information of the characteristics of the interview participants (Source: TMC Diamantopoulou, 2021)

Participants	Locations of Activity/Offices	Regions included	Level of action				Importance of coral reefs in the mission
			Local	National	Regional	International	
Participant 1	Puerto Rico	Caribbean	+	+		+	MINIMAL
Participant 2	Australia	Oceania	+			+	MINIMAL
Participant 3	Belize	North America	+	+	+		SECONDARY
	Honduras	Central America					
	Guatemala						
	Mexico						
Participant 4	Tanzania	Asia	+				CENTRAL
	Kenya	Africa					
	Indonesia	Oceania					
	Malaysia						
	Philippines						
	Papua New Guinea						
	Timor Leste						
Solomon islands							
Participant 5	Madagascar	Africa	+				MINIMAL
Participant 6	Haiti	Caribbean	+	+			MINIMAL
Participant 7	USA	North America	+	+			CENTRAL
		Caribbean					
Participant 8	Jamaica	Asia	+	+		+	CENTRAL
	Panama	Africa					
	Madagascar	Central America					
	Seychelles	North America					
	Maldives						
	Philippines						
Participant 9	Hawaii	Central America	+	+	+	+	CENTRAL
	Honduras	North America					
	Mexico						
Participant 10	India	Asia	+	+			SECONDARY
Participant 11	Belize	Asia	+	+			SECONDARY
	Tobago and Trinidad	North America					
	Honduras	Central America					
	Indonesia	Caribbean					
	Fiji						

	Mexico						
	Thailand						
Participant 12	Indonesia	Asia	+			+	CENTRAL
	Spain	Europe					
Participant 13	USA	North America	+			+	MINIMAL
Participant 14	Bonaire	Caribbean	+	+			CENTRAL
Participant 15	USA	North America	+	+		+	MINIMAL
Participant 16	Mexico	North America	+			+	CENTRAL
	Australia	Oceania					
Participant 17	Germany	Europe	+			+	MINIMAL
	Seychelles	Africa					
Participant 18	Colombia	South America	+	+			CENTRAL
Participant 19	Mauritius	Africa	+	+			SECONDARY
Participant 20	Dominican Republic	Caribbean	+				CENTRAL
Participant 21	Federated States of Micronesia	Oceania	+		+		CENTRAL
Participant 22	British Virgin Islands	Caribbean	+				CENTRAL
Participant 23	US Virgin Islands	Caribbean	+				CENTRAL
Participant 24	Philippines	Asia	+	+			SECONDARY
Participant 25	Mexico	North America	+				CENTRAL

3.3.4. Interview guide

Considering the findings provided by the theoretical framework of this study, an interview guide was created. Firstly, the main themes identified in the literature were operationalised to variables that could be detected and analysed during the data collection and analysis process. The guide was based on the operationalisation of the RU activities presented in table 2. As it is possible to observe in the table, under each strand, the activities recognised by DFID and other scholars are presented. The variables created include both quantitative and qualitative measurements.

Given the breadth of the types of NGOs participating in the interviews, the interview guide included three sets of questions based on the most usual types of collaborations between NGOs and academia identified in the NGOs database used for the preliminary information. This distinction was considered essential for the process as the difference in the approach needed for each category was significant. Specifically, for all three scenarios, a set of preliminary questions was created to gain and validate general information on the NGOs' activities and roles in the field of coral reef management, and on the types of collaboration it forms with the academia or independent researchers. Based on the answers to the preliminary questions, one of the three sets was used.

The *three scenarios* included:

(1) cases where the NGO is collaborating with the academia for the execution of a specific project or has long-term partnerships with one or more universities or researchers,

(2) cases where the NGO uses scientific advising, which can include occasional seeking of advice, well-organised scientific advisory boards, and processes of one-way or bidirectional exchange of information,

(3) cases in which the NGO has either no established interaction with the academia and uses only scientific information accessible or has a type of interaction that is not related to the exchange of information in any way.

The full interview guide can be found in the Appendix III. It is important to mention that the semi-structured approach of the interviews allowed for further discussions on topics not involved in the prepared questions. This enriched the results of this research with interesting points and approaches that will be discussed in the next chapters.

Table 2 Operationalisation of the RU activities under each strand based on existing literature

Strands	Activities for researchers	Operationalisation	
		Quantitative	Qualitative
Stakeholder engagement	Stakeholder mapping	Frequency of communication at the beginning of the research process	Perceived relevance of the project at the beginning of the research process Topics discussed Type of engagement proposed
	Alligning research design to the needs of stakeholder	Frequency of meetings in the research idea and process development	Perceived changes of the research towards allignment
	Ongoing engagement	Frequency of engagement activities during the research	Types of engagement during the research Stages of the research in which engagement is happening
	Evidence-informed discussions of results	Frequency of discussions of results during the research process	Means of discussions Accessibility of the results
	Influencing	-	Sharing of existing literature in the research topic
			Perceived consideration on the differences in the timescales Relevance of results with the NGOs requirements in given time
	Flexible and clear division of responsibilities (by Stevens et al., 2013)	Frequency of allignment of NGO and research timescales during the research process	Perceived awareness of responsibilities towards the research
Capacity building	Assessment of existing internal capacity	-	-
	Assessment of existing external capacity	Frequency of discussions on the NGO's existing capacity	Topics discussed
		Number of trainings Number of technical tools provided	Topics of trainings Perceived sufficiency of trainings Types of technical tools provided
	Development of capacity building strategy	Frequency of technical assistance	Types of technical assistance
Communicating	Research Synthesis	-	Usage of existing literature in the research process (applicable to collaborators only)
	Communication planning	Frequency of communication during the research process	Means of communication
	Results publishment	-	-
			Forms of results Perceived readability by non-specialists Connection of results with existing literature
	Packaging and communication of results	Frequency of receiving research outputs	
Centralisation of ultimate beneficiaries (by Stevens et al., 2013)	-	Perceived importance of ultimate beneficiaries in the stages of the research	
Monitoring and evaluation	Monitoring strategy	-	Existence of results framework and monitoring strategy Indicators measured
	Evaluation of impact	Frequency of participation in evaluation activities	-
	Sharing of learning	-	-
	Stakeholder's retention (by Stevens et al., 2013)	Frequency of communication after the end of given research Times of participation in following projects	-

3.4. Data analysis

As a first step in the data analysis, the interview recordings were fully transcribed to ensure that the conclusions made had the maximum relevance to the data. As a second step, the transcripts were coded using both closed and open coding with the use of NVIVO software. Closed coding was used to introduce the main themes of investigation in the transcriptions.

The main themes were:

1. *Current RU activities*
 - a. Stakeholder engagement
 - b. Capacity building
 - c. Communication
 - d. Monitoring and evaluation
2. *Opinions of NGOs on the perceived success of the RU process*
3. *Recommendations by NGOs*
4. *Types of collaborations with the academia*
5. *Uses of scientific knowledge*

The closed codes are directly related to and extracted from the conceptual model and the requirements of the research questions. Open coding was also used to identify more specific codes into the main six themes and to create any new themes that have emerged from the interviews. Examples of the latter include the categories of *Opinions of NGOs on non-process related elements of influence*, *Reasons to collaborate and not to collaborate* as well as codes that correspond to the experiences of NGOs as the *brokers of knowledge* and *the elements, they considered important*. The full coding sheet used in this study can be found in Appendix IV.

4. Results

In this chapter the findings of this study are presented, while also offering respective answers to the research sub-questions as set in the beginning of this paper. Concurrently, it presents and elaborates on the data collected during the interview process.

4.1. Activities identified in the research uptake process

The first sub-question “*What research uptake activities are currently occurring in the different stages of NGOs – academia collaboration?*” aimed at creating an overview of the research uptake activities observed toward NGOs in the field. To answer this question, the terminology and reasoning of the DFID framework was followed as a guide. Taking into consideration the activities identified, an overview of the adjusted research uptake process as experienced by the NGOs was created and presented in the figure 6. As shown in the figure 6, different categories of activities are present in the stages of the process. The categorisation was created through open coding of the references assigned to one of the closed codes that emerged from the theory. Their placement in the visualisation is representative of the indicated part of the process that is happening. It is important to mention that this visual representation of the process can show only the presence of those activities and not the frequency in which the interviewees mentioned them. Furthermore, not all those types of activities were identified by all NGOs. Specific activities were identified for each strand. The activities were extracted as a result of grouping the references under each category of activities for each strand. During the data analysis, the frequency in which the interviewees mentioned those activities was recorded to indicate how common each activity was among the participants. In the following sections, the activities and the frequency for each of the strands are presented.

Duration of the collaboration

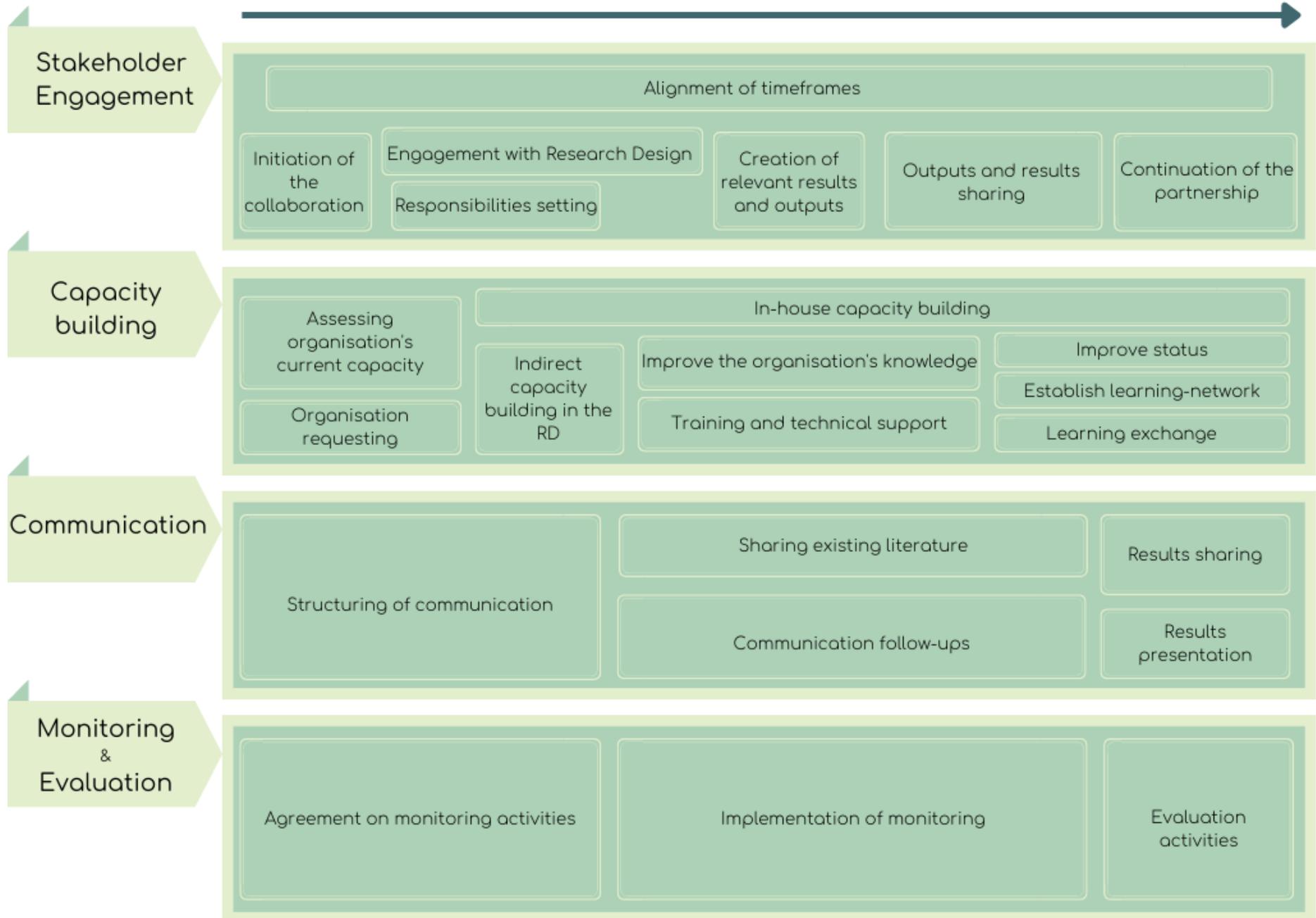


Figure 6 Overview of the RU activities identified under each RU strand in relation to the duration of a collaboration

Below, four visualisations have been made to provide an integrated overview of the current activities for each strand presented above. Each of the graphs provides several amounts of information. First of all, the visualisations are presented in a tree-map form where each box represents one of the categories identified in the strand. The size of the boxes is representative of the frequency of references identified on them. As a result, it is possible to quickly identify which categories are common and which are mentioned only by a few participants. At a second level, the activities under each category are presented as a word cloud. In each word cloud, the font size similarly represents the frequency in which the different interviewees mention the given activity. It is possible to compare both the frequency of activities in one category and the frequency of activities in-between categories under one strand.

4.1.1. Stakeholder engagement

The stakeholder engagement category appeared to be the category with the most concentrated activity among the four. Seven (7) types of activities could be identified in this strand. In the first stages of the process, activities to establish a relationship and eventually collaboration occur. At the same time, many interviewees referred to actions aiming to align the objectives of the two parties for a given collaboration and set clear responsibilities. Both successful and unsuccessful examples were presented. At a later stage, less frequently, activities regarding the creation of relevant results and outputs sharing were reported. Opinions on the success of these processes vary and will be further delineated in this chapter. The final actions identified in this strand are efforts to preserve the partnerships. During the process, activities that merged fundamental differences in timeframes and approaches between the two were also present.

Figure 7 presents the individual activities and the frequency in which the interviewees talk about them during the interviews. They are visually incorporated inside the sub-categories as explained in the beginning of section 4.1.

Stakeholder Engagement



Figure 7 Activities per category of the stakeholder engagement strand

Out of the seven types of categories, the one that refers to the **initiation of the collaboration** gathered the most reports. It is essential to note that most of the interviewees mentioned more than one type present during their experiences. Out of the forty (40) in total references, twelve (12) of them mentioned that the primary tool for initiating new collaborations between NGOs and academics is the utilisation of pre-existing relationships.

“Well, so far it usually happened through relationships. Somebody used to study there, or somebody knew the professor or something like that.” (Participant 17)²

“...it was a colleague that is working there, and we have been collaborating before in other a project. So, we were able to work together again.” (Participant 18)

Other times, one of the two stakeholders might reach out to establish a collaboration. There is no discrepancy between the times that the NGO was the one to approach the academics and the ones where the roles were opposite. An interesting fact emerging from the data is that the times on which the collaboration is initiated through students were as frequent as the other ways presented above.

“We have students from universities that will come and volunteer with us, and therefore we will get in collaboration or partner with the university through not necessarily personal relationships with people within the university, but the students that are studying there.” (Participant 5)

Finally, some activities that were reported less frequently were networking in events and creating a connection as a reference by other organisations in the field.

² Regarding all quotes used in chapter 4: In several cases the quotes have been slightly alerted to fit the requirements of the written language, without influencing their meaning.

The category of activities regarding the **organisation's engagement with the research design** was also a common type reported in the interviews, with thirty-eight (38) references quoting on that. The majority of the references (17) indicated that commonly there are activities that aim to co-create the research design. In specific, the participants talked about activities that include co-creating the plan and, especially, the research questions and brainstorming sessions on the methods. Furthermore, shared working time devoted to research design in the form of meetings, calls or field visits and the provision of shared working documents for constant updating on the progress of the design were reported.

“It's really like finding specific researches that we want to. They are curious about the question that we want to answer. And then we formulate together with the university, either the supervisor or the students together or with the organization.” (Participant 14)

Furthermore, on several occasions interviewees reported that they had requested support from the academia to create research designs for their projects. This can include requesting further information on a topic, feedback, and revision of the plan during the creation process. This was sometimes connected with creating the proposal as part of funding requests. As mentioned in the previous category, student internships and exchanges are an important part of the NGO academia interaction, therefore the creation of internships or exchange project planning was also a frequent answer amongst the interviewees. The process of creating plans is usually coordinated by the NGO, including the provision of plans, guidance, feedback, and students' capacity assessment. In several cases, it was reported that academia supports the research design process by contributing to the writing and providing suggestions on possible designs. Other activities reported only a few times include academia requesting the expertise of an NGO in the research design and the interviewing of academics to collect important information and inputs about the design with no purpose of collaborating.

“So, most of them are not involved in the design phase. They're mostly people that I would interview and take notes and use that to help me with designing.” (Participant 13)

“I will say that they see our participation as very key to their contribution, because, again, we are specialising in these citizen science programs and in large scale coral reef restoration. So, they come to us to actually involve those two strategies within their projects. And for that, we become very actively involved on the design phase.” (Participant 18)

On later stages of the research design, there were several answers recorded by the interviewees where it was mentioned that there is a need to adapt to new collaborators entering the project. Finally, it was suggested that when working with funding, a call for proposals was in place.

Processes of **result sharing** were mentioned in nineteen (19) references during the interviews. Multiple types of activities were identified. Most of the time, the reports or papers produced are shared only at the end of a project. It was reported that many times the reports were produced by the academia, however several times the NGO was the one to create them. Secondly, some of them mentioned that sometimes the outputs of a project are getting known to them in the form of a presentation. This can include thesis or project presentations but sometimes other sharing events such as conferences. Other activities mentioned were identified only a few times. These include giving credit to the NGO for participating in a project with the insertion of the organisation's name in the published papers, co-creation of the reports, creation of open access platform to access all available results, obligation setting at the beginning of the project on sharing responsibilities and the process of NGO adapting to the available research topics to make use of the results provided.

“And on a number of occasions, they have given us credit for our participation or financial support. So, it's been very positive in that way in terms of people being positive and responsive.” (Participant 13)

“And I think also because the organisation has our own scientists as well, and people who specialize in communicating science, we're able to work around that. So maybe if the thing we get is not exactly what, we're able to adapt it ourselves. Whereas if it went straight to a community-based organization here, they probably might not be able to use it.” (Participant 21)

The latter category is closely connected with the activities that aim to find **relevance between the results produced by a project and the aims and objectives of the NGO** involved in it. Only four (4) references were identified during the interviews that pointed to direct actions toward this goal. However, the ones mentioned include the use of methods of co-production of the outputs so that the NGO's knowledge and expertise are incorporated in the outputs of the research, participating in the research design, providing access to other reports and a good expectation setting to achieve relevance of the produced results for the NGO.

“Yes, definitely we don't have expertise in our own team on every topic, and so that's why we're kind of going to all of these scientists and asking them to partner with us. When we do that, I feel like we end up with a product that's so much more. We start with our own scientific review and then we take it to them, ask them to fill it in, review it more. We do that with a number of scientists, and by the end of it, we have a product that is really well rounded, full in the science. And so, I feel like that collaboration with them leads to really good products.”

(Participant 7)

Regarding **responsibilities setting**, nine (9) references were identified, providing insights on the respective activities. Only five (5) out of the twenty-five (25) interviewees reported having constructed agreements on their projects. Their answers indicated that they establish clear legal agreements, called Memorandum of Understanding (MOU), to clarify what is expected of the two sides.

“So, we also do agreements. When we engage with another organisations, we usually do agreements. And it's quite clear in our agreements how and what's expected from us and what we expect from them. And also, in terms of data sharing and all the rest of it.” (Participant 19)

The agreements usually include information about the project's financing but also expectations in terms of time, outputs and more. In some instances, informal, usually verbal agreements are in place. This is more frequent with student exchanges or short-time visitors. At the same time, some NGOs reported that they provide personal guidance to students to give them a picture of the situation on the ground so they can make a realistic goal for their activities. Finally, long-term strategy plans with annual objectives were in place in exceptional cases.

Regarding the **differences observed in the timeframes** between NGOs and academia, sixteen (16) references provided activities that help merge this gap. NGOs seem to initiate the vast majority of actions in this category of research uptake. Most of the time, the NGOs argued that they usually act by adapting themselves in terms of expectations, types of results sharing and other external parameters to align with the project.

“I know these things take time and it's terrible to be forced into a specific answer or having to do a really quick review of something when you know that it deserves more time to fully understand it. But I think in general, we work around that. I think oftentimes our partners also understand that if we're getting sort of last minute or very time-sensitive help it might not be that helpful to us.” (Participant 14)

“We were actually the ones who provided the timetable, so we had the deadlines that we gave to them. They were a little bit late, but in general, we are the ones who impose the timeline.” (Participant 6)

Furthermore, some of them mentioned that they try to guide the timeframe differences during the design of the process and sometimes share a pre-made timetable. At the same time, they also engage in planning ahead of time, along with assessing the environmental and local conditions relevant to the project before planning the cooperation. NGOs argued that time differences between the collaborators enhance timeframe differences.

“I think the biggest thing is just time differences and that is a big limiting factor and it's why it makes emailing much easier, but obviously emailing isn't as good.” (Participant 11)

To merge that gap, the partnerships sometimes include email as the main way of communication, and the collaborators also can keep open-timing working. Constant catching up with each other was also mentioned as an activity. Finally, in a few cases, totally independent activities between the two were established to overcome this problem.

Finally, regarding the **continuation of the partnerships**, only a few interviewees mentioned particular activities in place. These were cases where collaboration between a student and the NGO was upscaled to a collaboration between a professor and the NGO, leading to a bigger potential for partnership, cases where some follow-up communication was in place intending to preserve a contact as well as the establishment of a network of collaborators after the end of a successful project.

“We keep track of what was done, the good results. Then maybe down the line, we're able to connect again and we reach out. Sometimes people have changed, but many times we are both interested and then we connect them to other initiatives.” (Participant 3)

“Now I'm trying to establish a more long-term project, I don't only speak with the student anymore, but also with a lab professor. So, in this way, the next student can continue with me in the future to create continuity in the research. In the relations is not always like that but is the direction where I want to go.” (Participant 14)

4.1.2. Capacity building

Activities of capacity building were not as frequent as in stakeholder engagement. Only a part of the interviewees reported experiences with activities in that field. However, interesting categories were reported that are not mentioned directly in the DFID framework. At the beginning of the collaboration, several interviewees mentioned that the academic party tried to assess the existing capacity of the organisation. However, some of them mentioned that they sometimes could take the initiative to request for specific capacity building activities to be arranged as part of the collaboration. Some interviewees reported capacity building actions indirectly, for example, during the research design process. Most of the answers, though, were focused on improving the organisation's knowledge and providing training and technical support. Interestingly this procedure was reported as two-sided as organisations also provided training on their fields of expertise to the academic side. In a few cases, interviewees mentioned the existence of examples where capacity building actions were in place to elevate the organisation's status and create a learning exchange network. The final category of actions identified was only reported in cases where a scientific board is established internally or externally in the organisation and contributes internally to the organisation's capacity building. These boards can include scientists not employed by the organisation but by the academia.

Capacity building

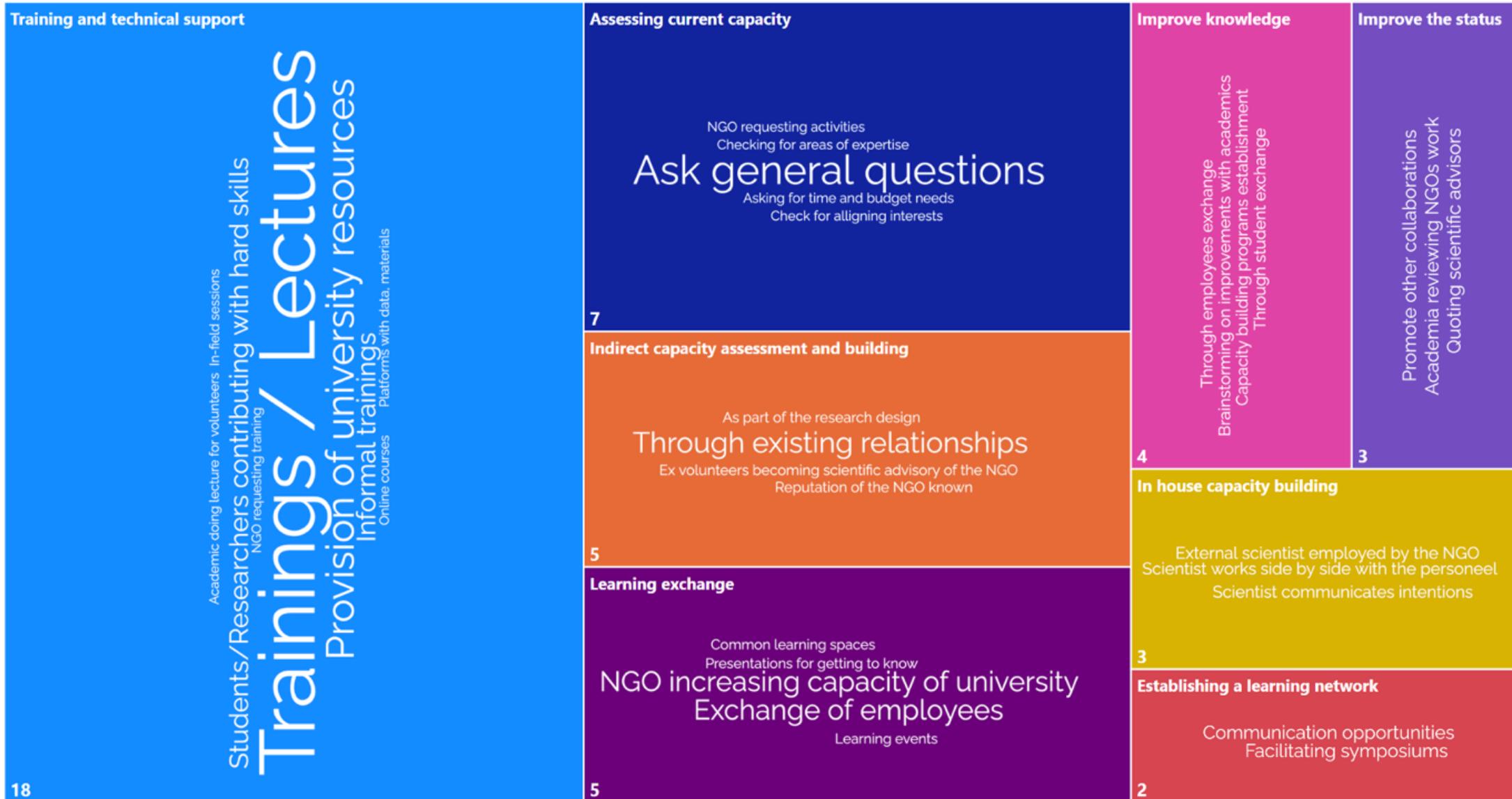


Figure 8 Activities per category of the capacity building strand

Figure 8 shows a more detailed overview of those activities along with the respective frequencies in which they were recorded. In the **training and technical support** category, the participants provided multiple examples of how those activities are executed. It is important to mention that the presence of training or provision of technical support does not always include the existence of an organised capacity building plan. Most of the time, the training or technical support was provided upon demand.

“Yeah, we tend to ask for it as much as possible so that we do have some capacity building.” (Participant 19)

Six (6) of the eighteen (18) responses in this category referred to simple training or lectures that are usually organised to fill a knowledge gap. It was less frequent that participants reported that their collaboration with university students provides them indirect access to scientific journals and other platforms they would otherwise need to invest in through their many times limited available budget. Other activities include collaboration with students to provide the organisation with specific hard skills or informal training.

“But I have students who are volunteers. For example, there was one girl recently here who was a student of zoology and microbiology and is now also trying to study marine biology. She has done quite a lot of study, and she was very helpful in the analysis of water samples, for example, from our transplantation site and also in identifying the coral and also doing all the Excel sheets where we are maintaining the record of the growth of the coral.” (Participant 10)

Finally, in individual cases, participants reported activities such as academics providing presentations for NGO volunteers, platforms with data and other materials for teaching, professional development, explanations, and online courses.

In seven (7) cases, participants had experiences with academics actively **assessing the NGO's capacity** to develop it. It is essential to mention that the NGO's capacity was often assessed but not with the intention of improving it. Instead, they were asked only to assess if they would prefer to collaborate or not.

"I would say that they do a little bit of checking in the sense of that they want to be careful who they associate with or who they lend their time and energy to. But that's more about checking backgrounds and stuff."

(Participant 13)

These cases were not considered as they do not add to the capacity building process. However, even in the cases of the correct intentions, most actions reported were solely efforts to ask general questions about the organisation. Only in individual cases did interviewees report experiences where the academic side was investing in assessing and aligning the interests of the NGO with the academic ones. Only in those cases were they identifying the NGOs' areas of expertise and assessing the needs in terms of time and budget.

"Usually, they want to know more about what we're doing, what our mission is. I think that's kind of some of the things you cover when you're deciding if you're going to work together or not." (Participant 21)

An interesting category that emerged from the data is the one of **indirect assessment and building of capacity**. The term "indirect" refers to cases where the process is happening even though it was not the active intention to do so. Those cases were mostly reported when there was an existing relationship between the NGO and the university or researcher.

"We've been around for a long time, our program, and a lot of our work with scientists is done through cultivating these longstanding partnerships and connections with a lot of scientists. They kind of know they have

trust in our program because it's been running for so long and personal trust from collaborations, and that's sort of been handed down throughout the 15 years that we've been around.” (Participant 7)

As a result of existing relationships, the collaborator had a deeper understanding of the organisation's current state. Furthermore, existing relationships usually mean that there can be already some capacity building activities in place. Other indirect activities are a. the capacity assessment and building as part of the research design as there is an exchange of personal and field specific information, b. the process in which researchers that have participated in volunteering programs become part of the scientific advisory of the NGO and c. the knowledge of existing capacity of the NGO because of its reputation in the field.

“Yeah, I think in part it happens when we design the question together.” (Participant 14)

Learning exchange activities were also mentioned by several participants. Under this category are activities in which the organisation and the academics learn new information and skills. Interestingly the activities with the most responses refer to NGOs providing new skills to academics based on their field of expertise and the exchange of employees from and to the academia to work with and learn from their collaborators.

“I would say there was actually capacity development going the other way from the NGO to the university and a developing country.” (Participant 9)

“We've been writing these learning exchanges into a lot of our grants that we apply for. And our most recent one was having to do with a specific technique of cutting corals up. And so, we went over to Saint Thomas, and they showed us everything they were doing. And we got to see their facility and what they had been working on and go in the field and see some of their corals as well. And then they just came over here to learn about coral spawning work, which is something that we do that they don't do yet.” (Participant 23)

NGOs can provide valuable knowledge to academia, such as local knowledge and practical conservation and restoration activities. One of the participants provided an interesting insight informing that in-field sessions were organised where academics or other collaborating researchers were visiting the NGO in question with the aim of capacity building. Other activities that were mentioned only once include events devoted to learning which might not be organised specifically for the NGO but for other stakeholders as well, common learning spaces between the organisation and the academia and presentations of the two stakeholders to get to know each other better and understand how they can develop.

Another interesting type of activity not mentioned in the DFID framework is **capacity building facilitated internally** by the organisation with the frequent use of external stakeholders such as academics.

“When I came here the programs on restoration had started long before I came. So, the first step for me was to transmit the message, deliver the message that I was here just to help, not to say or to target anyone because they were doing something wrong. But that message was more like, look, what you have done in the past is great, but I have some tools that I can provide for you to make your programs better. And we need to work together on that.” (Participant 20)

Three references mentioned cases where a scientist is either employed by the NGO or provides his/her services for free to improve its knowledge and expertise. This can include adapting to the organisation's environment, establishing relationships with the personnel, and then assessing the current state and working on improving the capacity. The process of earning the trust of the existing personnel was mentioned as a critical early step.

Finally, activities that aim at **improving the knowledge and status of the organisation** and **establishing a learning network** were mentioned by four (4), three (3) and two (2) participants, respectively. These can include sending students or university employees to share their knowledge with NGOs, implementing capacity building programs, and providing advice for improving the organisation's knowledge. In a few cases, interviewees reported that some capacity building activities can improve the organisation's status.

“If we are capable of engaging in any other project, we have the capacity, we have the knowledge. And also, if they have other projects we can leverage or use that leverage for other projects.” (Participant 18)

“But if a big project comes up, then of course I would like to quote them as scientific advisors because that would give my project proposal more credibility.” (Participant 10)

The credibility of the NGO's work appeared to be increasing in cases where the academia reviewed the final reports, and scientific advisors were quoted in them. At the same time, through this, the NGO was promoted to other collaborations as well. Finally, two interviewees mentioned activities that contribute to creating a learning network between more than one stakeholder. The examples mentioned in the interviews include the facilitation by collaborating academics of symposiums and other cases of communicating extra opportunities for collaboration and learning.

“We had a symposium with everybody because what I was saying to them was that we need to get us talking together more like all these different groups. Now we're about six different groups. So, I said, we need to have an opportunity to talk to each other. And so, we did have like a symposium and share information and so that. You know, it's even beyond capacity building.” (Participant 25)

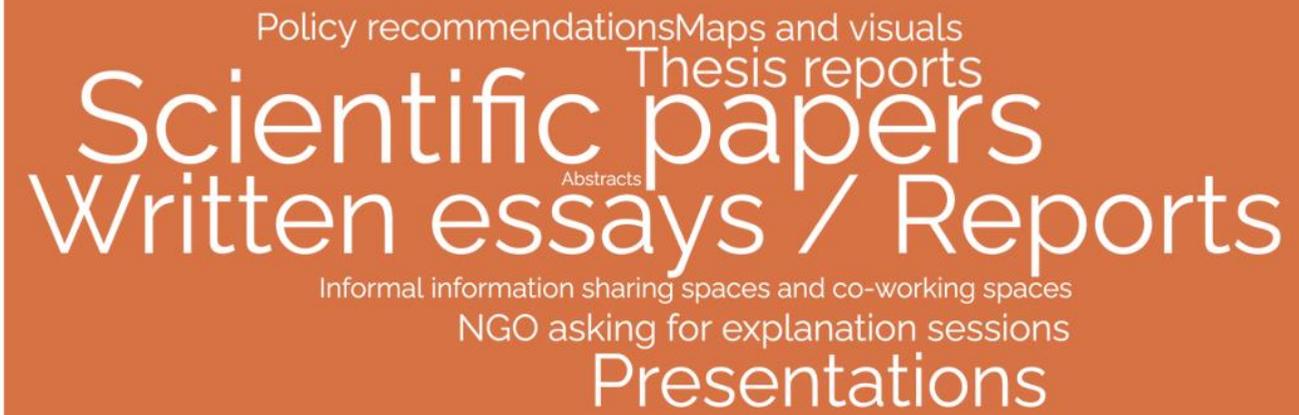
It is essential to mention that even though those activities present an interesting approach, they were only referred to once during the interviews, which indicates that they are not part of the frequent research uptake activities in the field. However, we can take them into account when assessing what can help optimise the research uptake process.

4.1.3. Communication

Regarding the strand of communication, multiple and varying experiences were reported (figure 9). In the outline of actions present, many organisations talked about activities that contribute to structuring communication during a project. This is usually at the beginning of the collaboration. It does not always lead to a high-detailed communication plan, though. Other types of activities include the sharing of existing scientific knowledge and communication follow-ups. Finally, under the communication category, interviewees provided information on activities of results and outputs sharing and presenting.

Communication

Results sharing - presenting



30

Communication follow-ups



27

Structuring the communication



21

Sharing existing literature



15

Figure 9 Activities per category of the Communication strand

The category of **creating a communication plan** gathered twenty-one (21) responses. Under this category, activities that contribute to establishing a structure in terms of communication are presented. However, there is not always concrete planning. In most cases, even though no structured communication plan was established, the participants reported having regular meetings with the academia during their collaborations. The meetings can vary in frequency based on the needs of each collaboration. A less frequent but still usual alternative was planning the next point of communication in every meeting.

“Yeah, it's definitely less structured and more sort of on an as needed basis.” (Participant 15)

At the same frequency, communication planning activities were happening with the NGO's initiative with students that are to work with it. As mentioned in previous sections of the results, the interaction with students has appeared to be quite frequent; thus, planning communication with them plays a role in the process. Along with the planning, follow-up communication points with students were mentioned by the participants to check the progress and sometimes share the information gathered.

“Usually we organize like a schedule, like a work plan before they come. And once they come and see what the reality is where they can make adjustments in the timing and also in the activities themselves. But it's a very structured process.” (Participant 1)

Finally, other seven (7) activities were mentioned once by interviewees. Only one participant mentioned a communication plan in place at the beginning of the collaboration. Communication structuring can happen in cases of follow-up grants where there is already an established relationship. Check-ins upon demand were also mentioned by one (1) of the participants. Other activities are providing advice on student plans based on the NGO

experience, the NGO providing adjustment spaces to align itself with the communication structure of the process, the use of agreements to secure the following of a structured communication plan and organised working sessions as alternative to communication plans.

Sharing existing academic literature was presented as a critical step in the process, as explained by DFID. This category gathered fifteen (15) responses. In many cases, though, no intention of sharing any academic literature was indicated. In those responses, nine (9) different procedures were reported with similar frequencies. This shows no prevailing activity, but the different collaboration chooses the most appropriate activities based on each case. In many instances, academia provided access to academic literature platforms. It is important to mention, though, that the interviewees frequently mentioned that provision of access to scientific literature does not essentially mean that the NGO will reach the relevant for the given research papers when there is no recommendation happening by the academic side. In other cases, the organisations mentioned that even though the university did not provide any access, it was possible to utilise the privileges of trainees or volunteers -researchers or students- that are directly given access to them as university members.

“In some sometimes they do, but most of the time it's the volunteers.” (Participant 10)

Furthermore, some interviewees mentioned that they have received formal emails in the past, usually in the form of newsletters in which scientific papers are sent along with a short explanation or opinion.

“It's sent to a huge group all in it, and someone would just link a paper access, and say something like, you know, just read this paper about coral refugia. I thought this point was really good. I didn't like this bit. What do you guys think? And then it kind of starts from there, but it can be different.” (Participant 11)

Similarly, due to the generality of these emails, the participants mentioned that they do not find that information always relevant to the research in which they are engaged. A few interviewees also mentioned that they might receive the literature in informal ways, such as during shared working time or the proposal creation phase. Finally, in individual cases, activities such as facilitation of a discussion with multiple stakeholders, the existence of a voluntary scientific board that shares literature, academia assessing the relevance of papers before sharing and alignment of results to the shared scientific information were mentioned. Regarding the latter, even though it was reported only once, DFID mentioned it as an essential step in the process of communication.

After establishing a communication structure, twenty-seven (27) times **follow-up types and tools of communication** were mentioned. The majority of types of follow-ups are emails as well as physical and virtual meetings. Those three types of activities constitute about sixty percent (60%) of the references mentioned. All other types and tools were mentioned once or twice during the interviews.

“Well, they have a newsletter. So, every time I see the newsletter, I check what they've been doing and sometimes I ask questions and vice versa.” (Participant 4)

Some other types used are advising sessions, network activities, social media postings, audio-visual sharing, and informal information exchange sessions. At the same time, participants mentioned that regular sending of documents, reminders of meetings, use of simple language and real-life examples help the communication process.

Finally, the category with the most references was the one of **results sharing**, indicating that this is the most common part of the communication process based on the interviewees’

experiences. There was a variety of activities regarding sharing and presenting results. Even though this category gathered thirty (30) references, it is important to pinpoint that this does not mean all interviewees had experiences with academic collaborators sharing the results and outputs of a collaborative project. In fact, in several cases, they mentioned that there was no sharing at all. Moreover, from the thirty (30) references, several mentioned that even though the sharing mechanisms were in place, the results were not relevant to the organisation, or they were presented in a way that was not understandable or convenient to utilise.

“It might be a research paper which would not be so useful to us.” (Participant 21)

Thirteen (13) out of the thirty (30) references mentioned the sharing of published scientific papers or unpublished written essays and reports. The latter can vary from annual reports in long-term collaborations to digested outputs of an experiment. Many also mentioned the organisation of presentations to share the outputs. An alternative to that, with less frequency, is the organisation of informal sharing spaces. This can particularly apply to collaborations that require the close and constant collaboration of the two parties.

“We were involved all the way. They came back asking questions, clarifying things. And all of that all the way through the process.” (Participant 6)

Due to the high amount of collaboration among students, several interviewees mentioned thesis reports as another tool, pinpointing their non-practicality as it is usually too long or technical. Finally, other means were mentioned a few times, such as the NGO requesting explanation sessions due to the high complexity of the outputs shared in other ways, sharing of abstracts, maps, visuals, and policy recommendations.

4.1.4. Monitoring and evaluation

The last strand gathered the least reports on respective activities. Only a few interviewees shared experiences regarding monitoring and evaluation of research uptake. Eleven (11) out of the twenty-five (25) interviewees reported that they were unaware of the existence of any monitoring or evaluation frameworks. The ones that reported an experience referred to activities regarding the arrangement and execution of monitoring and the existence of evaluation moments in the end of the project. It is important to mention that in cases where monitoring and evaluation activities were in place, assessing the success of transmission of scientific information was not the only motive, but it was sometimes part of multiple objectives, including the assessment of the partnership, the quality of results and more.

Monitoring and evaluation



Figure 10 Activities per category of the Monitoring and Evaluation strand

Figure 10 presents an overview of the activities recorded in this strand. It is possible to observe that the category of activities with the most responses is the one in which the **NGO facilitates monitoring and evaluation activities** that refer to the transmission of scientific information. This shows that the NGO has an active role in this process and does not appear to be only the receiver of the impact of academic actions. However, DFID clearly states that the academia should be responsible for establishing a monitoring and evaluation scheme with concrete indicators. In this category, varying activities were reported, but there are no significant differences in the frequency of references. At the beginning of the process, some mentioned that the NGO created a monitoring framework for the collaboration. This is not specific to research uptake. Other activities at that stage include monitoring the learning process and organising weekly check-ins with students.

“Yeah, definitely. Especially in the bigger projects, we're usually working from a log frame, which is our main tool to then develop more detailed monitoring of the activities that are attached to that log frame. Then we do sort of a percentage completion of where we are, how much more needs to be done and that sort of stuff until the activities are completed.” (Participant 19)

Regarding student interaction activities, NGOs reported that they engage in more monitoring activities. Finally, they also facilitate evaluation and discussion moments with partners, closing meetings to identify successes and points of improvement and evaluation questionnaires with students.

In only a few cases, NGOs reported the **existence of monitoring strategies or activities** by the academia. Specifically, two out of the six responses indicated the co-creation of a monitoring framework, while another two established informal progress check-ins. In

individual cases some interviewees mentioned the use of scheduled monitoring meetings and cases where monitoring activities happen after request of the NGO.

“And yes, we prepare work plans for each project or collaboration, and then we just keep track of those. And then, we have meetings again and we go point by point assessing.” (Participant 18)

Finally, six (6) different types of **evaluation** were presented, experienced only by a few participants. These include the filing of evaluation forms sent by the academia, the following of an evaluation process as part of funding or internships, evaluation meetings, and check-ins with mentors of students and staff evaluations. It is interesting to mention that when evaluation is initiated as part of the funding requirements, it is easy to evaluate but also monitor all agreements and promises made in the proposal phase of the project.

“We do have one program with the local university here that hosts undergraduate interns. And so, it's just six weeks in the summer and the program that they have does a decent amount of check ins with the mentors and check ins with the students. And then just like after everything is finished, they sort of ask for our thoughts and opinions. So, they're that program. But that I think that has a lot to do with the fact that it's specifically like a program designed for building capacity and young scientists. And so, they're also like it because the program is grant funded. I think they probably need to do a decent amount of analysis for their grant results as far as maybe we do some level of like internal casual monitoring where if we have a situation where we have a researcher come in and it's like actually very stressful for us and, we're doing too much for them.”

(Participant 23)

4.2. Successes and failures of the research uptake process

Following the identification of the activities that are happening, in the second sub-question “What is the perceived success of those activities by NGOs in the field, and what is yet to be

improved based on the NGOs' perspectives?" this study identified in each of the strands what is considered successful and what not through the experiences of the NGOs. The subsequent successes and failures were searched around the process described by DFID; however other non-process-related elements emerged from the conversations. The terms process-related and non-process-related adopted in this study are used to distinguish between the elements that refer directly to a research uptake procedure with concrete steps, activities and aims, while the second one includes all other elements that might influence the process such as behaviours, characteristics of the collaboration, cultural differences and more. This distinction was considered necessary for the interpretation of the results as the differences between the two are critical and particular importance was given to both separately during the interviews.

4.2.1. Process-related successes and failures

Stakeholder engagement

Following the same pattern as the presence of activities, the stakeholder engagement category gathered the most opinions on the success of the research uptake activities. In all categories, apart from the initiation of collaborations, there were opinions formulated.

Regarding setting responsibilities, almost fifty percent (50%) of the people interviewed expressed an opinion. Many of them argued that they feel that the responsibilities between them and their academic collaborators are clear.

"I think usually it's pretty clear because often it's the form of some sort of contract or grant agreement."

(Participant 21)

Some also expressed that there was no overlapping between the two stakeholders' responsibilities. The same number of interviewees, however, indicated that they usually do not receive the expected deliverables from the other side.

"There have been occasions when we thought the result was going to be different from what was delivered. And that was quite disappointing. And then we had to question, well, why is it, how did that happen? So those are some projects that probably weren't described. It's more the projects where we weren't involved in the real design that we tended to have that problem where our expectation was not what was delivered in the end."

(Participant 19)

Finally, the opinion that there is a difference in the centrality of responsibilities based on the type of project was also expressed.

About fifty percent (50%) of the respondents argued that **timeframes** do not constitute a problem in their collaborations with academia. However, the other half reported that the activities they experienced in the research uptake process failed to merge the gap between the differences in the timeframe of the NGOs and academia. The interviewees provided their perspectives of what is failing in terms of alignment of timeframes. Firstly, some reported that during collaboration with students, the timeframes of internships are not long enough to provide valuable data for the NGO. Similarly, several mentioned that the difference in the year schedule of the university and every other sector (corporate or non-corporate) also contributes to the problem.

"...And it just gets very hard because academic schedules are not uniform around the world and so not everybody can go and do things to meet at the same time." (Participant 13)

Furthermore, a great number of interviewees reported that they experience a fundamental difference in the urgency that the academia and NGOs approaches entail. To add to the last point, several NGOs referred to the consequences of the lower urgency of academia timeframe to NGOs. Specifically, they referred to the NGOs' corporate needs that cannot be fulfilled in the slow timeframe usually included in academic collaborations. Bureaucracy, administrative requirements, and wrong project expectations were also mentioned. Many people argued that they feel compassion for the reasons behind this difference. They specifically mentioned that they understand the reasons and sometimes try to embrace it as they feel there is nothing to do about it.

“It does certainly happen (the difference in timeframes), and I have a lot of sensitivity and compassion for that because I am a scientist” (Participant 15)

Multiple participants provided their opinion on the activities that empower the process of **engagement with the research design** to achieve research uptake. Many respondents find it important to collaborate on the co-creation of plans and proposals when it comes to collaborative projects. They argued that this is important as collaboration through the research design leads to projects that are well adjusted to the participants, geographical location, and needs.

“And then I will grab these guys and I will sit down with them and ask them to help me to make the proposal in more detail.” (Participant 10)

“That's why we want to be part of the question. And otherwise, there is a big gap that sometime happens. And that's why I learned to kind of filter that sometimes research is not worth it for me if it is not bringing back a knowledge that will help us to grow.” (Participant 14)

Some interviewees mentioned that the process becomes more successful when they collaborate only with specific individuals or universities – the ones they know can be beneficial for the NGOs’ topics and objectives. A few times, it was mentioned that the academia has shown to them that their engagement in the research design is also valuable. Some other opinions proposed on this topic are that all changes needed to be made should be happening as early in the project as possible, as later the collaboration becomes less flexible in change and that the level of engagement with the research design is sometimes depending on the NGOs expertise in the field of the given research.

“The beginning is really important because you want to make sure that you're starting off on the right foot. It's a lot easier to change things before they've started a year into the project. Once things started up and they're settled and they've kind of okayed what we're doing or they've agreed with it, you don't really have to be in touch too often if nothing's changing” (Participant 11)

However quite sometimes organisations reported that there is no interaction during the research design phase at all. They also argued that they have felt that the academia has not welcomed the opinions of the NGOs and thus excluded them from the process.

Forty percent (40%) of the opinions formulated expressed that they were **satisfied by the results** of the projects, and all the **deliverables matched their expectations**, indicating a well-functioning process of creating relevance. However, even in these cases, most interviewees referred to success as “most of the time” and not “always”. Specifically, in the cases where NGOs were interacting with the scientific community in the form of external voluntary advising roles, they all agreed that there were no expectations and that they were grateful for whatever types of information they received.

“Yes, they correspond to our expectations. If they the research is relevant, yes.” (Participant 1)

“I think that generally speaking, we're just asking them for advice. There's not a huge payoff. So sometimes if we're asking quite a complicated question, it might take them quite a long time. So, I think that we can only really expect advice, and that's it. If they're happy to give more time and extra information,” (Participant 11)

In many cases though the respondents argued that they didn't receive the expected results. The main problem identified for this was that they were not involved in the research design in the first place. They also referred that sometimes they received information that was irrelevant to the organisation. Some examples can be extracted from internships not well aligned with the organisation's needs.

In almost same number of cases, the activities reported above led to success or failure to **share results**. The NGOs that considered the action of result sharing successful talked about firstly the sharing of results at the end of the project but sometimes also in the middle, when necessary, secondly the sharing of results by students at the end of their project and thirdly cases of co-creation of the results along with the academia. Several times NGOs reported that they were the ones to share data or results with the academia. However, it was reported that they did not get a follow-up on the use and impact of that information.

“The outputs of each collaboration. So, it's not like they report to us, or we report to them.” (Participant 18)

“It's definitely more of a providing the platform and providing the raw data. We don't have much input in actually analysing the data and going through it with the partner.” (Participant 5)

On the other hand, twelve (12) references pointed to a failure in sharing results due to unsuccessful projects, such as student assignments where no obligation for a report was set or simply no sharing of the available outputs from the collaborating party. Finally, some respondents mentioned that long and too scientific reports such as a thesis fail to serve their purpose for the NGO-academia collaboration.

“I mean, it is easy to understand the thesis like the final document. It's just that it's a bit too long, you know? It's not practical.” (Participant 12)

Based on the activities that the NGOs have experienced, the vast majority reported that the current activities promote the **continuation of the partnerships**. In specific, most of them argued that the existing collaboration transforms into a long-term collaboration. In many cases, the interviewees reported that the partnership continues as successful projects can proceed to the next phase. Other times the collaborations are preserved in terms of relationships through staying in touch and finally due to the relationships that were already existing.

“Occasionally there are instances where there is a one-time collaboration. But most of the times we are trying to build long-term relationships that would allow us to come back and work together over again.”
(Participant 13)

An interesting point raised during the conversations was that sometimes the continuation of the collaboration could depend on the project's success.

“I think it depends on how successful the relationship is.” (Participant 21)

The remaining participants mentioned that they usually engage in one-time collaborations. This was mainly observed in NGOs that provide volunteering opportunities in which individual

researchers or students engage. However, they sometimes mentioned that they usually see people from the same universities, which leads them to believe that former volunteers spread the word about their opportunities.

Capacity building

The capacity building strand had few references regarding successful activities reported by NGOs. However, some information was provided in cases where there was no capacity building. This aligns with the relatively small amount of activity recorded in this strand.

Regarding **assessing an organisation's current capacity**, it was mentioned that the scouting process could have other motives than capacity building. However, some organisations mentioned that including the expectations regarding capacity building in agreements is a successful way to ensure it will happen. The opinion that the NGO should clearly request those activities was also expressed. Furthermore, one organisation mentioned their positive experiences establishing a learning exchange process. Unfortunately, though, in most cases, the interviewees mentioned that the partner was only interested in completing their own research and had no intention to engage in capacity-building activities.

“Thinking off the top of my head of some different people we've collaborated with, and some are extremely driven by their own research. This is what I want to discover, this is what I'm trying to figure out, and this is exactly how I would please ask you to do this work for us to make sure it happens in the right way.”

(Participant 25)

Other actions recorded that hinder the capacity development of the organisations are the lack of sharing of available information and analyses of collected data.

In terms of **training and technical support**, there were no successes mentioned. However, in a few cases, interviewees argued that there was either no training or that the NGO believed there was no need for training or support in the first place.

Communication

The interview participants provided opinions about the structure of the communication, the forms of results and the process of sharing existing scientific literature.

The majority of respondents felt that there was no **structured communication** during their collaborations. Instead, they said that they would only communicate when there was a need. They also mentioned that this is common when people use their facilities to conduct their research, trying to engage as little as possible with the NGO and when universities request an independent approach to students leading to no communication.

“Other universities have a much more independent old school libertarian approach, you go do you, this is your chance to prove that you are independent. So, we will see you again in half a year. And that is also how we work with universities regardless of which approach it is.” (Participant 24)

Only seven (7) out of the twenty-five (25) respondents agreed that the communication between them and the academia was well-structured. Finally, several interviewees mentioned that they had a semi-structured communication mainly characterised by casual relationships.

There were varying opinions regarding the success of the **forms in which the results are shared**. The number of people who argued on successful results sharing forms was almost

equal to the one on failing ones. The people that support the later statement usually said that the results are presented in a too academic way that makes it difficult for the NGO to understand and use. Interestingly though, the ones that supported the success of the current forms of results pinpointed that this is not always the case and that they many times still receive too scientific reports which they are able to utilise only because there has been capacity building before making them able to understand complex scientific information.

“Easy, easy to understand.” (Participant 4)

“My staff and I have been able to successfully play in having enough understanding of the science and enough understanding of the policy that we could help guide the conversation in a way that made it much more constructive and much more interesting. There was presentation at the right level for the audience and level of difficulty.” (Participant 13)

On the other hand, a significant number of references indicated that sometimes the NGO uses internal resources such as employed scientists to adjust the scientific information received to something that can be perceived and used by the organisation's staff. Finally, in only a few cases participants mentioned that agreeing on the expected form of results at the beginning in agreements or plans was proved successful. Furthermore, that the ability to understand the results given is dependent to who is going to read it inside the organisation and that this should be taken into account.

The vast majority reported that they received pieces of **existing scientific literature** successfully. NGOs were, in many cases, satisfied with the provision of scientific literature on the topic of research; however, they pinpointed that this sometimes can be too general. In specific cases, NGOs reported that they never receive existing scientific literature by their

academic partners. Although, they reported that sometimes this is not because of neglect but because the NGO is the expert in the collaboration.

“No, I don't receive it from them because they are really not specialists in core restoration or in my topic.”

(Participant 12)

At the same time, six (6) participants mentioned that they also actively share scientific literature with the academic collaborators indicating a bi-directional process.

Finally, the category of successes and failures regarding the **types and tools of communication** gathered the least number of opinions in this strand. There were no successes mentioned. However, multiple participants mentioned that the situation of Covid-19 created the possibility of video conferencing, which was not mainstreamed until now. In individual cases, they mentioned that sometimes meetings slow down the process and that geographical differences in multi-national projects make live communication almost impossible.

Monitoring and evaluation

The monitoring and evaluation strand was the one that had the least references in terms of the successes and failures of all four strands. Most participants argued about the non-existence of a monitoring or evaluation strategy, so there is only minimal valuable information on the success and failure of the activities in that category. It is important to mention that the arguments presented in this paragraph were only recorded once during the interviews. Firstly, it was expressed that a lack of long-term relationships leads to no monitoring activities. Furthermore, some organisations argued that they find a monitoring and evaluation strategy, not necessary based on their collaborations until now. One interesting approach mentioned is

that it should be performed externally and not internally to achieve successful evaluation. Finally, one participant mentioned the establishment of indicators and timeframes as part of a monitoring effort.

“It might be unnecessary in a way where it would detract from the conservation work our organization is trying to do. However, we always want to learn more and see where we can improve. And if anyone has advice or even if it's just a personal opinion, we always do try to cure it and give it reason and see whether there's any advantage of maybe going ahead.” (Participant 5)

4.2.2. Other elements that positively and negatively influence research uptake

The elements discussed in this part were raised by many participants, even though most of them are not related to the process described in the DFID framework. Those points are presented in this section of the results as they can be considered valuable elements that can influence the success or failure of the research uptake process. The data presented in this chapter were produced using only open coding, inductively by the guidance of the transcripts. The order in which the different elements are presented indicates the frequency in which different participants mentioned those elements as important.

The first element that was considered important by many participants was the **alignment of the goals and interests of the collaborators**. Out of the nineteen (19) interviewees that mentioned this element, thirteen (13) provided positive answers. Specifically, the majority of them mentioned that success is observed when occupying with projects that match both the organisation's and the university's needs and interests. They explained that this leads to easier collaborations. What is more, some mentioned that they have observed progress in terms of how much the academia cares to align the goals and interests of the participants and that they

see academics being less and less afraid of getting involved in pressing on-the-ground topics such as conservation.

“It is often that the conservation world is trying to address something urgently and an academic timescale or time frame is not quite so urgent. And it's because they're doing things in order to do research and the like. Interestingly, I feel that over a few decades of work in this field, the two are becoming more aligned. I think academics are less afraid of getting involved in conservation and more concerned about harm to the natural environment that they study as a result of climate change or other things. And so, we end up with a much more aligned concern and therefore a much more aligned time frame of urgency and speed.” (Participant 13)

Less frequently, some participants indicated that aligned concerns can lead to better alignment of timeframes and that alignment at the earliest stage of the design leads to success. Not many opinions were provided on what is currently failing and needs improvement. A few interviewees mentioned that the process is hindered as it is difficult to convince the scientists of the urgency. This can lead to the results being created too late and eventually providing no possibility to uptake them for conservation or restoration.

“And sometimes people feel that corals are dying, and they are dying pretty fast. And sometimes it's very difficult to convince that scientific research is still the way to approach to that problem. And sometimes science does not have the solution as fast as they would like to have it.” (Participant 20)

At the same time, some mentioned that no alignment of goals and interests leads to no relevant outputs for the organisations that cannot be easily up taken. However, it was clarified that aligned goals do not always lead to successful fieldwork as this is a multifactorial issue.

“So that, I would say, is sometimes a mismatch in terms of what's most helpful for conservation versus what what's most interesting.” (Participant 9)

Fifteen (15) references were collected, indicating that it is critical to consider the **dynamics of behaviours and cultures** to achieve successful uptake. The characteristic that was supported with the most references was cultural sensitivity. Considering the usual involvement of multiple countries and ethnicities, this characteristic was presented as essential for achieving research uptake.

“That is a straight cultural thing. I mean, subprojects, if you go to developing countries, time is irrelevant. You know, you can only prepare as much as you want. You have to be on site to get things done. Obviously, the outpost of bargaining is run by mostly Dutch people who have been living there for quite a while. So, you know, our European way of getting things done and push forward and integrating the presumable delays because something is going to mess up and the truck is not going to deliver or they bring the wrong thing, all these factors.” (Participant 8)

This can include the realisation of cultural differences and the adjustment of both sides of the collaboration. Goodwill and treating others with respect were also presented as important. NGOs reported that cases in which those elements were not present could not lead to successful collaboration, sharing of information and experiences as well as a long-term perspective of research uptake.

“So mutual respect for me is very important. I think that is the basis for exchange of information for knowledge. And to learn from each other” (Participant 10)

Other characteristics that interviewees mentioned include integrity, mutual respect when it comes to the exchange of information, openness, cooperative spirit, willingness to help with the translation of scientific information and understanding of differences between the various personalities and university cultures.

Achieving successful research uptake was often interrelated by interviewees with the **relationships** formulated during the process. Many of the interviewees mentioned that good relationships usually set the ground for many opportunities and the process of research uptake. Establishing trust was one of the most frequent characteristics mentioned. Other elements that have proved helpful based on the NGOs' experiences were transparency, creating horizontal relationships and investing in emotional intelligence. An interesting fact emerging from the data is that in cases where academia provides voluntarily advising services to NGOs was reward enough to preserve a good relationship.

“Usually, I'm aware that we're asking for a lot. It's entirely pro bono. They don't get anything really back. It doesn't help them academically. It doesn't help further their goals unless they already have a commitment to doing work outside of academia or to doing applied research or to having their research matter. And we always tell them that, you know, this is exceptionally valuable. And for many people, that's apparently a sufficient reward.” (Participant 15)

However, a failure in achieving beneficial relationships was observed in cases where the university was not willing to open and connect with the organisation and when there was lack of inclusivity of the organisation in the processes of the collaboration.

The concept of clear **and flexible division of responsibilities and expectations** was mentioned on a great scale by the interviewees. It is repeated in this section even though it was mentioned in the first part of this sub-question because it was clearly stated multiple times as important for the collaboration and further information were given that do not directly refer to the process of research uptake. Four (4) main success stories were indicated in this element. Most frequently the early communication of expectations by both sides was mentioned. Many

important insights were recorded on the potential success that the creation of agreements plays in the process.

“I think it has been very clear, what we have in the memorandum of understanding is very clear. What is my response to my organisation's responsibility? What are their responsibilities? I think you leave everything in writing. Clearly, I think that's the case. It has been very clear.” (Participant 18)

Furthermore, the creation of not overlapping sub-goals during a project was presented as successful. Finally, it was mentioned that the use of a middle person hired by the university that acts as the “champion” and is responsible for the partnership itself was presented as a success story.

“So, I find that universities, at least the ones that I've worked with, typically have someone employed dedicated to work with you, which is great because then that person is that sort of champion and an easy access point to talking with them.” (Participant 16)

On the other hand, some failures on the topic of responsibilities and expectations were recorded as well. In specific, the opinion that lack of sharing enough information can create a non-representative image of the current state for the NGO leading to false research uptake.

“And I had this a lot, which I found a very offensive for the work that we had done because there was information, wrong and not properly explained regarding their work and maybe just have the courtesy of sharing it.” (Participant 14)

Furthermore, it was reported that sometimes there might not be enough acknowledgement between the participants which can hinder or even stop the progress of the RU process. Finally,

cases of no connection in the design of a given project have led to no clarity of responsibilities for the NGO in a later stage.

Connectivity is the next important element raised by the interviewees. For this element, some interviewees raised important points of concern. Firstly, and with the most frequency, the interviewees mentioned that due to lack of connectivity between the different stakeholders – including academia – there is no sharing of complementing data. As a result, multiple entities need to create the same data repeatedly which could have been easily avoided if they would share the part they have already produced.

“A lot of NGOs and charities kind of replicate the same data and they don't collaborate. So, you might have a charity that has collected ten years of data on one species and then on the next island you have another charity that has another ten years of data on one species, and they won't talk to each other because they are independent. I think that this is really damaging because if you've got two charities doing the exact same work and it doesn't make any sense. So I think that making sure that data are open sourced for me it makes sense. I don't understand why you wouldn't do it. But a lot of charities especially in marine world, they all have their own id systems, but they won't share them. There is a lot more work to be done for charities to speak to each other, sharing data. Of course, it is quite complicated, but I think that for me as a scientist working for different charities that is one thing that always really frustrates me. And charities do not publish their data. Or they collect really great data, but no one can read it. I don't understand it. But I am sure there are reasons.”

(Participant 11)

This could be considered as slowing down the research uptake activity as organisations and universities are occupied with producing raw data already existing by other entities instead of working on applying the knowledge produced by those data in practice. Furthermore, politics was mentioned as another reason behind lack of connectivity.

“The politics of the Red Sea are quite complicated, and you've got countries that are basically not really talking, and they all generate their own data.” (Participant 11)

Finally, interviewees involved in some ways with funding mentioned that there is a lack of connection between the two spheres when it comes to applying for grants, while at the same time, grant applications increasingly require research uptake plans in place.

Several interviewees mentioned that achieving **accessibility of scientific information** can positively influence the research uptake. The opinions provided in this element were mostly positive. There are two main opinions to consider when it comes to the accessibility of information. Firstly, interviewees mentioned that there is an outstanding improvement in the situation compared to the past.

“Maybe in the past it was truer. Now it is becoming easier. But in the past, the old scientists, they did not like to share the information. Yeah. Example. If you are a scientist and you have done research, let's say from point A to point B, and if I'm interested in the same field, I should have access to all the information you've already done right. And I start from it, and I continue to maybe F or G or whatever. But that was not the case before they would not part with the information. So, which meant that if I wanted to do the same thing, I would start again from a and if I was lucky, I would get past D and go to maybe E or F.” (Participant 10)

Even though the situation is still not optimal, the steps to achieve that are visible to the organisations. Secondly, several interviewees mentioned that creating accessibility of scientific information could also happen by an initiative of the NGOs. Many are working at the creation of platforms of open-source information contributing to the process of research uptake themselves.

The activity of **citizen science** was considered by the NGOs also an important element. The interviewees formulated opinions suggesting that citizen science can, directly and indirectly, help the research uptake process. Directly it helps the research uptake process towards the public. However, it can indirectly lead to the massive production of data that would not be able to be gathered in such a short time.

“Their idea is a bit like they acknowledge that there’s a lot of scientists out there that could benefit from citizen science activities and that this portal is potentially a way to do that. Yes.” (Participant 2)

This moves the focus of the scientists to the creation and use of the produced relevant outputs in time to fight urgent problems instead of spending years in data collection. Participants mentioned that it remains for this tool to be trusted and to invest in it. In some cases, participants mentioned that in specific countries such as Australia, the idea of citizen science had not been taken up by a wide range of professionals.

The final element mentioned by the participants is the creation of **win-win collaborations**. Several successful activities were mentioned in this category. Firstly, win-win relationships were achieved in cases where the project's goal was the main motive of the partnership instead of individual interests.

“So, you know, we can all help in our own way. So, to me, the final outcome is very important. Whatever project we do, we are not doing the project just for the sake of doing the project or because we have the funding, but we should really make a difference.” (Participant 10)

Secondly, taking into consideration the importance of student-related partnerships, long-term student and university relationships can promote this as long-term plans can be achieved with

consecutive student projects instead of one-time collaborations. Furthermore, a collaborative approach was considered essential, as well as choosing collaborators that have or are intending to establish plans.

“Both the organisation and the university have to gain something from it. And ideally, if it can be longer term where you can continue, it doesn't mean that it's active all the time, right? It just means that it's there. It's solid and it can be activated when the collaboration points are touched. I think that's successful.”

(Participant 3)

Finally, the interviewees mentioned the importance of understanding and expressing how the two collaborators will benefit from this relationship. On the opposite side of this, several NGOs had experiences of providing bachelor's or master's student programs that required an exceptional amount of time with no real help for the organisation and cases where the NGO was providing resources such as boats, fuel and more while not receiving any outputs or data in return.

“Give us back what is needed, you know, because if they come here and collect data but they don't publish anything at the end or they don't produce decent report because at the end what they need is just to pass or they don't care, what is done for the foundation is a lot of energy and resources that are wasted, I have to be honest.” (Participant 14)

4.3. The influence of roles in the research uptake process

Taking into consideration the level of complexity that the process of research uptake entails it is important to consider the roles that the NGOs play both in the field of coral reef conservation but also in the process of research uptake. This chapter provides the required data to answer the third sub-question of this research “*How are the variations in NGO roles influencing the research uptake process?*”. To achieve that all available information on the different objectives of NGOs recorded, the uses of scientific information and the types of collaboration they form with the universities were identified. The reason behind collecting these three types of information is to identify connections between the three and the current state of the process of research uptake. To understand the influence of the roles of NGOs in the research uptake process, it is important to realise that optimising research uptake means helping the organisation improve and succeed in performing its decided roles. Thus, understanding the objectives that NGOs aim to perform should shape the process of research uptake.

4.3.1. Objectives of the NGOs

Figure 11 shows the overview of the objectives the organisations interviewed discussed during the conversations. Seventeen (17) different objectives were identified by the twenty-five (25) organisations participating in the study. It is interesting to pinpoint that overall, sixty-five (65) references were collected during the interviews, indicating that the vast majority of NGOs engage with more than one objective. This increases the complexity of the interrelation between the objectives and the research uptake process and should be considered. The most frequent objectives mentioned during the interviews were “Conservation” with sixteen (16)

references and “Restoration” with seven (7). Six (6) different organisations mentioned education as an objective as well. The frequency of all other ones varies from five (5) to one (1) time. An interesting insight is that several times some organisations mentioned that one of their objectives is to merge the gap between scientists and practitioners, governments, and general public but also between scientists themselves.

This overview shows that there are objectives that can be elevated by research uptake, such as conservation or research, but at the same time, some can, directly and indirectly, help the process of research uptake. Several examples can be the dissemination of knowledge or the creation of accessible information.

Objectives of the NGOs

- Conservation
- Restoration
- Education
- Bridging different spheres of action
- Awareness raising and outreach
- Empowering local communities
- Research production
- Creation of volunteering programs
- Dissemination of knowledge
- Provision of assistance to governments
- Capacity building
- Fiscal sponsorship
- Provision of funding
- Consulting services
- Media creation for marine conservation
- Provision of accessible information
- Representing legal cases



Figure 11 Objectives of NGOs identified in the context of coral reef management and marine conservation

4.3.2. Types of interaction academia and uses of scientific information

It is interesting to address the objectives in relation to how the NGOs collaborate with the academia leading to research uptake. During the interviews, it was possible to collect information on the types of collaborations identified between the NGOs interviewed and the academia. Furthermore, data on the uses of scientific information by NGOs were collected to search for similarities and differences between the three. Figure 12 presents the different types of collaborations while figure 13 the uses of scientific information along with the frequency in which they were presented in the interviews.

First and foremost, it is interesting to observe the variety of ways in which the two stakeholders interact. Collaborating in research projects with academia was the type with the most frequency. Secondly, a significant amount of the graph (32,14%) is devoted to activities that involve collaboration with students. This can include internships, volunteering programs, mentoring, or supervising projects and other trainings. It is important to take into account this type of collaboration and consider the specific characteristics of this category for research uptake as it constitutes one of the most significant ways of collaboration. In a similar pattern, NGOs collaborate significantly with PhD and Post. Doc. candidates as well. Several interviewees mentioned that they also collaborate with the use of scientific advising boards. This is an interesting case to investigate as people engaged in this activity provided mainly positive opinions and experiences while cooperating with academia. Other types referred to several times include collaboration for events and forums, joint learning collaborations that can include staff and knowledge exchanges, financial assistance, data collection and analysis that can happen both ways based on the given collaboration and training facilitation. Finally, the rest of the activities were mentioned only a few times.

Nine different ways were described in which the organisations interviewed use scientific information. The variety of ways corresponds to the one of different objectives and types of collaborations. The majority of interviewees mentioned that they utilise scientific knowledge in order to support their projects scientifically. This can be because of the organisation's initiative and interest to do so or after a request from another non-academic collaborator. Even though only a few times objectives that refer to the transmission and creation of accessibility were mentioned (accessible information, disseminate knowledge), a significant percentage talked about the use of information to create platforms for accessible scientific information. In many cases, this is happening through their websites. Other times they use it to provide advice, stay up to date with the latest scientific information or make decisions. Other less frequent uses were to support educational and outreach activities, to collect data by analysing different scientific methods or existing literature on the topic as well as to take advice for their actions.

Frequency of different types of collaborations with academia

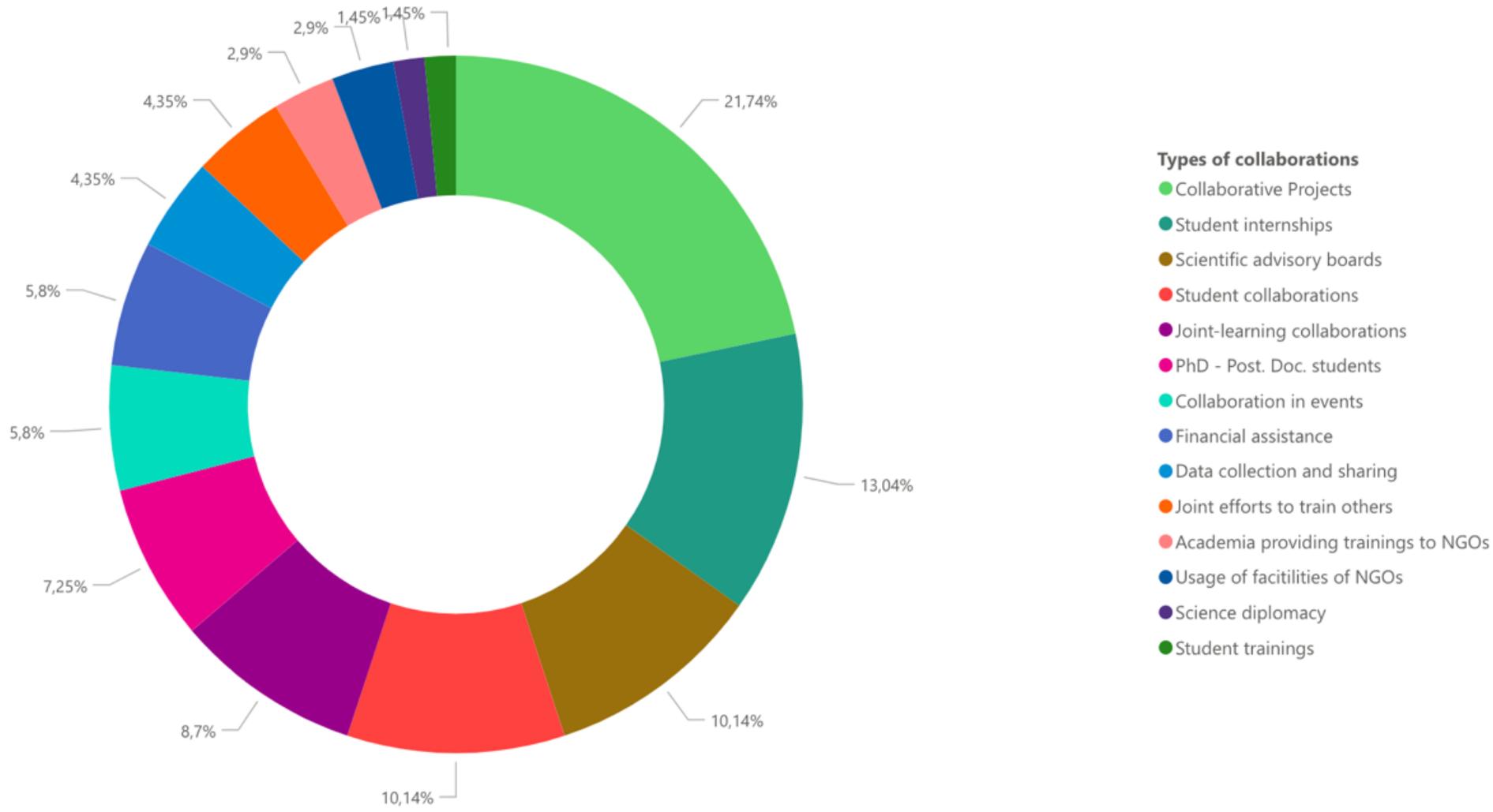


Figure 12 Frequency of the different types of interaction between NGOs and academia

Frequency of the uses of scientific information

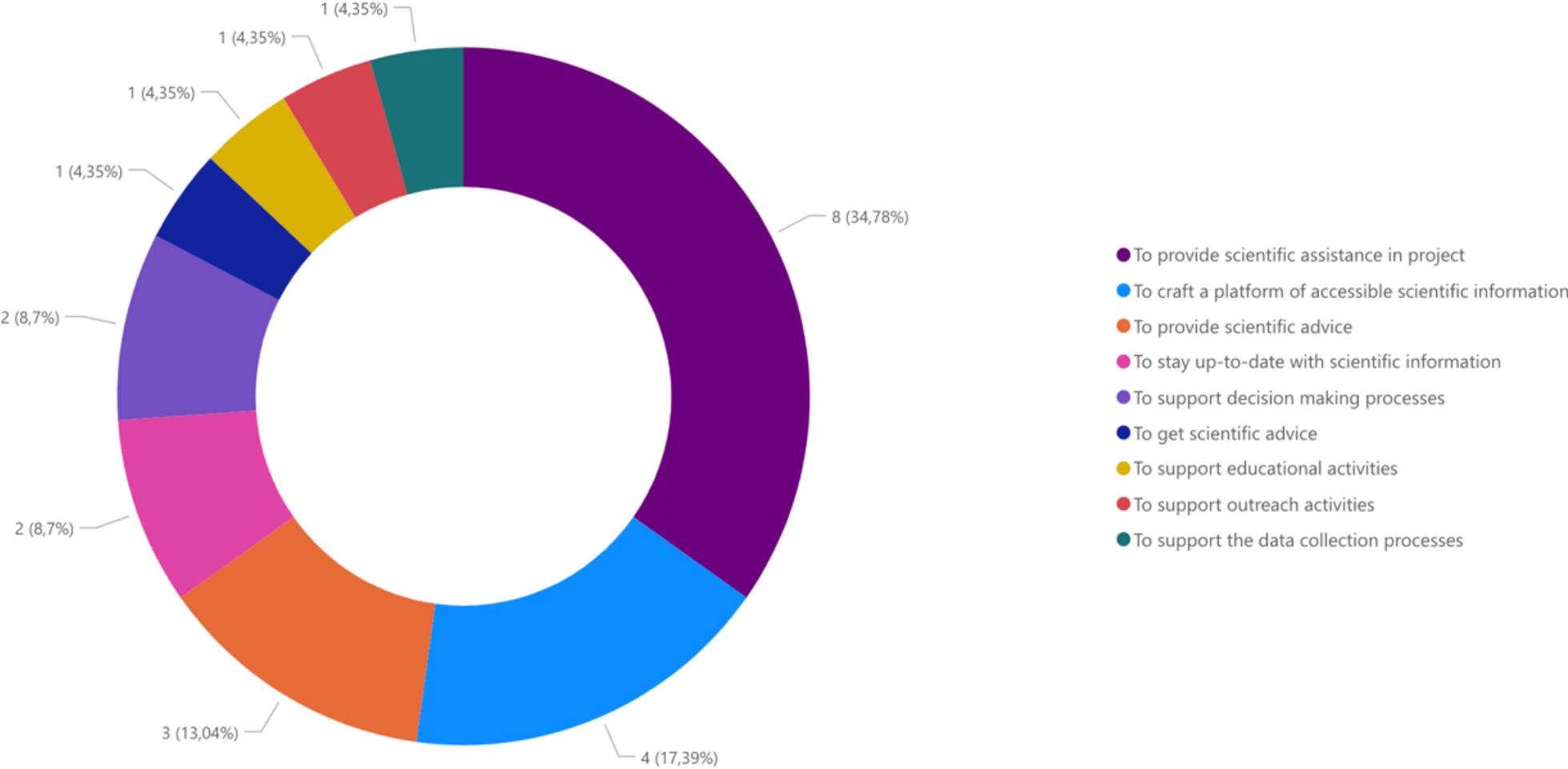


Figure 13 Frequency of the different uses of scientific information by NGOs

4.3.3. The reasons that influence the decision to collaborate

While sharing their experiences, the interviewees were asked to provide their opinions on why and why not to collaborate with academia (table 3). This information can help identify the needs of the NGOs, ways to approach the process of research uptake, and the centrality of research uptake on the decision of the NGOs to collaborate or not with academia. The most frequent reason that NGOs choose to collaborate with academia is to access specific information required for their actions. This can include new theoretical information, specialists' expertise, and new technologies that can add to the organisation's capacity. It can be directly related to research uptake from academia to NGOs. With a significant difference in frequency, the second reason was to establish credibility. Interviewees at this point mentioned that the name of a university usually makes their outputs to be considered more credible by other collaborators. Achieving the organisation's goals sometimes requires collaboration with universities. The cases in which this reason was mentioned usually referred to sharing knowledge and creating connectivity between stakeholders or the public.

Table 3 Overview of the main reasons NGOs choose (not) to collaborate with the academia and the amount of participants that supported these reasons

Reasons to collaborate	Number of times
To access the information needed	12
To establish credibility	4
To achieve the goals of the NGO	3
To have access to students / researchers	3
To establish legitimacy	2
To create exposure	2
To receive university resources	2
To have more papers published	2

To learn	1
To gain fundings	1
To have flexibility working around different topics	1
To have long term monitoring	1
Reasons not to collaborate	
Reasons not to collaborate	Number of times
Too long and bureaucratic processes	6
NGO becoming a tool	5
NGO has no value over the information produced	3
Academia has no passion for the topic or too narrow in their scope	3
Academia has no trust to other organisations	2
Too high overheads	1
No willingness to share their research	1
Academic arrogance	1

Three people mentioned that they choose to collaborate with universities also as it is an opportunity to come closer to students and researchers that contribute in varying ways to the organisation. Other reasons mentioned once or twice are presented on the table 3 and include opportunities NGOs can grab from collaboration with a university, such as learning, funding and more.

Many interviewees presented their opinions on why they did not want to collaborate with academia. The majority considers university processes too long and bureaucratic, making the establishment of relationships difficult and time-consuming. Almost the same number of participants mentioned that during their previous experiences working with academia, they have felt that the NGO has become a tool either to collect data or to provide services or facilities instead of being an active actor that contributes and benefits out of a partnership. Several interviewees also mentioned that the academia has neither no passion for the topics but rather for the idea of research nor enough trust in other organisations such as NGOs. These two

perceptions can sometimes influence NGOs to decide not to collaborate with academia. Other reasons mentioned a few times include high overheads that lead to loss of money, no willingness of the academia to share their research and arrogance described as academic behaviour.

4.3.4. NGOs as brokers of information

In the process of understanding how different elements of the interaction of NGOs with the academia influence the process of research uptake by them, it was clearly identified that the NGO is not always the end receiver of the impact of research uptake but can also act as a broker and creator of information. Some insights have already been provided regarding the NGO acting as the broker of information to other stakeholders. This means that the NGOs actively work also as the stakeholders that initiate a research uptake process towards different types of receivers such as governments, civilians, children, and local communities. The conversations developed during the interviews provided insights into the usual ways NGOs engage in the transmission of scientific information. The most common way presented was as part of science training and lectures. These can be part of either their programs or as guests in schools, events and more. Usually, NGOs also work close to the authorities feeding them with the latest information to contribute to the decision-making process. There they need to make the decision-makers aware of the necessary information on urgent topics such as implementation of conservation practices. Sometimes they might engage in partnerships with other organisations where they have to share their expertise and scientific knowledge. Furthermore, the participants mentioned that they usually translate available knowledge into comprehensive materials, which can be part of the information on their websites. Finally, they share information in citizen science programs and even with scientists.

They also provided information on elements they have experienced as important when transmitting scientific knowledge to non-scientists. Most interviewees mentioned the need to present the information creatively and engagingly. Characteristic examples include photographs, audiovisuals, games, and even virtual reality. Presentations were also mentioned as a frequent way to transmit information successfully. Usually, written pieces of information can be provided as well. The idea that there needs to be an understanding of the receiver's needs and an adjustment and translation of the information based on that, was mentioned by various interviewees.

“You know, while it's not really the domain to be sharing academic literature, I do find that it is a great opportunity to share information to the general public. It depends on, I think, what your goal is. For my nonprofit, a lot of our goal is to distil academic information to the general public. So how do we make this very difficult to understand, easy to understand and fun to learn? So that's part of it. It's why we use art. It's why we use different types of mediums like virtual reality. And then the other way is when it comes to actual literature, in the end, it's word of mouth.” (Participant 16)

Several times interviewees mentioned that they also limit the amount of information shared to avoid overload, create summaries to provide in cases such as governmental advising, use social media to share facts and information and break down the information in simple steps.

“First you reach out and you have different stages of how much information you provide, and you don't run into the doors with everything that you thought about, of course.” (Participant 17)

They distinguish between what to present and what not, considering that the information provided needs to improve the receivers' goals. Finally, an interesting point was that many use

knowledge assessments or other evaluation activities in the end and middle of the process to assess the success of the transmission and improve it accordingly.

4.3.5 Summary

This sub-section provided multiple elements that can help answer the question of how the different roles of NGOs can influence the process of research uptake. Firstly, it is important to consider that the multiple objectives of NGOs identified along with the answers on the successes and failures of RU activities can lead to the assumption that different objectives might require different approaches in regard to research uptake. It is also essential to consider the diversity of those objectives and the fact that while some of them can be improved with the existence of effective research uptake (e.g., conservation) others can promote this process regarding other NGOs and stakeholders (e.g., dissemination of knowledge, capacity building). The same idea applies for the different types of collaborations formed between NGOs and academia. In regard to the uses of scientific information, NGOs can influence the process of research uptake as many times they utilise scientific knowledge for the creation of accessible information. At the same time, the reasons that drive NGOs to collaborate with the academia align to a significant degree with the aims of the research uptake process pinpointing that there is relevance in achieving effective research uptake toward NGOs. The opposite reasons can elucidate how the process is negatively influenced. Finally, the multiple roles that NGOs appeared to play in the process of research uptake starting from academia to the general public or other stakeholders show the active role that they hold in this process toward NGOs and other stakeholders.

4.4. Recommendations for an improved research uptake process

To answer the last sub-question, “*Based on the findings of this research, what recommendations can be made for successfully implementing research uptake towards NGOs in coral reef management?*” information was gathered on recommendations that the interview participants made on the optimisation of the research uptake toward NGOs. That information was used to provide concrete recommendations constructed both by the academic literature, this study's findings and the interview participants' recommendations. The interviewees provided recommendations for improvement with different objectives in the process of research uptake.

To enhance the **accessibility of scientific information**, many of them proposed the creation of open data sources that would help access information needed easily and freely.

“You know, one of the problems we have is if the scientific information that we generate is not placed in a format or a platform that could be of any use to foreign researchers. Actually, we have a database to hold it so people can decide if they can just use that information or need to come here and do a little bit more things like that.” (Participant 1)

They argued that this is a good way to show their work and share it with more than one NGO at a time. Specifically for cases in which the NGO completes the data collection for a study, multiple interviewees mentioned that the researchers should consider sharing the impact of the NGO's work.

“They could say, you know, thanks to this research, we could advance the restoration effort from 0 to 10 because we understood that and that then we can thank you, the university and the research etc. I think that

would make a big difference for them as well. But I don't know, sometimes looks like they're not interested or a little bit of attitude in the research environment and scientific environment.” (Participant 14)

This can help by not only providing the research results but also improving the relationship between the two stakeholders. Finally, the online reviewing and conversation of papers on an accessible platform were also mentioned.

Regarding the stage of **agreement establishment**, several interviewees mentioned that the organisation's needs in terms of deliverables should be clearly mentioned in the beginning. By legally agreeing on the deliverables, the NGO can ensure that the correct pieces of information will reach it and can be utilised accordingly. Furthermore, a few mentioned the need to agree on the use of shared information throughout the process and the rights of the two parties regarding publishing.

“Actually, what we do in the agreement is we talk about whether we need to do any reporting. So, we would then have a time schedule for reports or anything like that to fit with the project's timeline.” (Participant 19)

Regarding achieving **a clear division of responsibilities**, the majority of the people that provided a recommendation mentioned the need to establish transparency. This is interrelated to the latter argument as well. With the same frequency, the interviewees mentioned that they find critical the establishment of rules and expectations way ahead of time. Establishing legal agreements was presented as a frequent way to achieve this objective. An interesting idea mentioned was that some bigger-scale organisations in the field could create a template and provide it to the smaller organisations to achieve consistency.

“I think maybe an organization like the Dutch Caribbean Nature Organization, which already collects and record all the researches that are happening around the island could be also the one defining an agreement

template or basic rules that the NGO could use when needed and maybe shape it more specifically for the organization.” (Participant 14)

The advice to establish deadlines with the students and their supervisors was also proposed. Other less frequent recommendations include differentiating the roles as much as possible, clear timelines and regular meetings.

Some general advice was given regarding improving **communication for research uptake**. The majority of interviewees talked about the importance of establishing right communication early in the process and about the need to tailor the outputs of the collaboration based on the intended receivers. As explained above, a different approach might be required amongst the different types of NGOs. Many consider it important for academia to understand those needs and adjust the information accordingly. An interesting recommendation was that the universities could establish specific communication mechanisms for the sake of research uptake towards other organisations to ensure that this process is happening.

“A well-articulated mechanism to be able to communicate, ask questions, get support, technical support on the study itself.” (Participant 2)

“Well, I think first is to know exactly who your audience is and what they need and to tailor your products towards them using the science that you need.” (Participant 7)

Many interviewees proposed recommendations on the **achievement of connectivity** between the two. The key message that can be extracted from those recommendations is that NGOs have identified the need for researchers to shift from a desire to research and publish to a desire to make an impact. Specifically, the interviewees talked about the request to see more empathy in the needs that drive humans to conduct research and connect more with the world of practice.

“I guess this is part of what we're trying to do with our own strategy is trying to get them to understand the importance of getting their information out there to people who are working on the ground. Scientists always work in their bubbles.” (Participant 7)

“Some of the universities and professors would enlarge their vision and see actually how meaningful their research is and get out a little bit of the academic world where publications are just titles and makes you be the best researcher in the world. And you get a little bit less egocentric, and you actually try to think that the research can make this world a better world. Then I think for the researchers themselves will be much more rewarding and for us as well. Otherwise, I feel like what they want to do is just have an attempt page, résumé of publications. And that's pretty sad.” (Participant 14)

Moreover, they feel that trust is an essential step to achieving the prior argument. Other more practical recommendations on this topic are the establishment of organisations that actively work on connecting those two worlds, the utilisation of the opportunities that the internet and online social platforms create for connection, the use of champions and the need for NGOs to look for the opportunities to connect with academia actively.

More than half of the interviewees talked about possible improvements in **creating mutual respect and acknowledgement** to promote research uptake. The suggestions are versed around the need to understand the struggles of the NGOs, especially smaller ones, and treat them with respect. To achieve that, several people proposed a clear setting of rules that secure that the time and resources of the NGO will be respected. Many interviewees talked about their desire to see a change in the quite common opinion that work outside of a university cannot be considered credible.

“We need to just take away the stigma of working with people outside of academia and instead make it like rewarding and kind of like those should be the best academics at the university rather than the people who are

saying like, oh, you know, their science isn't so strong because they work with someone who's not a scientist.”

(Participant 15)

Finally, several participants mentioned that the NGO leaders also need to try to understand the perspective and struggles of a university if they want to achieve respectful collaborations. The need for taking the time to understand each other's needs was also mentioned a couple of times as a recommendation for aligning the timeframes of the two stakeholders.

Lastly, even though the experiences of the organisations with **monitoring and evaluation** processes on research uptake were rare, several NGOs proposed some ideas that, based on their opinion, could help establish those processes. Firstly, some proposed that they would like to be given a log frame that they could easily monitor and evaluate.

“Using a log frame, a standard project log frame is really helpful in keeping the whole project on track, making sure that you actually can verify that you've finished something, but then also taking a step back into detailing out the activities very clearly so that you are now taking your activities against a time frame besides the completion of it.” (Participant 19)

It is important to mention that specific organisations, especially small-scale ones, have argued that they might not have the time or resources to devote to these activities, so this is needed to be taken into account when deciding on the best ways to promote monitoring of research uptake. At the same time, others proposed the use of a project manager employed by either side that would have the monitoring of research uptake at the centre of her job description. Sometimes the opinion that an external party should perform these procedures was presented. Finally, some interviewees mentioned that both organisations need to be accountable for those two processes.

“But I think it's the responsibility of both organisations to understand the capacity to carry out this project, what's expected. And so that needs to be fully understood before accepting to be part of a project team, you know, what is really expected of them to show they can do it. But I mean, it's not difficult, but it just does take some thought into that part of things.” (Participant 19)

5. Discussion

Taking into consideration the data gathered during this study, this section of the report is diving into points of discussion that were raised by the results, connections that can be made between the results and the existing scientific literature, the new insights that this study adds as well as the limitations that it entails. These points will support the information collected during this study to identify the conditions to optimise research uptake towards NGOs in the context of coral reef management.

5.1. Research uptake can be considered more than a process

The theoretical foundation of this research approached the idea of research uptake mainly as a process that includes clear steps and actions. Even though the results do not dispute this, clear evidence is provided that to understand and utilise research uptake fully, it is important to consider elements unrelated to the process to be followed. Significant value was given to the importance of individuals' behaviours and the relationships formed between them. It was clear that in cases where the process was well established, non-approved behaviours have led to disruption of the relationship, ending the possibility of research uptake, and increasing the gap between the two organisations involved. On the other hand, in cases where no well-crafted process was identified, interesting and creative ways to exchange knowledge from the academia to the NGOs and the other way around were presented as a result of respect, acknowledgement, trust and well-treated relationships.

At the same time, both existing literature (e.g., DFID, Stevens et al., 2013) and the information gathered suggest that research uptake is not and should not be a one-time activity. The results

of this study indicate that engagement in research uptake should be considered and treated as a collaboration between two stakeholders. Establishing a collaborative approach can help set the responsibilities, rights, and expectations of the two parties to avoid any disappointments and implications during the process (Stevens et al., 2013). Keeping this at a central position can help smoothen the relationships and lead to win-win situations where both stakeholders are satisfied. Further, this could increase the possibility of continuation of interaction between the two parties. The study of Stevens et al. (2013) also mentioned the importance of investing in building strong partnerships, especially in cases where the NGO and the academia are working on the co-production of research.

Furthermore, to achieve a well-functioning process, it was indicated as important for the academic to study the collaborator's needs, objectives, and interests. Roper (2002) argued that the different objectives and interests between the two could influence the success of the process as they can potentially lead to incompatible collaborations. Roper (2002) also argues that understanding what is at stake for the stakeholder constitutes a critical condition for achieving successful collaborations. The present study indicated a critical need for assessing that information to adjust and align the research and the partnership with the given collaborator. The cases analysed showed that consideration and alignment of the needs and interests could increase the possibility of uptake of scientific information. When broadening the scope, placing this perception at the centre of each study could potentially lead to research becoming more relevant to today's problems and to the people on the front line of solving them.

5.2. Research uptake can be considered as a bidirectional process

While exploring the current state of research uptake toward NGOs in the context of coral reef management, it became evident that there is not a straight line of action starting from academia and ending with NGOs. The experiences of the organisations interviewed showcased multiple types of interactions. For example, the NGOs appeared in many cases to be responsible for transmitting their expertise and local knowledge to the academia. Other times the collaborations between the two required to exchange back and forth pieces of data a couple of times in order to create the final outcomes. Those outcomes can be up taken and used during the NGO actions and more. Those examples indicate that NGOs are not passive receivers of scientific information. We need then to consider the different roles they can play in the process of research uptake. The results of this study showed that NGOs could be placed in three different stages of the process. Starting from the end, as already mentioned, the NGOs can be the ultimate receivers of the information. In the middle of the process, they can receive the scientific information to act as brokers and transmit it to other stakeholders such as governments and civilians. Finally, NGOs can transmit their own knowledge to the academia as well as create original research on their own or collaboratively and share it with other non-governmental organisations. These constitute only examples of possible interactions as other activities can also exist. Understanding the various roles of NGOs in the general process of research uptake is the first step toward the realisation that when academia engages in research uptake processes with NGOs is feeding a rather enormous system of information transmission. This is one of the key takeout messages and alternative approaches that this study creates, considering the data gathered.

5.3. The need to change the dominant academic opinions on NGO interactions

The successes and failures in the process of research uptake identified elucidated the need for the academic community to broaden its perspective on how to approach its NGO interactions. It is possible to identify two main points of attention that academia could shift to enable the process of research uptake.

Many of the failing experiences of NGOs were directly or indirectly related to a couple of negative academic mentalities that NGOs reported to be taking place. The first one refers to the opinion that research, methodologies, or other information produced solely by an NGO can be of questionable credibility. Even though this opinion does not directly relate to the procedure of research uptake, it can discourage the possible collaboration between an NGO and a university on a project that includes the co-production of research that would aim at creating more relevant for the NGO outputs, thus hindering research uptake. This study proposes an alternative opinion in which instead of choosing not to collaborate or use information produced by an NGO, academia could increase these collaborations to not only participate in the creation of knowledge but in building the capacity to produce credible knowledge. This could have significant benefits for both parties. The second mentality derives from scientific interests and is that the desire of a scientist to explore a topic or research does not always correspond to the urgency of problems such as coral reef degradation. However, even in the cases where there is an alignment of the two, several interviewees mentioned that during their experiences, many times, academia pays more attention to the completion of the research and the publication of papers than to what this research represents for the world and the impact it should have. This can cause many implications, amongst them being the lack of sharing of the results with NGOs

and lack of engagement of the NGO in the process leading to irrelevant outputs. Shifting this mentality is critical in overcoming these obstacles.

The second point of attention is to realise and utilise the ways the two actors already interact with each other and adjust the process accordingly to help research uptake occur. Although many reasons for which the academia interacts with NGOs were identified, most of them were related to student projects, internships, and other exchanges. Even though the conceptual model of this study does not provide any reference on how research uptake can be promoted with the use of students, it appears that they contribute to all four stages of the process. Realising that students can be a powerful tool for academia to create research uptake toward NGOs is essential and needs to be considered. For it to be successful, the academia needs to construct a plan with specific objectives on how this could be implemented and then adjust to achieve it. Other types of collaborations have also been identified that need to be considered, such as collaboration for the co-creation of projects or providing advice. In almost every type of collaboration, crucial components need to be adjusted to achieve better alignment. Existing literature has identified typologies of strategies of collaboration based on the needs of the given case, such as the “expert-consultant model”, “the joint-learning model”, and more (Roper, 2002) which can provide a base on the different approaches available.

5.4. Investing in capacity building

At the current state, capacity building seems to happen only occasionally. Most commonly, this includes individual training cases, while assessment of current capacity and the creation of a strategy rarely happen in the context of coral reef conservation in the cases examined. The academia needs to realise the importance of the process of capacity building whenever aiming at research uptake. Capacity building was proven to trigger a chain of actions that can provide multiple benefits not only for the NGOs but to all stakeholders engaged in this process. This chain starts with the assessment by the academia of its internal capacity as well as the capacity of the NGO. This provides clarity on the capabilities and needs of both sides. A careful assessment of the current capacity can power to-the-point capacity development actions. When those actions are successful, knowledge, hard skills and soft skills are transmitted to the organisation, which then performs all the different roles described in the previous sections. As part of those roles, the academia is benefiting in return in various ways such as practical knowledge, pools of data and more. This cycle of actions elucidates that devoting a part of a project budget and personnel workload to capacity building should not be considered an expense but an investment for both academia and the organisation. Studies such as Roper (2002) have also pointed out the importance of capacity building as a criterion to achieve successful collaborations between the two actors.

5.5. Limitations of this research

Although this research was conducted with a pre-constructed plan and existing theoretical foundations, there are specific limitations that need to be considered when interpreting the conclusions of this research and the considerations for further research.

5.5.1. Regarding the process of data collection and analysis.

As discussed in the methods section, due to the lack of available empirical evidence on the topic of research, no specific criteria were applied in selecting NGOs to be interviewed in terms of geographical location. This aimed at creating the maximum variety of information that could provide a representative overview of the reality. However, during the analysis of the results, many points were closely related to individual behaviours, mentalities, and cultural characteristics. It is important to consider that all these elements can differ significantly between geographical locations. This was also observed during the data analysis. This means that the results might not represent the reality for individual areas.

At the same time, special importance needs to be given to the use of the term “non-governmental organisation”. Since the beginning of the research, an inconsistency in the word and meaning of the term was observed between the organisations and the geographical locations. Similarly existing literature has also indicated there are multiple interpretations of the term in place (e.g., Kuruwila, 2015; Salamon 2003). Considering this observation, the term "non-governmental organisation" has been used to incorporate organisations declared as non-dependent from the government and with a non-profit character and was defined at the

beginning of the report with the use of a relatively general definition (Kuruwila, 2015). This comes with its limitations as it was not always possible to extract that information beforehand for all the organisations invited to the data collection process.

Finally, some of the participants of the interviews were more closely related to the academia than others which should be considered when assessing the opinions gathered. However, this should not influence the outputs of the overall research as existing literature has suggested that usually, the people that constitute each of the two sides (academic and practice) have many times in the past or present been part of the opposite side (Aniekwe et al., 2012). This could justify an overlapping of opinions between the academic and NGO side.

5.5.2. Considerations for further research

This research has provided a clear overview of the experiences that NGOs have regarding research uptake from the academic community in the field of coral reef management. It has also elucidated the opinions of the NGOs in terms of successes, failures, and needs, as well as recommendations for further improvement. However, to construct an integrated strategy for optimising research uptake from academia to NGOs, it is essential to perform similar research focusing on the academia's experiences and opinions. One example on that can be derived from the monitoring and evaluation strand. Even though based on the NGOs experiences there are only minimal monitoring and evaluation activities this does not necessary mean that academia does not have any. It could be the case that the NGOs are not aware of this procedure. By assessing both sides equally, it is possible to achieve the maximum possibility of creating win-win partnerships and contribute to an integrated understanding of the current state.

The DFID framework provided a useful tool to assess the current situation, however, it needs to be mentioned that the reality that was described through the results is much more complex and the process needs to be customised in every different case as a lot seem to be changing from the original framework. Furthermore, the framework appeared to include the assumption that the academic party engaged is fully committed and aligned to the idea of research uptake and collaboration with practitioners. The results showcases that this is not always the case, even though, there is an improvement towards this.

At the same time, this study suggests that identifying the necessary research uptake activities can happen more effectively if the two parties are engaged in a co-creation process. It is important to pinpoint that based on the complexity observed, there cannot be one universal strategy that will fit all circumstances. It is essential, then, to dive into different strategies based on the ways of interaction, geographical locations and characteristics of the academic party included. It is also reasonable to assume that the propositions of this study might not align with the current state of research uptake in other contexts such as forests or even other types of marine conservation. Finally, this research proposes to further study the appropriate ways to monitor and evaluate the process of research uptake as a necessary step to optimise the desired transmission.

6. Conclusions and recommendations

This thesis has addressed the socially and theoretically relevant question of what the conditions are to optimise research uptake toward NGOs in the context of coral reef management. To answer this question, it was chosen to use an alternative approach from the existing theoretical information. The process of research uptake was addressed in a shifted way, meaning that instead of approaching the question from the academics side it was decided to extract the information directly from the experiences of the NGOs. Considering that, a careful methodology was crafted that aimed at collecting data from conversations with NGO representatives from all over the world. Through this, it was possible to collect data from NGOs active in almost 20 countries achieving a high variety of experiences and insights. This thesis provided the novel insight that it is important to approach research uptake as equally from the process side as by the behavioural and collaborative one in order to successfully drive the transmission of information. At the same time, this research elucidated that NGOs hold a core and strong position in the complex web that connects multiple spheres of action such as governmental, academic, or civil society, when it comes to research uptake. From that insight emerged also the need to utilise this role of NGOs in the process of research uptake not only by initiating knowledge exchange collaborations but also by developing their capacity to make their contribution to this process even more impactful.

With the use of the substantiated results of this thesis it was possible to extract a set of conditions that can likely contribute to the optimisation of research uptake toward NGOs in the field of coral reef management. Taking into account the importance that was given to the difference between factors related to the process of creating research uptake and the ones not related to it among the data gathered, the conditions are also categorised as such. Even though

multiple elements were proved to be important for the success of research uptake, the following ones were possible to be characterised as conditions based on the judgement of the researcher after reviewing all available information.

Concerning the process of research uptake to be followed, the first condition comes from the objective of stakeholder engagement. Although many activities were in place, there was one common element present in all successful processes and the same one missing in all failing cases. That was the existence of clear agreements that entail information regarding the responsibilities of the two parties, expectations in terms of contribution, deliverables, finances and more. This emerged as highly critical for successful uptake but also for partnerships. In specific, this condition can ensure that there will be no exploitation by any of the two sides leading for example to NGOs not receiving any information at all at the expense of their own budget, but it also increases the possibilities for continuation of the partnership. It is important to mention that after reviewing the different roles and current states of NGOs, the ways in which they interact with the academia and the uses of scientific information, it is evident that the correct form of agreement might differ based on those multiple parameters.

The second condition is extracted from the strand of capacity building. After reviewing multiple incomplete experiences described by the interviewees regarding capacity building, multiple negative approaches of assessment of the current capacity building and difficulty from the academic side to understand the value of research uptake, the second condition would be to ensure that before proceeding to any assessment or development of the NGO's capacity it is important to access and develop the internal capacity first. This is also encouraged to occur in the process described by the DFID framework. Developing the internal capacity for research uptake could include skills on the translation of information to non-specialists, on approach

strategies for the creation of new partnerships and on the creation of a customised research uptake strategy.

After assessing the data produced in the communication strand it became clear that multiple and different between each other activities have been considered successful based on each individual case. There were even recorded cases where although no communication was in place the NGOs reported positive experiences with the research uptake process. This leads to the conclusion that there is no specific recommendation that can fit every case. The only condition that can emerge from that strand is that assessing in each individual case if and what type of communication is fitting can optimise the process of research uptake.

The last process-related condition is extracted from the monitoring and evaluation objective of the research uptake framework. In the vast majority of cases examined, no clear process was able to be identified in place to monitor and evaluate research uptake. As almost no processes are in place it is practically impossible to make conclusions on if research uptake is successful or not. That leads to the condition, which is the establishment, by the academia, of an at least very simple and comprehensive log frame to track if the uptake is happening and the success of it, while spending the minimum amount of time and resources possible to achieve that. Only if this is in place, would it be possible for the two parties to understand the success or failure of it and on a further step to improve whatever is needed to optimise it in each given situation.

Regarding the non-process related conditions, the first one is to adopt a same-level-approach. Based on this research, respect and mutual acknowledgment of the value and unique contribution of the two parties were considered essential for the university to choose to connect with an NGO and for the NGO to feel trusted by the academic side as well. If this element is

missing two possible outcomes can occur based on the data collected. Firstly, the NGO might obtain from creating a partnership with this academic collaborator and possibly with others in the future. It can also create the feeling of need to argue and stand for the credibility of the NGO, which should not be a reason for it to spend its resources and time.

The second condition is to customise the approach of research uptake based on the objectives of the NGOs and the types of collaboration with the academia. The data collected during this research showcase the high differences that can be observed among the possible roles that the NGOs can play and the ways in which they collaborate with the university. At the same time, the experiences of the NGOs have indicated that multiple types of activities are happening in the process of research uptake. Therefore, this research suggests that the approach and strategy used for one type of collaboration might be totally irrelevant in another. Thus, it is not possible to propose one universal strategy that would fit all circumstances. On the contrary, it is essential to assess the current situation of each individual case and customise the approach of research uptake based on it. An effort to apply the same strategy in different circumstances could possibly create a seriously negative impact on the uptake.

The third condition proposed is to realise the importance of capacity building and assess the benefits that it can have for both the NGO and academia. This condition is extracted from multiple parts of the data. Firstly, from the huge lack of action in this sphere. Secondly, from the several arguments on the impact that credibility can have in the decision of academia to collaborate or not with an NGO. Thirdly, from the multiple mentions by the NGOs of experiences in which assessment of capacity is not happening with the aim of capacity development. After taking these three points into account it is argued that understanding the importance and benefits of this procedure could firstly increase the possibility of creating a

concrete capacity building strategy, and secondly, to identify that by increasing the NGOs capacity it is possible for the academia and other collaborating stakeholders to significantly benefit. Several examples of benefits for the academia could be the transmission of knowledge from the NGO to the universities and possibilities for co-production of research.

The last condition is to approach the collaborations for research uptake on the long-term. This was elucidated as a requirement to achieve trust between the collaborators and create the feeling of well-deserved investment of time, staff, and budget. At the same time, most of the interviewees' positive experiences with research uptake included long-term collaborations. Furthermore, it is important to mention the central role of pre-existing relationships in the initiation of collaboration as presented in the current activities of research uptake observed. These arguments justify the necessity of approaching the collaborations in the long-term to achieve a constant flow of information from and to NGOs.

7. References

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Appendix I: Table of countries and numbers of NGOs interviewed

Table 4 Countries or regions of activity of NGOs interviewed and number of NGOs per country/region

Country	Number of NGOs
Puerto Rico	1
Australia	2
Belize	2
Honduras	3
Guatemala	1
Mexico	5
Tanzania	1
Kenya	1
Indonesia	3
Malaysia	1
Philippines	3
Papua New Guinea	1
Timor Leste	1
Solomon islands	1
Madagascar	2
Haiti	1
USA	3
Jamaica	1
Panama	1
Seychelles	2
Maldives	1
Hawaii	1
India	1
Tobago and Trinidad	1
Fiji	1
Thailand	1
Spain	1
Bonaire	1
Germany	1
Colombia	1
Mauritius	1
Dominican Republic	1
Federated States of Micronesia	1
British Virgin Islands	1
US Virgin Islands	1

Appendix II: Email invitation and small questionnaire

Dear colleague,

In collaboration with [dr. F. van Laerhoven](#) of Utrecht University's [Copernicus Institute of Sustainable Development](#) and as part of the [SEALINK project](#) headed by [prof.dr. M. Vermeij](#) of Vrije Universiteit Amsterdam and [Carmabi](#), we are conducting research on strategies to increase the relevance, and therefore actual use of insights and knowledge generated by science. We are specifically interested in the role that NGOs do and/or can play in what we call research uptake. In our research we focus on marine conservation in particular.

For this investigation, I would like to kindly ask you for your input and collaboration.³It would be an enormous help if you would be able to reply to the following two questions:

		yes	no
a.	In the past 5 five years, has the organization that you represent interacted and/or collaborated in any form or manner with universities, research institutes, and/or individual researchers/scientists?		
b.	Do you give permission to further contact you for a short interview?		

³ During the process of contacting NGOs three reminders were sent.

If you agree to be interviewed by me, I will send you more information about the points of discussion in advance. In case you require more details or information, before you can decide, do not hesitate to contact me.

Thank you for considering my request. Your contribution would be more than valuable for our research. I am looking forward to your response.

With kind regards,

Elisavet Diamantopoulou

Utrecht University

The Netherlands

Appendix III: Interview guide

Before the interview: Introduction

- Greet the participant
- Introduce researcher
- Introduce the project
Regarding the overall project SEALINK is an interdisciplinary research project that aims to merge different scientific disciplines to get an understanding of how current natural processes and human influences at the land-sea interface shape the coral reefs of the Caribbean and how this will affect future coral reef communities and their ability to continue to provide ecosystem services.

Privacy and GDPR information:

- I would first like to inform you that your name and the organisation's name will remain anonymous throughout the research and that all data regarding the interview are stored safely and are only accessible by me..
- The information provided by the interviews will be used for the creation of a thesis report and a small brochure that will be distributed to all participants of the interview.
- Before we start with the questions, do we have your permission to record this meeting for research purposes?

a. Context Questions

- **Does the organisation use scientific information?**
 - To what extent?
 - What type of information to you usually seek?
- **Have you ever interacted with the academic community, or did you use scientific articles online?** (To be adjusted based on each situation)
 - If yes:
 - Could you briefly describe the projects you are/have interacted with the academic community?
 - How is/was the academic community connected with the project?
 - Have you ever participated in projects that the uni was the lead partner
What is/was their role?
 - If no:
 - Follow questions of category 3

- **Confirm informally the kind of category they fall into with questions – or follow up questions if necessary for validation using the key words of each category**

Select on which of the next categories of questions I will ask:

Category 1 – Partnership / Collaboration on project(s)

Long-term partnership in multiple projects with one or more universities

Collaboration with one or more universities for the execution of a specific project

Category 2 – Scientific advising- Communication for exchange of information

Occasional seeking of scientific advice

Regular seeking of scientific advice

Exchange of information from the NGO to the university

Exchange of information from the university to the NGO

Category 3 – No interaction

Use of scientific articles' outputs

b. Research uptake process Questions

Category 1 – Partnership / Collaboration on project(s)

I. Stakeholder engagement

- **How were you introduced in this collaboration(s)?**

In case they were the leading partner start here: Do not ask the questions that start with “if applicable”

- **At the design phase of those collaborations were you usually in communication with the uni/researcher/scientist?**
 - If yes:
 - How frequent was your communication?
 - How did you engage with each other? (e.g., meetings, emails)
 - What topics were you discussing?
- (If applicable) **How central was the NGOs role?**
- (If applicable) **To what extent were you actively participating in the design phase?**
 - (If applicable based on answer) Were you usually noticing any changes in the design with the aim to align with the organisation needs/inputs etc.?
- **During the actual research phase, were you usually engaged with the university/researcher/scientists?**
 - If yes:
 - How often were you communicating?
 - What were the reasons to communicate?
 - In which stages of the research were those happening?
- (If applicable) **Were you usually informed about the results of the research?**
 - Was that only in the end of it or also during the process?

- In what means of communication did you receive updates?
- **Did you ever receive or provide existing scientific literature in the topic of research by the university/researcher/scientists?**
- **Let's talk about the alignment of timeframes. Were the NGO's needs in terms of timeframe usually considered? Did you receive needed inputs in a relevant time based on your needs? What could be improved?**
- (If applicable) **Did you usually have the feeling of clear division of responsibilities on the research? How did you feel about that?**
- Discuss positive and negative aspects of the processes until now on the NGO's perspective

The organisation as the broker for other stakeholders:

- **Are you also engaging other stakeholders to these collaborations (volunteers, policy, companies etc.)?**
 - How where you introduced to that?
 - In what ways were you engaging them?
 - Did you have to adjust based on the needs of the receiver?

II. Capacity building

- **Did you ever discuss with the partner the NGO's knowledge, skills, attitudes before or during the research process?**
 - If yes:
 - What were the topics of discussion?
- **Have you ever participated in any related trainings?**
 - What were the objectives?
 - Who organized them?
- **Did you receive any kind of technical tools and assistance by the uni/rese/sc.?**
 - What types?
 - Did you ask for those or where they proposed by the other party?
 - If yes:
 - What impact did this have for the NGO? Was it helpful?
 - If no:
 - Would you have needed such trainings, tools or technical assistance?

NGO as the broker: (not always applicable)

- **Did your organisation organize trainings, provided technical tools and assistance to other stakeholders regarding the transmission of scientific knowledge?**
 - If yes:
 - What type of stakeholders?

- Did you adjust the ways of communicating the information based on the stakeholder? How?

III. Communicating

- **Was there a structured communication plan during those collaborations?**
 - If yes
 - How often did you communicate?
 - In what way?
 - If no
 - If there was no plan, did you communicate at all during the process, how?
- **Returning back to the results section, in what form were you receiving results?**
 - Were the results in a form that was easy for you to use and understand?
 - Would you also consider them readable by non-academics?
 - Did it become clear to the NGO how those results are connected to existing literature?
- **Did you feel the results usually corresponded with what you would have expected based on your involvement?**
- Discuss positive and negative aspects of the processes until now on the NGO's perspective

IV. Monitoring and evaluation

- **Was there a concrete monitoring strategy for the collaboration?**
 - If yes:
 - What did it include?
 - What did you measure?
 - (If applicable) How were you involved?
 - Was your collaboration part of the monitoring objectives? What did it include?
 - If no:
 - Do you know the reasons why?
 - Do you think there should have been one or not? How would have that helped you?
- **Did you participate in any evaluation activities?**
 - If yes:
 - In what form?
 - How frequently?
- **How frequently did you communicate after the end of the given research?**
- **Did you participate in other activities after that with the same uni/res/sc? More than one?**

Category 2 – Scientific advising

I. Stakeholder engagement

- **Why did you decide to seek information by this university/researcher/scientist etc.?**
- **Were you in communication with the university/researcher/scientist at the design phase of the activity you needed advising on? (Not always applicable)**
 - If yes:
 - How frequent was your communication?
 - How did you engage with each other? (e.g., meetings, emails)
 - What topics were you discussing?
- **During those collaborations:**
 - How often were you communicating?
 - What were the reasons to communicate?
 - In which stages of the research were those happening?
- **Were you usually receiving existing scientific literature in the topic of research by the advising party?**
 - If yes:
 - In what form did you receive the information? (Articles, summaries, etc)
 - To what extent was it relevant for your research?
 - Was it easy to read and use the outputs of the existing literature?
- **Let's talk about the alignment of timeframes. Were the NGO's needs in terms of timeframe considered? Did you receive needed inputs in a relevant time based on your needs?**
- **Were you also participating in any kind of transmission of that information to other stakeholders? (Not always applicable)**
 - How where you introduced to that?
 - In what ways were you engaging them?
 - Did you have to adjust based on the needs of the receiver?

II. Capacity building

- **Did you ever discuss with the partner the NGOs knowledge, skills, attitudes before or during the advising process?**
 - If yes:
 - What were the topics of discussion?
- **Did you participate in any related trainings?**
 - What were the objectives?
 - Who organized them?

- **Did you receive any kind of technical tools and assistance?**
 - What types?
 - Did you ask for those or where they proposed by the other party?
 - If yes:
 - What impact did this have for the NGO? Was it helpful?
 - If no:
 - Would you have needed such trainings, tools or technical assistance?

III. Communicating

- **Was there a structured communication plan during the research?**
 - If yes
 - How often did you communicate?
 - In what way?
 - If no
 - If there was no plan, did you communicate at all during the process, how?
- **Did you feel the results corresponded with what you would have expected based on your collaboration?**
- **What do you think is important regarding communication of information?**
 - Where those elements present in your experience?
 - How could this be ensured?

IV. Monitoring and evaluation

- **Did you participate in any evaluation activities?**
 - In what form?
 - How frequently?
 - Was it helpful? Why?
- **How frequently did you communicate after the end of the given research?**
- **Did you participate in other projects after that? More than one?**

Category 3 – No interaction

- **Have you ever been approached for such reason?**
 - If yes:
 - What was the occasion?
 - How were you approached?
- **Have you ever tried to approach a uni/researcher/scientist?**
 - If yes:
 - What the response and process followed?

- **Have you ever participated in any event where the results of a research were presented?**
 - If yes:
 - How were the results presented?
 - Was the form relevant and easy to understand?
 - What would you need more?
- **Have you participated in training workshops provided by the academic community?**
 - If yes:
 - Was the language used appropriate for practitioners?
 - What could be improved?
- **Did your organisation organize trainings, provided technical tools and assistance to other stakeholders regarding the transmission of scientific knowledge?**
 - If yes:
 - What type of stakeholder?
 - Did you adjust the ways of communicating the information based on the stakeholder? How?

c. Closing Questions

- **How do you characterize a successful cooperation?**
- **Did your organisation organize trainings, provided technical tools and assistance to other stakeholders regarding the transmission of scientific knowledge?**
 - If yes:
 - What type of stakeholder?
 - Did you adjust the ways of communicating the information based on the stakeholder? How?
- **What would be the main reasons to collaborate and not to collaborate with a uni in your opinion?**
- **What would you need more to choose to collaborate with the academic community?**
- **If you had to grade your satisfaction of the collaboration between 0-5, what would it be?**
- **Is there anything else that you would like to add that has not been addressed yet?**
- **Would you like me to share a small version of my final report with you when finished?**

Thank you for your time

Appendix IV: Coding sheet

Table 5 Overview of the coding guide that includes the closed and open codes, descriptions, and examples

Closed coding	Open coding	Description	Example
Stakeholder engagement activities	Engagement with Research design	Activities happening at the beginning of a given NGO-academia interaction that aim at engaging the NGO in the planning of the collaboration. It can differ based on the type of collaboration. For example, for research projects it would be a research proposal while for a student internship it would be customised accordingly.	“And then as soon as I know more, we'll get them involved in that. And then when it comes down to solidifying and making a concrete scientific plan, that's where I kind of draft people in so they're aware of changes.” (Participant 11)
	Initiation of the collaboration	Activities that aim at the first interaction between the NGO and academia. These are activities that can happen between people that have no pre-existing relationships or the opposite and include the different ways in which one collaborator approaches the other.	“We have had people that we know who have introduced us to different researchers, of course, saying that they want to come and do things.” (Participant 19)
	Results sharing	Specific activities and approaches that aim at transmitting the results/outputs of a collaboration mainly to the NGO.	“And sometimes it happens that they don't accomplish what they wanted to do. So we don't have a real result of the product of their work. But yes, sometimes we have had some very useful papers or reports that are shared with us.” (Participant 1)
	Setting of responsibilities	Activities usually happening at the beginning of the collaboration that aim at setting clearly the responsibilities of the two collaborators. This can include objectives such as data sharing, finances, communication and more.	“I think usually it's pretty clear because often it's the form of some sort of contract or grant agreement.” (Participant 21)
	Alignment of timeframes	Processes that the collaborators use to minimise the differences between their timeframes. These can vary from very practical problems (e.g., time differences) to deeper ones (e.g., slow timeframe of the approach of academic research).	“I think the biggest thing is just time differences and that is a big limiting factor and it's why it makes emailing much easier, but obviously emailing isn't as good.” (Participant 11)

	Relevance of outputs for the NGO	Activities that, from the beginning of the process, try to make the results/outputs relevant to the NGO's needs or to adjust them at the later stage with the same aim.	"Yes, definitely we don't have expertise in our own team on every topic, and so that's why we're kind of going to all of these scientists and asking them to partner with us. When we do that, I feel like we end up with a product that's so much more. We start with like our own scientific review and then we take it to them, ask them to fill it in, review it at more." (Participant 7)
	Continuation of partnerships.	Activities that aim at transitioning the partnerships to the long term.	"Even now, the project is over, but it still continues because I'm doing monitoring with them." (Participant 10)
Communication activities	Structuring of the communication	Activities and tools that try to create a certain-degree structure in between the collaborating parties.	"We'll set that meeting for pretty much the next month, same time, same day. If we feel like we've covered what we need to cover but we want to do a general check in, we'll give it like a two-month return. Usually try to get that meeting locked in before the end of the meeting or within the next couple of days." (Participant 16)
	Sharing existing literature	Means in which the collaborators share existing academic literature that could contribute to the topic of collaboration.	"So sometimes if they've done similar work in other places or they know of, they might provide us with past research that they've done or their colleagues have done that they think would be relevant to us to read in terms of project design or understanding the results of something they've done for us." (Participant 21)
	Communication follow-ups	Activities that contribute to the regular communication between the collaborators.	"Well, they have a newsletter. So, every time I see the newsletter, I check what they've been doing and sometimes I ask questions and vice versa." (Participant 4)
	Results sharing and presenting	Means in which the results decided to be transmitted in the stakeholder engagement phase are shared and presented.	"They are usually in the form of a paper." (Participant 1)
Capacity building activities	Assessing current capacity	Activities that aim at understanding the organisation's current objectives, knowledge, expertise and needs with the aim of improving it and utilising it in the best way possible in the collaboration.	"Usually, they want to know more about what we're doing, what our mission is. I think that's kind of some of the things you cover when you're deciding if you're going to work together or not." (Participant 21)

Indirect capacity assessment	Activities where the current capacity is assessed and developed through processes that do not aim at this specific goal.	“I think in part it happens when we design the question together.” (Participant 14)
Trainings	Capacity building activity that includes processes where different types of trainings are performed with the aim of learning new information or skills on a specific topic.	“And then while it's not something we demand, we kind of want that people who are here, especially from the Philippine universities who use office facilities and such that they come and give some talks to both staff and volunteers here on what they discover in the research and what's coming out of it. So, you know it's an easily digestible format.” (Participant 24)
Technical support	Capacity building activity that includes multiple processes of technical support that can vary in topic (e.g., methodologies, data provision).	“They created a questionnaire and the spreadsheets and everything related to the data input”. (Participant 6)
Learning exchanges	Capacity building activities that aim at exchanging the knowledge and expertise of the personnel of the two parties so that both collaborators can benefit.	“So, when we write the grant to get the funding to have the learning exchange, we would contact someone at the university. Usually it's a specific professor or the head of the Marine lab and say, hey, we want to write this in to our grant. Are you okay with doing these visits and can you send your students here? And we're writing in all the travel money for them as well. So, we would just get kind of like email. Yes, that sounds fine. And we would write it into the grant. And so, it's in the grant. I guess that's kind of an agreement.” (Participant 23)
Improvement of knowledge	Capacity building activities that aim at developing the general knowledge of the organisation on multiple topics.	“And so we definitely have experienced both, where once we do have either those researchers coming here or even some of our team going abroad to share knowledge.” (Participant 19)
Improvement of status	Capacity building activity where academia contributes through specific processes in the improvement of the status of the NGO with the aim of providing more opportunities.	“If a big project comes up, then of course I would like to quote them as scientific advisors because that would give my project proposal more credibility.” (Participant 10)

	Learning network establishment	Capacity building process in which one collaborator acts as a connecting point for multiple entities to interact with the aim of learning experiences.	“We had a symposium with everybody because what I was saying to them was that we need to get us talking together more like all these different groups. Now we're about six different groups. So I said, we need to have an opportunity to talk to each other. And so we did have like a symposium and share information and so that. You know, it's even beyond capacity building.” (Participant 25)
	In house capacity building	Cases in which capacity building is established by initiative of the NGO for the NGO with sometimes the use of academia.	“I just came here two and a half years ago. The programs that restoration practitioners had started long before I came here. So the first step for me was to transmit the message, deliver the message that I was here just to help, not to say or to target anyone because they were doing something wrong. But that the message was more like, look, what you have done in the past is great, but I have some tools that I can provide for you to make your programs better. And we need to work together on that.” (Participant 20)
	No capacity building activities	Cases in which no capacity building activities were reported at all.	“No, not much. I think they are more interested in the research on their own.” (Participant 14)
Monitoring and evaluation activities	No established mentoring activities	Participants experiences where no monitoring activities were established for RU.	“Not so far. We don't have any long term partners in in that sort of monitoring.” (Participant 22)
	No established evaluation activities	Participants experiences where no evaluation activities were established for RU.	“I think that because it's quite a casual relationship, it's not necessary.” (Participant 11)
	Evaluations	Evaluation activities that academia introduces to the collaboration. Not always focused in evaluating RU.	“I guess we were in a sense by meetings and seeing how things were progressing.” (Participant 6)
	Monitoring strategy in place	Monitoring strategy and activities that academia introduces to the collaboration. Not always focused in evaluating RU.	“We prepare work plans for each project or collaboration, and then we just keep track of those. And then we have meetings again and we go point by point assessing.” (Participant 18)
	Monitoring and evaluation activities facilitated by the NGO	Monitoring and evaluation activities that the NGO introduces to the collaboration by its own initiative. Not always focused in evaluating RU.	“So, we always try and factor in some monitoring and evaluation of all of our projects, and we call it monitoring, evaluation and learning. So we do try at the end of any

			project to really sort of ask what did we learn and ask what others feel like they learned?..." (Participant 13)
Opinions of NGOs on success of RU process	On setting responsibilities	Positive and negative opinions on how setting clear and flexible responsibilities and expectations has influenced RU.	"So sometimes people don't deliver, or their expected outcomes aren't what we hoped." (Participant 16)
	On alignment of timeframes	Opinions on if and how timeframes influence the process of RU and positive and negative experiences with activities that aim at aligning the timeframes of the collaborators.	"Often, we have difficulties, so things move here very slowly. So, like depending on the way the project is, let's say if it's an outside they're asking us to help them. It's very often they don't understand how slow our timeframe is." (Participant 21)
	On engagement in research design	Opinions on effective and not effective activities that aim at increasing the engagement of the NGO in the early process of designing the collaborating project.	"Really the beginning is really important because you want to make sure that you're starting off on the right foot. It's a lot easier to change things before they've started a year into the project. Once things started up and they're settled and they've kind of okayed what we're doing or they've agreed with it, you don't really have to be in touch too often if nothing's changing." (Participant 11)
	On satisfaction of the results shared	Positive and negative opinions on how satisfied NGOs were by the relevance of the results/outputs that were shared to them as part of their collaborations with academia.	"Yes, they correspond to our expectations. If the research is relevant, yes." (Participant 1)
	On results sharing	Successes and failures during the processes of sharing results from academia to the NGOs.	"Sometimes when we have people who are using our facilities or whatever. We don't really expect much just to acknowledge that that we helped in the collection of the data or something along those lines." (Participant 24)
	On continuation of partnerships	Opinions on activities that can promote the continuation of the partnerships between the two collaborators and on activities that create the opposite effect.	"Occasionally there are instances where there is a one-time collaboration. But most of the times we are trying to build long term relationships that would allow us to come back and work together over again." (Participant 13)
	On structured communications	Opinions on the degree in which structured communication was desired and achieved.	"It has not been very well structured." (Participant 10)

	On forms of results	Opinions on successful and failing means of crafting and sharing of the results and outputs of a collaboration.	“I mean, it is easy to understand the final document of a master thesis. It's just that it's a bit too long, you know? It's not practical.” (Participant 12)
	On sharing of existing scientific literature	Opinions regarding the satisfaction of NGOs on the provision of relevant scientific information.	“I think generally the scientists who we reach out to are very receptive and responsive (in terms of sharing scientific literature) and fantastic to work with.” (Participant 15)
	On types and tools of communication	Opinions on successful and failing means of communication between the collaborators.	“It can be a bit slow with meetings, especially if it's a lot of (geographical) distance.” (Participant 19)
	On assessment of current capacity	Opinions on the success of the activities introduced by academia with the aim of assessing the current capacity.	“They take into consideration, you know, our time needs our budget as well.” (Participant 18)
	On training	Opinions on successful and failing means of trainings.	-no quotes-
	On technical support	Opinions on successful and failing means of technical support.	-no quotes-
	On monitoring and evaluation	Opinions on existing monitoring and evaluation activities.	“You would say it was not structured.” (Participant 8)
Opinions of NGOs on other elements of influence (Open coding) ⁴	On alignment of goals and interests	Opinions on the influence that aligning the goals and interests between the two stakeholders can have for the success of RU.	“So that, I would say, is sometimes a mismatch in terms of what's most helpful for conservation versus what what's most interesting.” (Participant 9)
	On the dynamics of behaviours and cultures	Opinions on the role that the differences in cultures and individual behaviours can have in the process of RU.	“But when we have people who are doing their masters and such a lot depends on university culture, where they are from.” (Participant 24)
	On relationships	Opinions on the characteristics of the relationship between the collaborations that positively or negatively influence RU.	“And then what is really nice is if you've developed a good relationship with an academic, if they see something new, they will send it around as well.” (Participant 13)
	On division of responsibilities and expectations	Opinions on how clear division of responsibilities and expectations not related to RU influences the process indirectly.	“Usually where we have been involved in the design (generally), the result fitted the expectation (RU).” (Participant 19)

1. ⁴ The code of *Opinions of NGOs on non-process related elements of influence* was not part of the closed codes but emerged in the open coding process. However, the code is listed in the Closed coding column to fit the structure of the table produced as this open code includes several subcodes.

	On lack of connectivity	Opinions on how lack of connectivity between the academic and NGO sphere influences the process of RU.	“The politics of the red sea are quite complicated, and you've got countries that are basically not really talking, and they all generate their own data.” (Participant 11)
	On accessibility of information	Opinions on how achievement of accessibility of information between the two spheres enhances the process of RU.	“And we don't get anything out of it in return because they actually don't want to share the data with us, and they might share it in seven years' time.” (Participant 22)
	On the use of citizen science	Opinions on the effects that the use of citizen science can have in achieving RU.	“Their idea is a bit like they acknowledge that there's a lot of scientists out there that could benefit from citizen science activities and that this portal is potentially a way to do that.” (Participant 2)
	On the creation of win-win collaborations	Opinions on what activities can lead to win-win collaborations that promote RU.	“Give us back what is needed, you know, because if they come here and collect data but they don't publish anything at the end or they don't produce decent report because what they need is just to pass or they don't care, what is done for the foundation is a lot of energy and resources that are wasted, I have to be honest.” (Participant 14)
Uses of scientific knowledge	-	Ways in which NGOs use scientific information.	“But also, we use the information from our scientific monitoring to inform the educational outreach for our programs.” (Participant 19)
Types of collaborations with universities	-	Ways in which NGOs interact or have interacted with academia.	“Through students that come to do an internship for two weeks to three months” (Participant 1)
Objectives of NGOs	-	The different objectives that NGOs have regarding the context of coral reef management.	“Translating science on coral reef resilience and management and putting that into more of an actionable kind of resource for coral reef managers and practitioners. So, we do a lot of trainings and online courses, webinars trying to connect managers with other managers across the world and also try trying to connect them with experts.” (Participant 7)
-	Reasons to collaborate with the academia	Motives that urge NGOs to form partnerships with academia.	“To increase scientific knowledge because this is not our goal. I mean, we collect data, we do monitoring, we analyze our own data. But there are specific scientific questions that we don't have time. And also, this is not the purpose of our

			organization. So that's the main reason I would do it.” (Participant 14)
-	Reasons not to collaborate with the academia	Elements that urge NGOs to avoid forming partnerships with academia.	“If I don't get a good feeling from that university, and if they think they know everything already” (Participant 10)
-	NGOs as the transmitters of information	Examples of cases where NGOs were performing a brokering role regarding scientific information.	“And we also have a couple of projects that are specifically citizen science based.” (Participant 2)
-	Elements of the transmission of information by NGOs	Elements that NGOs noted as important regarding the brokering of scientific information to other stakeholders.	“Everything really needs to be adapted.” (Participant 21)
Recommendations by NGOs	Accessibility of scientific information	Ensuring that the NGOs can access all scientific information easily and free.	“Actually, this would be an amazing initiative if it was possible to have a central database of all the people that are accessible to you for specific things. This would be, I think, the ideal situation.” (Participant 4)
	Agreements	Creation of legal agreements and other contracts that include information on the expectations of an NGO-academia collaboration.	“What we do talk about (in the agreements) is that if there's any communication about the project, which is again different, if anybody wants to just highlight on their social media or on the press or whatever, that the two organizations must agree on the communication that's being developed.” (Participant 19)
	Clear division of responsibilities	Ensuring that both the NGO and the academia know which are their responsibilities regarding the collaboration and each other.	“But I do think that if the roles are differentiated and the perimeter of the collaboration is clearly defined, there shouldn't be a problem.” (Participant 12)
	Communication for research uptake	Communication strategy or activities that help promote research uptake from academia to NGOs.	“A mechanism to be able to communicate, ask questions, get support, technical support on the study itself.” (Participant 2)
	Connectivity	The capacity to connect NGOs and academia in general circumstances not only including existing collaborations.	“So, like the last element I think of success is offering an opportunity for the researchers once we trust them and they trust us to actually meet and work directly with our partners because usually we run the interface there. We don't know.

			They don't talk to our partners and our partners don't talk to the scientists. But if we can condense that and we can bring them together, I think sometimes that can be really powerful.” (Participant 15)
	Mutual respect and acknowledgement	The state in which both stakeholders treat each other with respect and acknowledge the unique contribution that they both bring to the collaboration.	“I think it's very important that scientists do understand that they can contribute in those ways.” (Participant 15)
	Monitoring and evaluation	Creation and implementation of a monitoring strategy and evaluating the success of the process in the end.	“I think what works is if you're doing monitoring and you know, definitely what works is putting a log frame in place because then you're very clear about what your outputs need to be, the objectives, the outputs for each of them.” (Participant 19)