



ARTICLE



<https://doi.org/10.1057/s41599-024-02942-5>

OPEN

“Maybe you need to do something about it”: challenges in global environmental change research with and within local communities

Roxana Roos ^{1,2} 

Research on issues such as adapting to rapid environmental change should include indigenous and local people in developing more robust and inclusive diagnoses and responses. Various studies indicate that such projects may face challenges. Researchers touch on these in papers where they reflect on their own work, but to a lesser extent in their empirical papers. Based on interviews with, and articles by, a varied sample of 15 researchers who work with local or indigenous peoples around the globe, I identified the challenges they face and how they deal with them. Thematic analysis of interview transcripts revealed eight themes: (1) external pressure, (2) engaging local people, (3) relevance of projects, (4) prior negative experiences, (5) cultural, historical, and geographical differences, (6) language challenges, (7) payment for participation, and (8) diverging epistemic cultures. Respondents' statements in all themes contain reflections displaying care, consideration, or responsibility for the projects and the local people they involve. This links the challenges with everyday ethics. Analysis of scientific papers written by the respondents showed that they hardly write about the challenges they face, whereby neither local participants nor other readers of these texts are actively informed by and engaged in critical-reflective discussions about the challenges arising during the research and the strategies used to deal with them. The research community has a responsibility to remedy this shortcoming: in their papers, authors should discuss the main challenges faced and develop, describe, and promulgate strategies for dealing with them.

¹ Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, The Netherlands. ² Centre for the Study of the Sciences and the Humanities, University of Bergen, Bergen, Norway. email: roxana.roos@uib.no

Introduction

It is now widely recognised that it is necessary to include indigenous and local people and their knowledge in projects aimed at developing more robust and inclusive diagnoses and responses to complex societal challenges, such as adapting to rapid environmental change (OECD, 2020; UNESCO, 2022; Kaiser and Gluckman, 2023). More calls for proposals by major research funding organisations therefore expect researchers to propose projects that include community partners and require collaboration with local people.

At the same time, various studies which focus on issues such as climate change impacts and environmental issues show that such projects face a range of challenges: lack of trust in researchers due to negative experiences from previous projects (Macdonald et al., 2023), “helicopter/ parachute research” (a practice whereby outsider researchers extract information from communities for their own benefit) (Brown, 2005; Howard, 2016; Castleden et al., 2012), ignoring local people’s methods, analysing data without local collaboration, “cherry picking” indigenous knowledge, misinterpreting indigenous knowledge, treating indigenous people as research subjects rather than equal partners in research, and current funding structures (Doering et al., 2022; Macdonald et al., 2023). Furthermore, it is mentioned that projects tend to be initiated by researchers rather than local people (Castleden et al., 2012; Macdonald et al., 2023; Kouritzin and Nakagawa, 2018; Anderson and Cidro, 2019). Other challenges include the imposition of Western methods, frameworks, and epistemologies (Mena and Hilhorst, 2022; Igwe et al., 2022; Wilson et al., 2022; Klett and Arnulf, 2020; Nakagawa, 2017); imposition of English in scientific publications; the dominance of English keywords “resilience”, “vulnerability” or “risk” (Chmutina et al., 2021; Mena and Hilhorst, 2022); the paucity and low status of non-English journals (Mena and Hilhorst, 2022); and the failure to communicate results in the local language and the tendency to communicate results in complex scientific language (Hilhorst et al., 2021).

Clearly, there is room to improve the practices of research projects involving local people and/or their knowledge and perspectives. The challenges affect both a project’s participants and all parts of a project, from planning to the dissemination of results or knowledge. According to Rossman and Rallis (2010), the choices made about all parts of the projects have a moral dimension, not least because the projects involve interaction with local/indigenous people and may furthermore impact their and other members of the community’s future lives. Which of the choices can be seen as good or bad can, in many cases, be situation-dependent (Rossman and Rallis, 2010). This means that choices that can be seen as ethical can vary from project to project and over time (Manzo and Brightbill, 2007). Therefore several studies suggest routinely including the ethics of care or virtue ethics in projects (Schaffer, 2009; Held, 2006; Rossman and Rallis, 2010; Banks et al., 2013). Ethics of care focus on the responsibilities associated with relationships (Held, 2006) and ensuring that ethical decisions are made in a caring interaction with those affected (Rossman and Rallis, 2010, p. 384).

Banks et al. (2013) argue that the ethics of research projects that rely on local people’s participation concern the “relationships,” “ways of being” and “acting” (p.266). Ethics are thus not merely a set of specific principles, established rules, and statements attesting that proposed projects are ethically sound and may go ahead. As Rossman and Rallis (2010) write, “ethics exist in our actions and in our ways of doing and practicing our research; we perceive ethics to be always in progress, never to be taken for granted, flexible, and responsive to change” (p.383). Manzo and Brightbill (2007) call the ethics of researchers’ daily practice “conundrums...that

emerge throughout the process and are not easily predicted at the outset” (pp. 33–34).

Indeed, Banks et al. (2013) argue that projects with local people need to be linked to the concept of everyday ethics, “which stresses the situated nature of ethics, with a focus on qualities of character and responsibilities attaching to particular relationships” (p.264), and thus addresses ethical issues and challenges arising in projects from inception to completion. As I see it, key ethical issues in projects involving local people concern epistemological choices, the design of research projects, implementation, and, not least, opportunities for participation in the reporting of results. I find similar thoughts in Mena and Hilhorst (2022) and O’Sullivan et al. (2023). In summary, in projects involving local people and/or their knowledge and perspectives, ethics goes beyond specific principles and established rules and touches all parts of such projects that can have an impact on the participants (and other members of the community) both during and after the project.

In connection with ethics in practice, several researchers (e.g., Rossman and Rallis, 2010; Von Unger, 2021) emphasise the importance of critical reflection on choices and decisions made on the fly because they often have ethical implications for the participants and a particular project’s political and social context. The reflexivity referred to here is called ethical reflexivity and goes beyond methodological reflexivity. It includes reflexive actions aimed at relational aspects, ethical elements that are contextually conditioned (Von Unger, 2021), how the results, participants, and communities are represented in scientific texts (Pickering and Kara, 2017; Roos, forthcoming), and implications of research projects (Von Unger, 2021). According to Von Unger (2021), the responsibility for establishing a practice of exercising ethical reflexivity is placed on researchers, in dialogue with co-researchers and other project participants (e.g., indigenous peoples, community partners) and researchers from other fields and disciplines.

It is unclear how such a reflexive practice can be achieved; however, I believe that for the research community to be able to participate in the ethical-reflexive dialogue, scientific articles should be transparent about the challenges the authors faced and how they were addressed. The importance of transparency in dealing with ethical issues is mentioned by Rossman and Rallis (2010), and some authors (e.g., Ninomiya and Pollock, 2017) have also noted that research publications rarely discuss ethical challenges, sub-themes, and solutions encountered during projects. Although information is provided about anonymity and informed consent, such publications place little emphasis on everyday ethics, which are situational and just as important as following abstract principles and rules (Banks et al., 2013).

Since all parts of research projects involving local people and/or their knowledge are linked to ethics, it is conceivable that several challenges faced by researchers are primarily ethical challenges. As a reviewer of this paper pointed out, two studies have specifically reviewed ethical challenges in Community-Based Participatory Research (CBPR) (Wilson et al., 2018; Kwan & Walsh, 2018). Note that these reviews are not focused on issues related to climate change or environmental challenges. Further, the search terms used in these reviews (e.g., ethical considerations, ethical challenges, ethical dilemmas, and ethical issues) may have led to the exclusion of articles on challenges in CBPR that do not use these terms. Still, several of the ethical challenges that these reviews identified, are also mentioned in the studies I discussed above, even though those studies do not have a direct focus on ethics.

As I have shown above, there is a growing focus on improving the practice of research projects involving local people and/or

local knowledge and perspectives and on making such research work more attentive to ethical issues. At the same time, there seems to be a lack of empirical studies where researchers who have participated in projects involving local people are interviewed about their experiences, reflections, challenges they have faced and how they have dealt with them, and where they talk about all parts of their project from start to finish. This can contribute to improving the research practice of working with local people and/or their knowledge and perspectives, by eliciting tacit knowledge through interviews with practicing researchers and by enhancing ethical reflexivity.

In my study¹, I interviewed a selection of practicing researchers with different professional backgrounds who have worked with local/indigenous peoples around the world and analysed some of their publications. The research questions this paper addresses are: *What challenges do researchers who work with local and indigenous peoples face? How do they deal with these challenges? How are these challenges (or others) discussed in their articles?*

Context and method

This study is part of the SeMPEr-Arctic international project in which I focused on research reflexivity. The data was collected by me and a colleague², using semi-structured interviews. Fifteen practicing researchers were interviewed, all of whom worked on issues related to climate change or environmental challenges. The scope of the sample was limited to these fields because of SeMPEr-Arctic's focus. I used snowball sampling, starting with some established names of researchers in the wider network of the project's consortium that strongly matched above-mentioned criteria or that I knew from the literature. I asked both the ones who rejected and the ones who accepted to recommend other candidates and stopped at the point where 15 agreed to be interviewed. In addition to analysing the interview transcripts, I also analysed scientific texts written and selected by the interviewees. All respondents were informed that their articles would be analysed. Some provided three or four texts, some also provided their doctoral theses. To keep the sample balanced, I opted to analyse one article per interviewee and did not include doctoral theses. I included only those articles that the researchers talked about during the interviews and that were related to relevant topics (climate change and environmental issues).

The researchers have worked on different projects with different local communities, some comprising indigenous people. They have different disciplinary backgrounds, and their experience of working with local people ranges from a few to many years. Over half of them have worked on transdisciplinary projects. During the interviews, the researchers talked about the various projects they were involved in. This concerned both projects where local people were partners and projects where local people were only interviewed. Specifying who only did interviews would lead to some researchers being easily recognisable from their quotes, while I promised all anonymity. Since the analysis did not show specific challenges related to one of these groups, I decided not to separate them in the analysis. Overall, the diversity of the sample helps to illustrate different experiences, opinions, and challenges that researchers encounter and the ways they deal with them. Supplementary Table S1 online provides an overview of the participating researchers and the articles they selected for me. Throughout this paper, I have anonymised the researchers by replacing their names with numbers up to 15.

The respondents worked with the locals (interviewed them, observed them, or had them as partners) in the following countries: Philippines (>1), Mexico (1), Russia [Siberia] (>1), Greenland (>1), Norway (North (1), West (>1) and Svalbard (1)), Canada (>1), Germany (1), Greece (1), Colombia (1), Vietnam

(>1), Mongolia (1), Bangladesh (>1), France (>1), New Zealand (1). During the interviews, several researchers chose to link their stories and reflections to various projects they had carried out. In Supplementary Table S2 online ("Selected statements from interviews grouped per theme") countries that several of the researchers have worked in are mentioned, but countries that only one researcher talked about are not, and the names of the communities or indigenous groups have been anonymised with #. To enhance the researchers' anonymity, in Supplementary Table S2 online the numbers assigned to them change from theme to theme. Where I draw from several statements from the same researcher under the same theme, I use letters (1a, 1b).

Practical aspects. All respondents were invited by email and were given information about SeMPEr-Arctic, my work, and other necessary information such as anonymity and practicalities of the interview. I prepared the interview guide, which comprised 26 questions, drawing on the literature on research reflexivity and collaborative research. The questions focused on the researchers' preparation for meetings with local people, work with local people, the relevance of projects for local people, the language researchers spoke with local people, whether they used interpreters, how they involved local people, and how they analysed the data and presented their results. The interviews thus focused on all the stages of a research project involving local people. I asked each of the researchers to link their stories to a specific project that resulted in a published article. The interviewees were given the opportunity to add something I did not ask about, but which they thought was important.

The interviews were conducted online via Zoom and lasted on average 60 min: the shortest was 25 min and the longest 90 min. Fourteen of the interviews were conducted in English and one in Norwegian (because I and the respondent both speak Norwegian). The interviews have been transcribed manually by AmberScript (a commercial academic transcription service).

To analyse the data, I used inductive thematic analysis (Braun and Clarke, 2006), and therefore the themes are data-driven and are strongly linked to the data itself. The analysis was conducted using NVivo-12, where the focus was on identifying patterns (themes) in the interviews. First, I coded the data to identify patterns relevant to the research questions. The codes were analysed to ascertain how they could be combined to form a common theme. "A theme captures something important about the data concerning the research question and represents some level of patterned response or meaning within the data set" (Braun and Clarke, 2006, p.81). In my study, the themes group statements about challenges and strategies for their handling. I focused on whether the themes appeared in several interview transcripts. After sorting statements from interview transcripts into themes, I discovered that the challenges and strategies for dealing with them were related to five concepts found in the literature on everyday ethics: "responsibility", "situational choices and actions", "relationships", "epistemological dilemmas" and "choices on the fly". See the discussion section below.

After identifying the challenges and strategies for dealing with them and assigning them to the themes, I reviewed research literature that focused on challenges and solutions in projects with local people (see introduction). Many of the challenges I identified appeared in the research literature but in a fragmented way.

After that I analysed the second part of the corpus (article texts) by means of close reading, to ascertain whether the articles mention or discuss any challenges and how these were dealt with. I then investigated whether these challenges and ways these were dealt with were also mentioned in the interviews.

Results of the interviews with the researchers

During the analysis, I identified eight themes indicating the main challenges that the interviewees faced in projects involving local/indigenous peoples: *external pressure, engaging local people in projects, relevance of projects for local people, language challenges, indigenous people's negative experiences from previous projects, different cultures, history and geographical conditions, payment for participation/interview, and diverging epistemic cultures*. Some interviewees also mentioned how they dealt with these challenges. Others mentioned that there were challenges without going into detail, but suggested strategies to deal with them. Supplementary Table S2 online gives examples of statements from the analysed interview transcripts, sorted by theme. I use some statements from this table when presenting the results. To maximise the transparency of the analysis, below I describe how many of my respondents talked about the different challenges related to the themes.

External pressure. Although the interview guide did not include questions about the demands placed on researchers by the institutions they work at or by project-funding organisations, these topics appeared in the stories of 10 of the 15 interviewees. Eight interviewees mentioned challenges related to what can be characterised as *external pressure* and another two highlighted strategies for dealing with challenges related to this theme without explicitly mentioning specific challenges. Almost all interviewees had participated in local and international projects. The projects usually had deadlines and expected results to be presented in the form of reports or publications. When projects involve interaction with local people, expectations of results and deadlines can lead to what interviewees refer to as *pressure* (1a, 2, 12). These include pressure to find respondents or partners, pressure to collect data (1b, 8), pressure to involve local people in projects (2, 12), and pressure to publish results (1a). One interviewee recounts what local people told him when he suggested they collaborate on a project: (1b) *We [local people] are not interested in working with you. They were very harsh, and I felt completely corrupt because they were right. I only asked them to participate because of the money, because I get paid for that job [...] I learned about my own job a lot from the people. I was confronted with my own interest*. This statement is part of this researcher's account of how pressure from the project he participated in led him to try to convince local people that the project was relevant to them. As can be seen from statement 1b, the challenges were not just stated as facts but were presented reflexively: the researcher reflected on what happened, and from statement 1b it appears that he feels responsible for his actions.

Pressure to publish also crops up in interviewees' reflections on their sense of responsibility towards their collaborators: (3) *I still think there is a challenge, as researchers we do, we all have this pressure on us to publish peer-reviewed articles. But the question is, who is benefiting from this peer-reviewed article? Would it actually be better to do something else from that, because they [the locals] are not so interested in reading this material?* Here, the interviewee questions the benefit of scientific articles for local people. In the same way as in statement (1b), the statement is linked to the interviewee's sense of responsibility to the local people in projects. Reflections that show feelings of responsibility for actions taken and towards those researchers collaborate with are prominent in all interviews and apply to all the themes.

Two respondents (4, 13) mentioned challenges related to the lack of opportunities for long-term collaboration with the local people due to fixed timeframes and limited funding. The researchers' stay in the communities they work with is limited by the project timeframe, and according to my interviewees, this

can negatively impact, for example, the implementation of resulting solutions or long-term collaboration. Additionally, this challenge is both situational because it often concerns collaboration with communities far from the researcher's home, and relational because, according to my interviewees, it affects trust and collaboration.

The *solutions* that interviewees mentioned regarding the challenges of external pressure did not concern changes in funding practices. Two of the researchers (5, 6) who did not mention clear challenges said that pressure to publish exists and that they try to include indigenous peoples in the writing of articles or give them their texts before publication to get their feedback. This does not reduce the pressure but improves the quality and relevance of the publications. My analysis also shows clear contradictions in terms of the importance of publications for local/indigenous people. Some local communities (especially those highly educated) see the articles as necessary knowledge, while others say that "this is for universities and scientists", according to one interviewee.

Two respondents (7, 4) talked about handling the challenges researchers face when they must leave the locals they worked with without opportunities for further collaboration or dissemination of new knowledge to improve problems specific to the locality. (4) *I try as best I can to avoid projects where I think I'm just going to go in and out and leave again. We have no right, as researchers, to be there. This is especially true when it comes to completely different cultures that have been colonised. As climate researchers, we represent a colonial past, even though we somehow label ourselves as doing something good for society today*. This approach can be seen as preventive and future-oriented (avoiding specific projects), and it is also reflexive (about the researcher's own position, ethical issues, and the history of the discipline that the researcher represents). Like the challenges mentioned above, reflexive action is associated with responsibility.

Engaging local people in projects. Statements about challenges that were grouped under the theme of *engaging local people in projects* were triggered by the interview question of whether the interviewees had encountered local people declining to participate when they were contacted. The challenges were mentioned by four researchers, and three others only talked about solutions related to this question. Three interviewees (2, 3, 4) answered that they had personal or second-hand experience of local people's unwillingness to participate in a particular project. One respondent (7) emphasised the challenges of recruiting participants "at a distance", for example, through social media [contacting one of the Arctic communities from a Western country]. He believed that the associated challenges arise from cultural differences, such as how we communicate with each other [for example, indigenous people more often communicate in person, while Western people more often communicate online], how we solve problems, and what ties we have to each other. The statement shows that this challenge is relational, situational, and cultural in nature.

The *solutions* interviewees proposed concerned better communication and adapting the project to the individual community (2, 3, 4, 7, 9). These five interviewees mentioned the importance of meeting and talking to the local people in person to establish a good relationship. One interviewee (11) mentioned using a local artist in the project and using art to communicate with local people because they did not speak his language.

All statements related to the theme of *engaging local people in projects* were reflexive in nature. One interviewee (4) for instance emphasised the importance of creating *a fluent dialogue with local communities in order to listen [to] what are the relevant topics for them*. And he said that *we have to better understand what their*

main concerns and priorities are and where they think that action has to be taken. Researchers are thus interested in conducting research that is responsible, i.e. relevant to the local community. This mainly applies to projects researchers themselves initiated, but as I showed above, external pressure (e.g., from funded projects) leads to researchers encountering resistance from the local community to which they turn. One interviewee reflected on how researchers present their projects: (3) *but maybe it's not the people, but you, the way you present the research, maybe it's your position in the context, in the social context of the research. Maybe you need to do something about it.* The solution based on this reflection improves the interviewee's own positioning and way of communicating. How researchers contact local people and the way they present their project affects the locals' response.

Project's relevance to the local people. Statements that further formed the basis for the theme *project's relevance to the local people* were triggered by the interview question about why it is important to conduct research based on collaboration with the local communities. Several challenges and solutions emerged in the interviews with 10 of the 15 respondents. One of the fundamental challenges is that the funding calls researchers respond to or the researchers' own interests do not always match local people's needs (2, 6a, 8, 9, 10). According to interviewees' statements (2, 6b, 7, 9, 10), local people are more interested in local challenges, such as what ice is going to be in the future (locally), or how the community is changing due to the closure of coal mines or to increasing tourism or to an increase in the population. Another challenge is that local people become distrustful of science and do not see the relevance of scientific knowledge to their lives (6b, 7): (7) *People think that science is not relevant to them.* One interviewee said the reason local people perceive research as irrelevant is related to researchers' view of respondents from local communities. He said (6b): *We [researchers] essentialise and idealise local communities as if everyone sits and talks to each other all the time and agrees on things, but that's almost never the case in large communities.* Later in the interview, this researcher returned to the same reflection and added: *Communities are mixtures of people, and some of them never see or talk to each other. They have very different interests and, very different positions, different levels of knowledge. So, you can't assume that local communities know what interesting research questions are. We need to reflect on this.* The statement shows that the relevance of projects for local communities can depend on which community members the researchers talk to. What is relevant to some residents is unimportant to others. The challenge of the *project's relevance to local people* can thus affect the entire project, from the formulation of problem areas to the presentation of results or the implementation of new knowledge. Statement (6b) invites researchers working with local people, and indigenous peoples, to mutual critical reflection that can improve research projects involving local knowledge and concerns.

The last challenge concerns who should conduct research where indigenous peoples live: Western scientists or scientists with an indigenous background (4, 5, 11, 4). One interviewee says: (4) *I was at a conference. There were a lot of Inuit presenting their projects. [...] I was unsure. And I thought: Is my research useful for the Inuit? Am I the right person to do this research? Maybe I need to let the Inuit do the research.* The statement shows the interviewee's reflexivity in relation to some fundamental questions concerning the Western dominance of those who conduct research on or with indigenous peoples whose cultures and epistemologies differ greatly from Western ones. Statement (4) is directed towards reflections on responsible research, but at

the same time does not show what the researcher specifically chooses to do and why.

Dealing with the above-mentioned challenges primarily entails focusing on the issues and requests that come directly from local people, organisations or local authorities (6a, 10), (7): *include people from the start that they feel involved*, (8, 9) *redesign your research*, adapt our research to their issues and *change the research question*. This, according to the interviewees, can (6a) *help to make projects more rewarding for those concerned.*

Indigenous peoples' negative experiences from previous projects. The theme of *indigenous peoples' negative experiences from previous projects* was raised by 10 of the 15 interviewees. One suggested solutions without going into detail about specific challenges. Many mentioned that *foreign researchers* come to the community for a short period of time, *ask questions, collect the data material, and leave again* (1, 2, 8, 11, 13, 14, 15), and (13) *They came [the researchers], they talked to them, they took the data, and they went back to their country, and they never heard about them anymore. (...) They're taking some valuable resources, and they don't give something back to the community, they don't use it for the well-being of the community.* Seven interviewees reported that distrust is strongly linked to local people's statements that foreign researchers *take away their knowledge without giving anything back.* One interviewee mentioned that indigenous people (in the Arctic) read scientific articles, another said that local people in southern countries told him they never read such texts. According to three interviewees, distrust, especially among indigenous communities, also arises from fear of being recolonised. One noted (3) *everybody has an interest in this game. We're in power, we are in power relations, we are not neutral scientists; we are agents of something.* This means that even if researchers do not visit indigenous peoples to colonise them, the researchers benefit from research involving local communities (three interviewees mentioned career and salary benefits). The theme of *indigenous peoples' negative experiences from previous projects* touches on such relational factors as trust in researchers and in projects. As statement (3) indicates, sometimes only researchers seem to benefit from projects they invite local people to participate in.

The *solutions* to the above challenges were similar. Collaborative approaches, co-production, and transdisciplinarity were mentioned as approaches that can be seen as preventive and contribute to respect and trust. For example, one interviewee said that knowledge co-production (8) *prevents from all these problems.* Another mentioned that a solution could be to make visible the concerns and knowledge of local people participating in the projects: (4) *getting their voice heard, (...) bringing their voice somewhere.* One interviewee (1) suggested allowing some project products (e.g., artworks) to remain with their local creators (1). Another (8) advocated acknowledging local participants in articles, i.e., making them co-authors, saying: *I'm the scientist but you [an individual from indigenous communities] are a scientist too! You have knowledge that I don't have. We are in the project at the same level. The most important thing is to put their names into the paper as co-writers of the articles.* The statements regarding solutions show that researchers have a sense of responsibility and care for the local people with whom they conduct research. However, I have no evidence that being a co-author gives local/indigenous peoples any benefits in the same way as it benefits researchers.

Different cultures, history, and geographical conditions. Statements that formed the basis of the theme that I called *different cultures, history, and geographical conditions* were

identified in all 15 interview transcripts. Some of them talked about both challenges and strategies for dealing with them, others only about challenges and several highlighted cultural/historical/geographical challenges and concentrated on how these can be dealt with. Some of the cultural challenges can arise from what one interviewee called (3) *power hierarchies* with a particular emphasis on *gender hierarchies*. Another interviewee with experience from southern countries mentioned cultures where female researchers cannot have male informants and the resulting challenges: (1a) *in the end, it was easier to talk with women only, and because of cultural considerations, men were not very keen to talk with a woman*. In other cultures, according to this interviewee, only older men are seen as authorities, and community members suggest them when researchers ask for participants: (1b) *They're obviously seen as the authorities; they're the ones who have some kind of knowledge to share*. The challenges that researchers face because of cultural *power hierarchies* apply, as can be seen from the statements on which voices represent communities.

The next challenge concerns what interviewees referred to as *understanding*. For example: (4) *If you don't know people, their history or culture, then you can't understand them*. Others also mentioned knowledge of geographical conditions, knowledge of the place, historical aspects, and the problems that are relevant there, which can lead to researchers (7) *neglecting a very important or key topic for residents or not understanding what local people say*: (6b) *Sometimes, I ask them a question and don't understand what they say, not because of the language, but because of the context, and culture*. Similar thoughts were expressed by five others (9, 10, 11, 13, 15). These statements show that too little knowledge or lack of knowledge of the culture and context may result in not grasping what local people are referring to or saying. This can lead to researchers misunderstanding what is being said. While too little knowledge of the culture can pose challenges, too much knowledge can also create obstacles: (9a) *If we know the culture too well, we will not have these open eyes to be curious and to ask questions to people*. The interviewee was referring to researchers who have lived for several years in a particular culture or are themselves part of the culture they are studying. Another challenge, related to knowing the culture too well, is the challenge of obtaining relevant data. One interviewee recounted approaching one citizen in a small community who did not want to be interviewed: (14) *Hey, [#], come, I'll do an interview. I need to ask you your point of view about that, and sometimes when I ask that, they say: no, let's come to my house to have a cup of tea but I don't want to have this interview. They say that because they know me quite well. So, I found out that when you are a foreigner, maybe they are more: "Okay, I do it" [i.e. assent to an interview]*.

The statements indicate that lack of cultural competence affects comprehension of what is said in the context of culture and history. Even though the interviewees did not mention which parts of projects this challenge affects, it seems likely that the analysis of data, interpretation, presentation of results, and implementation may be most affected. Challenges related to a researcher being almost part of the culture in which the research project is carried out affect opportunities to find respondents (14) and to see what has been taken for granted or has become self-evident in a society (6c).

In addition to knowledge of the culture a researcher enters concerning a particular project, mention was made of the need to know how the country to which the indigenous community belongs views ethnicity: (8b, see also 8c) *In some countries, having different ethnicities is more accepted than in other countries. Such countries are often proud of their indigenous groups. Researchers should know this before starting their projects because there may be an underlying conflict that creates certain reactions that the researcher is not aware of and may misunderstand what is being said*. What the interviewee talked about here concerns the relationship between indigenous communities and the government in their country of residence.

During the interview, the researcher explained that in some countries, for example, indigenous peoples have not been given the opportunity to use their own language at school and that their cultural knowledge was seen as superstition.

Finally, I would like to mention an interesting reflection one interviewee made while talking about cultural challenges: (8a) *The problem can be that we think that the culture of indigenous people in one place is the same as the culture in another place. But they can be completely different, like from different planets*. This reflection concerns a researcher's assumptions and overgeneralisation, which can affect the preparation for a particular project, its implementation, and, not least, the results.

The *solutions* the interviewees proposed concern communication, such as the inclusion of artists and art (3, 10) (to be able to understand each other) and asking local people to allow those groups (women and young people) who are not usually seen as knowledgeable or who do not usually participate in important social decisions to participate in the projects (1a,b, 2). In addition, some respondents mentioned that it is important that researchers coming to societies with different cultures follow the rules of those societies. One solution was also to acquire *just enough* knowledge of the cultural, historical, and contextual aspects before the researcher starts collaboration or fieldwork (4, 5, 6a, 6b, 13). *This kind of work starts with reading a lot about the social-cultural, and economic context (6a,b). I think that part of the preparation of research is to be aware of the local context as much as we can, but not too much (9a)*. One of the solutions to learn more about culture was to let people talk about things other than what the project or interview is primarily about (9b) *I let them talk because I'm not from the North. It helps me to understand how they live. And if they have time and I have time, I let them talk because they teach me how they live up there*. The final solution interviewees mentioned is to live among indigenous people for a certain time (11, 12, 4, 9), which *can help indigenous peoples begin to trust you as a researcher (14)* and in certain phases of the project to include researchers familiar with a particular community and culture (15).

The strategies to deal with the challenges touch on several stages of a particular project: preparation (inclusion of artists and art to understand the participants; getting as much knowledge as possible about the culture and history; including researchers with knowledge of local culture); getting varied participants/respondents (involve women and youth as respondents or participants); during the interviews (let people talk freely during the interviews).

Language challenges. Statements that were grouped under the theme of *language challenges* were triggered by my interview questions, six of which focused on language. All 15 interviewees mentioned challenges they have experienced and solutions they have used. Several said that when speaking with local/indigenous people it is more challenging to have translators than to operate without them. (1) *It was more difficult to have interpreters than to speak English directly with the person. Because with the interpreters, there is a personal point of view. You lose something in the translation and the person who translates is also going to translate the way that this person heard the Indigenous speaking. When you understand something, you understand this through your culture, your personality, and your history, and then you are going to translate it to another person. What we heard is like a translation with that interpretation by the translator*. The statement shows that translation can distort what is being said and prevent researchers from accessing what indigenous people actually said. Another respondent said: (3) *you almost always lose parts of the original speech*. Using an interpreter can also lead to challenges that respondents referred to as *filtering*, which causes parts of

what is said to be lost during translation: (8) *a person responding to a question goes on and on, and then the interpreter just says one sentence, where seems like the person must have said so much more* and (12) *I have to trust a translator, and sometimes that doesn't go well because sometimes we have an interview and the recording would be 40 min long, and the transcript would be two pages. But: "Oh, where's the rest? That's all there. It's obviously not all there".* Other challenges related to interpreters are their knowledge of English, which is described as (9b) *not-so-good*, and which leads to *wrong answers*, and the challenge that interviewing with an interpreter disrupts the flow of the conversation because you must wait for something to be translated (12).

Another challenge mentioned is knowing in which contexts different words are used by native speakers. (4) *I think that it is quite challenging to find the exact same words that you are using in English, in this case in Russian, and to make sure that they have the same meaning or that they are used in the same context.*

Statements about linguistic challenges show that the researchers have reflected on them and see that using an oral or written translator transforms the original speech so that something disappears, something is only the interpreter's own understanding of what is said (the interpreter's summary) and something is mistranslated. The interviewees' reflections are not directed at the possible consequences of language challenges, but it is conceivable that language challenges can affect both results and new knowledge.

Respondents mentioned several different *solutions*, the most prominent being to use *local field assistants* (3, 5, 6, 10c, 11, 13) and *colleagues* (10) who speak English and know the local culture. The researchers who had experience of using art believed that it could significantly improve communication: (7b) *because that's a way of speaking and communicating that isn't based on words.*

Payment for participation/interview. The theme of *payment for participation/interview* was brought up by seven interviewees. (4) *When you are doing some field research, there is always the issue of paying your informants or not paying them. It's a tricky question.* Interviewees explained that the consequence of not paying can lead to indigenous communities declining to participate in interviews (6a). However, paying for the interviews may mean that researchers are unable to collect data because the respondent wants extra payment: (9) *He [informant] gave [an] interview, a three-hour interview. We have all the transcripts. And then there was this kind of misunderstanding, we sent the transcript back to him. We paid him for the interview. But he wanted more payment to check the transcript. We offered him some, but not enough. And then he withdrew his transcript. And now we're in this tense situation, [...] we've paid for an interview that we don't have anymore.* This suggests that the payment challenge affects aspects of the project, such as the number of respondents recruited and access to the data.

One of the prominent *solutions* mentioned by interviewees (6a, 8, 9) is to always pay a certain amount both because it is usual practice in some indigenous communities (you pay for access to their knowledge) and because participating in projects and interviews takes up people's time. (9) *It's important, I've never been shy of paying interviewees because some people, especially in [a country in the Global South], if they were talking to us, they weren't working, and they have to work to get paid, they're paid on a daily basis.* Another solution mentioned (10) is to invite local people to workshops where they can exchange knowledge with others. The interviewees' reflections demonstrate consideration, care and responsibility for the indigenous people: payment is intended both for the interview and for the time spent with researchers.

Diverging epistemic cultures. The final challenges that emerged during the interviews were assigned to the theme *diverging epistemic cultures*. Six of the 15 researchers talked about challenges related to this theme. These are related to differences between Western epistemic culture and the epistemic culture of researchers with an indigenous background. (4a) *I am doing research in different local contexts. Is there a condition to try to build your interpretations about the data collected using also local references, and local scientists, as references? I have nothing against Western theories, but from a social perspective, these theories were built on different contexts. [...] I worked with a local community in [#], and to me, it was very natural to refer to scientists working in the context of [#]. [#] context is very specific, and I used key authors, not very known here, [...], and I had one reviewer, who said, "I am not going to review this work because I don't know those people, they are not legitimate from my eyes. They are not actual scientists to me."* The statement shows that Western theories, knowledge, and ways of knowing are seen as being dissimilar to other epistemic cultures, such as indigenous cultures, which creates challenges in working with indigenous peoples and colleagues from indigenous communities: (4b) *When you work with colleagues from other countries, they feel excluded from the knowledge. It's not that they cannot build knowledge, but they are not playing in the game, because they are not from a European university or an American university.* It emerges that the reason why Western epistemology has more recognition and power has to do with the economics of Western countries. The researchers I interviewed want to decolonise epistemic culture. (5) *The programmes of [some indigenous communities #] have no millions to implement projects and it's the way the science has been constructed in the Western world. The way we read the data, and the way we make sense of the data are quite different, but to me, it's important to decolonise this view, because we are suffering still the impacts of colonisation at all levels, also scientific and academic.* Almost all interviewees mentioned the words *colonisation* and *decolonisation*, and by reflecting on the consequences of the colonisation of indigenous communities or knowledge they show responsibility for the research being done and the people it affects.

Lastly, it is interesting to see that interviewees hardly talked about challenges related to the diversity of Western epistemology in projects in which local people are involved, an issue that may also require more ethical reflexivity (cf. Funtowicz and Ravetz, 1993). However, one of the interviewees talked about a small interdisciplinary project where four researchers with different disciplinary backgrounds jointly prepared an interview guide. He said that they had very different approaches and different goals, but through discussion, inclusion, and openness, they succeeded in preparing and conducting the interviews.

The *solutions* interviewees suggested are similar. Decolonisation of knowledge and science can happen through dialogue between different ways of knowing and by including researchers from non-Western backgrounds in projects and in the writing of articles. For example: (4) *not excluding the other knowledge, [...] and building a dialogue between them.*

The above-mentioned results show that all 15 researchers interviewed reflected deeply on the various challenges they face when their projects involve local or indigenous people. The reflections indicate that they are committed to conducting research with responsibility for local people and knowledge developed through projects. In addition, the results show that my respondents have consideration for participating local people in all parts of the projects they carry out together.

Results from the analysis of research articles. The second part of my analysis shows that the challenges interviewees mentioned

regarding working with local people do not feature as prominently in their publications. Articles A2, A3, A4, A6, A9, and A11 do not mention or discuss any of the challenges presented above or similar challenges. Three of the articles analysed focused on reflection on a completed project (A5) or on the presentation of a method with its advantages and limitations (A15, A13). These three articles differed in that they mentioned some of the challenges and presented some ways of dealing with these; A5 discussed the challenges mentioned. The six remaining articles only mention what can be understood as dealing with possible challenges.

Challenges related to the theme of *external pressure* were identified in only one article: A13. Here, the focus is on the pressure to obtain data in the form of narratives (funding organisations expect results): *I tried to sell my project and asked: Are you not afraid of climate change? Here, so close to the dike, living beneath a rising sea level? I tried hard, but they did not buy into my narrative of climate change. They said, climate change means nothing and everything. [...] And they added that climate change is something for science and administration* (p.5). The author also mentions where the pressure comes from: *I felt the pressure of a three-year project, the peer pressure, and the pressure to present results* (p.5). The statement shows the author's open conversation with himself and reflection on his experiences. The reflections show that engaging local people in a project developed without contact with local people can present challenges that primarily concern the mismatch between what the researchers think are actual problems for local people and what they consider to be problems. The source article has been published, so the reflection is insightful not only to the author but also to his readers. The strategy for dealing with this challenge comes later in the article, where the researcher writes that he did not try to persuade these people again, but still talked to them about their work and their concerns. He mentions that local people he talked to attended the workshop he organised.

Challenges under my theme *engaging local people in projects* are mentioned in A5, where the authors describe the challenges of engaging participants in using art to express their own perceptions in the specific project on the conservation of native maize in Mexico: *We also found that while some participants were very motivated to create artworks, others were somewhat scared or overwhelmed by the idea, either due to the time it was perceived as requiring or a sense of their own lack of artistic abilities. For some people, the creation of artworks was seen to require particular creative skills that they felt themselves lacking in* (p.14). The response to this challenge, as described in A5, was to offer possibilities other than just art as a form of expression and to conduct unoffensive interviews with indigenous people. This shows that the handling of challenges affects whether researchers recruit enough respondents, which affects the number of interested partners. Handling is situated in a specific context, and it depends on relational actions that in this case are two-way between the researchers and local people.

In four articles I identified challenges and/or handling of these related to *the relevance of projects for local people*. For example, to make the project as relevant as possible to local people, the project described in A8 focused on *Northwest Greenland, which is the Nordic region most affected by permafrost. It is where the most pronounced changes are expected to take place* (p.63). Similar handling of the challenge of making projects relevant to local people was mentioned in the interviews.

What is relevant to some members of the community may be irrelevant to the rest, as I showed based on the interviewee's statement (6b). Article A1 clarifies that project participants cannot be seen as representative of the entire community in Svalbard (where the authors conducted interviews) and the authors write that therefore they present only specific views on the topic the project focuses on (p.2). This statement can be

linked to the reflective interviewee statement (6b) that researchers often take for granted that local communities are diverse and taking a sample from them does not necessarily mean that their opinions, concerns, and the like apply to the community in general. Article A15 does not mention specific challenges but provides what could be called a response to the challenge: *engaging as many members of the indigenous community as possible, especially youth* (p.582).

A7 examines what a selected indigenous community thinks about the focus of existing research in terms of credibility and relevance and what issues indigenous peoples are interested in so that future research will be relevant to them. The article also discusses knowledge that local people consider relevant and irrelevant.

The theme of *the indigenous people's negative experiences from previous projects* was mentioned by several of my interviewees, but only article A5 explicitly touched on this theme. It mentions this challenge, draws on relevant studies to support the discussion, and explains what the researchers did to create a safe atmosphere in the community they worked with: *The use of art in environmental research has been documented to be a powerful tool to decrease the distance between researchers and other stakeholders and empower all participants* (p.2). *The use of art and collaborative projects was also intended to assure them [indigenous people] that we [researchers] wanted collaboration and not only extraction of their knowledge, as had been previously experienced by the community* (p.5). Engaging local artists and the use of art was also mentioned by my interviewees as solutions to challenges related to negative experiences some indigenous communities had from previous research projects.

The next two themes *different cultures, history, geographical conditions, and language challenges* identified during the analysis of interview transcripts have been merged because they are more intertwined in the articles than in the interviews. Article A14 mentions that the interviews in their project were conducted in Norwegian and English, languages spoken by both the researchers and the informants (p.3). During the interviews with my respondents, several interviewees mentioned the importance of being able to understand history, culture, context, and language to understand what local people say. Article A14 mentions that several of the article's authors knew the language, history, and culture of the community being researched.

Article A12 highlights key challenges also mentioned by my interviewees: translation and the use of interpreters. The authors write: *Linguistic limitations due to live translations could [...] lead to a loss of terminological precision* (p.2). The solution mentioned in the article is to use an interpreter who knows the local context and language and can clarify terminology with the researcher.

Article A7 does not mention specific language challenges but does emphasise that one of the authors had 10 years of experience as a researcher from the indigenous community the project focused on. This was also mentioned by my interviewees as a solution for understanding what local people talk about in the context of their culture and history. Cultural understanding can additionally be achieved using the CreativeVoice method, as suggested in article A5: *We developed CreativeVoice as an integrative method to help us understand the local contexts, cultures, and perspectives from community members of different ages and genders* (p.1). However, the authors write that using art and the CreativeVoice method led to some challenges, which they discuss together with how these were handled. Challenges they mention are some community members requesting more art material than necessary, engaging indigenous people and convincing them they are free to create what they want, and, finally, some recruits subsequently withdrawing, which led to fewer participants (p.15). The authors say this required the researchers to be patient, engaged, and encouraging throughout.

Furthermore, one article mentions the importance of using local assistants in projects involving other cultures and languages. A8 mentions that the project's respondents were briefed about the project in their own language by local field assistants (p. 61). Above, I reported that interviewees suggested using local assistants because of their knowledge of the local culture, context, and language. In A8 this is justified by explaining that local field assistants have *knowledge of people living in the two communities* (p.61) in the Arctic.

As can be seen from the results, few of the articles mention challenges related to culture and language, even though the same researchers mentioned many different challenges during the interviews. Yet several of the articles contain what could be called strategies for dealing with potential challenges, but since the challenges are not specified, readers must decide what the strategies are a response to.

The theme of *payment for participation/interview* appeared in one article. A5 discusses payment for participation in the research project: *We knew that previous research projects working in the communities had offered money in exchange for participation and that this had provoked divisions and misunderstandings. Wanting to avoid this, we constantly clarified that we would not give or receive money. However, we did offer art materials to those involved in the project since we did not want participation in the project to create a financial burden* (p.15). The article thus both describes the challenge and shows how it was handled. This leads to more transparency and enables readers to reflect on the handling of the challenge.

Some of the challenges and their management mentioned in the articles did not fit with the themes identified during the analysis of interview transcripts. I present these below.

A15 presents what the author refers to as a *scenario for conducting research with indigenous communities confronting the local effects of global climate change* (p.582). Some approaches that can be understood as solutions are presented here, and even though the challenges are not specified, they can be inferred. The author writes: *The first step is to be sure the targeted research communities are interested in working on climate issues. It is also important to have longevity in the given field/research communities and a working knowledge of the local language* (p.582). The statement emphasises the importance of knowing both the language and culture/context of the community you want to research with and being sure that indigenous people are interested in the issues that researchers consider important. These solutions were also mentioned during the interviews in relation to the challenges concerning the themes of relevance of projects for local people and different cultures, history, geographical conditions, and language. Additionally, the author writes that: *It is important from the beginning of [...] research process to be sensitive not only to the way our research partners frame global climate change but also to the way we frame global climate change with them* (p.582). This was not mentioned by my respondents during the interviews but can be seen as a relevant challenge to consider because if the researchers do not reflect on this, their analysis and results may be affected.

Article A10 mentions the importance of using local artists and art in their project to *create a safe and friendly environment for discussion and reflection* (p.492). However, the reason for including art mentioned in A10 is not negative experiences from previous projects (a reason mentioned in the interviews), but the fact that *art could offer new insight and unsettle what science sometimes takes for granted* (p.492).

A13 contains several reflections on certain challenges, among them the researchers' own understanding of the terms they use in the project and which are used in conversations with local people. One concept discussed in the article is *climate services* (p.3) and

its connection to the concept of *narrative*. The article asks: *But what exactly are climate services, and where and how do narratives and climate services intersect?* (p.3) The author refers to this as *opening a black box* (p.3). This challenge was not mentioned by my interviewees. Although the challenge is worthy of reflection, perhaps the interviewees did not perceive it as a challenge that arises when working with local people.

A5 mentions a challenge that could be assigned to the theme of cultural differences, but it differs somewhat from what the respondents talked about during the interviews. It refers to *power imbalances among men and women as well as among elders and youth* (p.6), which is often part of the culture in indigenous communities. A5 explains that the challenge was dealt with by *dividing participants into small focus groups by gender and age* (p. 6).

Conclusion and discussion

In this article, I have identified and explored the challenges that researchers face when working with local communities and how they deal with them.

My approach has some limitations. I analysed interviews with 15 researchers from different backgrounds and one article by each, and although I have identified patterns related to challenges and strategies for dealing with these, the results may not be generalisable.

Overall, the results show a wide range of challenges occurring at different stages of research projects. I grouped these into eight themes:

1. *External pressure* to find respondents or partners, to collect data, to involve local people in projects, and to publish stems from challenges related to the lack of opportunities for long-term collaboration with the locals because of fixed timeframes and limited funding. The solutions suggested are to try to avoid projects in locations where the researchers cannot stay for a longer period with the locals and to include local people in the writing of articles or involve them in reviewing draft articles.
2. *Engaging local people in projects* can be difficult, especially long-range (via email, social media, etc.). The solutions suggested are meeting the locals in person, using art or local artists to establish communication, and improving how projects or issues are presented to local people.
3. *Relevance of projects for local people* can be perceived as low if there is a mismatch between the researcher's own interests and local people's needs. Recruiting respondents or participants can be hard due to stipulations by project funders and because local people may have little trust in science and do not see it as relevant. The solutions suggested are to include local people from the start in project development and to adapt projects to local people's problems.
4. *Indigenous people's negative experiences from previous projects* stem from extractive research practices where foreign researchers come to the community for a short period of time, ask questions, collect the data, and leave, giving nothing back to the community. Local people fear recolonisation. They see that the visiting researchers get more benefits (e.g., career and salary) than them. Solutions proposed are collaborative approaches, co-production, and transdisciplinarity for building trust, making local people's knowledge and concerns visible, making some of the participants co-authors, and if local people have developed or created something (e.g., artwork), leaving it with them.
5. *Different cultures, history, and geographical conditions*, which lead to: challenges in getting a balanced sample of

participants because of gender hierarchies and age hierarchies in indigenous communities; challenges with understanding because of insufficient cultural competence; researchers' curiosity being blunted by having too much cultural knowledge; the challenge of obtaining relevant data; misunderstandings due to assuming that different groups of indigenous people have identical cultures; and challenges in understanding what is being said due to a lack of knowledge of an underlying conflict. The solutions suggested are to ask local people to allow women and youth to participate in projects; include art and local artists to improve understanding between participants; acquire as much prior knowledge as possible about the research area; let local people speak freely during interviews even if off-topic (to get to know their culture); and include researchers who know a particular community and culture.

6. *Language challenges* occur, for instance, when interpreters have poor English skills, summarise and filter what is said, and when interpreting disrupts the flow of conversation. Solutions include using colleagues who speak the local language and know the local culture and using local field assistants. Including art as a means of communication was also suggested.
7. *Payment for participation/interview* is a challenging issue because not paying may result in fewer locals participating. The solution can be to always pay a certain amount or invite local people to workshops where they can exchange knowledge with others.
8. *Divergence between epistemic cultures* may lead to misinterpreting local knowledge and local ways of knowing using Western theoretical frameworks and methods. Using indigenous theories and methods or building on, and referring to, work by indigenous researchers (non-Western epistemologies) is not widely accepted by the Western scientific establishment and so colleagues from non-Western countries can feel excluded. A suggested solution is the decolonisation of knowledge and science. That requires dialogue between different ways of knowing and the inclusion of non-Western researchers in projects and article writing.

Many of the challenges mentioned are similar even though they draw on experiences from very different countries. What stands out is that cultural conventions vary from country to country: in some Southern indigenous communities and countries, for example, female researchers cannot interview men and, in some places, only older men are proposed as project respondents or participants. Other differences in challenges are that some local communities are not interested in scientific publications and thus do not read the research articles. However, other communities, particularly in Arctic areas, are mentioned as both reading such articles and participating as co-authors.

In all eight themes, statements from the interviewees contain reflections demonstrating care, consideration, or responsibility for the projects and the local people involved. Several statements concern responsibility for the researcher's actions: e.g., attempts made to convince local people of the relevance of the project's topics. The results show that the challenges and strategies for dealing with them have a situational and relational character because they arise in interaction with the local people involved. They touch on trust between scientists and local people and local people's trust in science.

Although none of the researchers I interviewed mentioned the word ethics, it seems that the projects involving local people and the challenges researchers face there are inseparably linked to ethical issues. Indeed, reflexivity, responsibility, care, and

consideration are central issues in the literature on everyday ethics (for example, Banks et al., 2013). Everyday ethics is situational, relational, and important in research involving people. It addresses ethical issues and difficulties that arise in projects from inception to completion (Mena and Hilhorst, 2022; Banks et al., 2013; Manzo and Brightbill, 2007; Rossman and Rallis, 2010). This is also evident in the statements of my respondents. All eight themes touch all parts of a research project or at least one of them.

Some of the challenges and their handling stand out because they can affect the lives of local people during and after the projects. They comprise cultural, linguistic and epistemological challenges. According to the respondents, indigenous methods and theoretical frameworks are rarely used in research projects because local people's epistemologies differ too much from Western epistemologies. That can lead to misinterpretation of local knowledge and concerns, which subsequently can misinform policy decisions.

Even though researchers face, deal with, and reflect on many different challenges, results from the analysis of 15 scientific articles written by the researchers I interviewed show that these are hardly mentioned in their articles. Six of the analysed articles do not mention any of the challenges that figured in the interviews. Three of the articles mention or discuss the challenges and strategies for dealing with them. Two of these articles are methodological; in the third, the researcher critically reflects on a completed project. The six remaining articles only mention what can be understood as dealing with possible challenges.

The discrepancy between researchers' experiences of challenges and strategies for dealing with them and the coverage of these in the resulting scientific articles is clear. This may have to do with the constraints of the research article genre and scientific journals' requirements. These conventions mean that neither local people who participated in the projects nor the readers of the scientific texts are actively informed by and engaged in critical-reflective discussions about the challenges that arose during the research and the strategies for dealing with them. The fact that all challenges I identified are ethical in nature and may impact the future of local people means that the research community has a responsibility to advance their practice of dealing with the challenges discussed here. This requires that in their articles researchers start discussing the main challenges they faced and develop, describe, and advance strategies for dealing with them.

Data availability

The data that support the findings of this study are included in this published article and its supplementary information files.

Received: 8 December 2023; Accepted: 7 March 2024;

Published online: 18 March 2024

Notes

- 1 This study was conducted within the project "Sense making, place attachment, and extended networks as sources of resilience in the Arctic" (SeMPER-Arctic) in which researchers work closely with local communities and collect local stories of change, crises, and shocks.
- 2 The two of us contacted researchers and interviewed them. In total, we contacted 47 researchers, 15 of whom agreed to be interviewed. Five interviews were conducted by my colleague Natalia Doloisio and the rest by me. Doloisio did not help devise the interview questions. Doloisio was also a respondent: the first to be interviewed.

References

- Anderson K, Cidro J (2019) Decades of doing: Indigenous women academics reflect on the practices of community-based health research. *J Empir Res Hum Res Ethics* 14(3):222–233. <https://doi.org/10.1177/1556264619835707>

- Banks S, Armstrong A, Carter K et al. (2013) Everyday ethics in community-based participatory research. *Contemp Soc Sci* 8(3):263–277. <https://doi.org/10.1080/21582041.2013.769618>
- Braun V, Clarke V (2006) Using thematic analysis in psychology. *Qual Res Psychol* 3(2):77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Brown M (2005) Research, respect and responsibility: a critical review of the tri-council policy statement in aboriginal community-based research. *Pimatisiwin* 3:79–98
- Castleden H, Morgan VS, Lamb C (2012) “I spent the first year drinking tea”: Exploring Canadian university researchers’ perspectives on community-based participatory research involving Indigenous peoples. *Can Geogr/Le Géographe Canadien* 56(2):160–179. <https://doi.org/10.1111/j.1541-0064.2012.00432.x>
- Chmutina K, Sadler N, von Meding J et al. (2021) Lost (and found?) in translation: key terminology in disaster studies. *Disaster Prev Manag* 30(2):149–162. <https://doi.org/10.1108/DPM-07-2020-0232>
- Doering N, Dudeck S, Elverum S et al. (2022) Improving the relationships between Indigenous rights holders and researchers in the Arctic: an invitation for change in funding and collaboration. *Environ Res Lett* 17(6):065014. <https://doi.org/10.1088/1748-9326/ac72b5>
- Funtowicz S, Ravetz J (1993) Science for the post-normal age. *Futures* 25(7):739–755. [https://doi.org/10.1016/0016-3287\(93\)90022-L](https://doi.org/10.1016/0016-3287(93)90022-L)
- Held V (2006) *The ethics of care: personal, political, and global*. Oxford University Press, Oxford
- Hilhorst D, Swartz L, Ceelen A (2021) Let’s talk about it: embedding research communication in transformative research. Available via ISS BLOG Bliss. <https://issblog.nl/2021/02/13/positioning-academia-lets-talk-about-it-embedding-research-communication-in-transformative-research/>. Accessed 5 Nov 2023
- Howard H (2016) Co-producing community and knowledge: indigenous epistemologies of engaged, ethical research in an urban context. *Engaged Scholar J: Community Engaged Res Teach Learn* 2:205–224. <https://doi.org/10.15402/esj.v2i1.207>
- Igwe PA, Madichie NO, Rugara DG (2022) Decolonising research approaches towards non-extractive research. *Qual Mark Res* 25(4):453–468. <https://doi.org/10.1108/QMR-11-2021-0135>
- Kaiser M, Gluckman P (2023) Looking at the future of transdisciplinary research. Discussion paper. Centre for Science Futures. International Science Council. Paris. <https://doi.org/10.24948/2023.05>
- Klett TC, Arnulf JK (2020) Are Chinese teams like Western teams? Indigenous management theory to leapfrog essentialist team myths. *Front Psychol* 11:17–58. <https://doi.org/10.3389/fpsyg.2020.01758>
- Kouritzin S, Nakagawa S (2018) Toward a non-extractive research ethics for transcultural, translingual research: perspectives from the coloniser and the colonised. *J Multiling Multicult Dev* 39(8):675–687. <https://doi.org/10.1080/01434632.2018.1427755>
- Kwan C, Walsh CA (2018) Ethical issues in conducting community-based participatory research: a narrative review of the literature. *Qual Rep* 23(2):369–386. <https://doi.org/10.46743/2160-3715/2018.3331>
- Macdonald M, Gringart E, Garvey D et al. (2023) Broadening academia: an epistemic shift towards relationality. *High Educ Res Dev* 42(3):649–663. <https://doi.org/10.1080/07294360.2022.2087602>
- Manzo LC, Brightbill N (2007) Toward a participatory ethics. In: Kinson S, Pain R, Kesby M (eds) *Participatory action research approaches and methods*. Routledge, New York, pp. 59–66
- Mena R, Hilhorst D (2022) Ethical considerations of disaster research in conflict-affected areas. *Disaster Prev Manag* 31(3):304–318. <https://doi.org/10.1108/DPM-03-2021-0075>
- Nakagawa S (2017) Indigenous research methodology and the indigenous academic. *Can J Nativ Stud* 37(1):95–115
- Ninomiyama MEM, Pollock NJ (2017) Reconciling community-based Indigenous research and academic practices: knowing principles is not always enough. *Soc Sci Med* 172:28–36. <https://doi.org/10.1016/j.socscimed.2016.11.007>
- O’Sullivan S, Desmond E, Buckley M (2023) The ethics of engagement and representation in community-based participatory research. *Ethics Soc Welf* 17(2):159–174. <https://doi.org/10.1080/17496535.2023.2211756>
- OECD (2020) *Addressing societal challenges using transdisciplinary research*. OECD Science, Technology and Industry Policy Papers, No. 88, OECD Publishing, Paris. <https://doi.org/10.1787/0ca0ca45-en>
- Pickering L, Kara H (2017) Presenting and representing others: towards an ethics of engagement. *Int J Soc Res Methodol* 20(3):299–309. <https://doi.org/10.1080/13645579.2017.1287875>
- Roos R (forthcoming) The role of frames in shaping the representation of local knowledge and concerns in scientific texts. *Front Clim*
- Rossmann GB, Rallis SF (2010) Everyday ethics: reflections on practice. *Int J Qual Stud Educ* 23(4):379–391. <https://doi.org/10.1080/09518398.2010.492813>
- Schaffer MA (2009) A virtue ethics guide to best practices for community-based participatory research. *Prog Community Health Partnerships: Res Educ Action* 3(1):83–90. <https://doi.org/10.1353/cpr.0.0053>
- UNESCO (2022) *Knowledge-driven actions: transforming higher education for global sustainability*. Report by the UNESCO Independent Expert Group on the Universities and the 2030 Agenda. Available via <https://unesdoc.unesco.org/ark:/48223/pf0000380519>. Accessed 25 Oct 2023
- Von Unger H (2021) Ethical reflexivity as research practice. *Hist Soc Res* 46(2):186–204. <https://doi.org/10.12759/hsr.46.2021.2.186-204>
- Wilson D, Mikahere-Hall A, Sherwood J (2022) Using indigenous Kaupapa Maori research methodology with constructivist grounded theory: generating a theoretical explanation of indigenous women’s realities. *Int J Soc Res Methodol* 25(3):375–390. <https://doi.org/10.1080/13645579.2021.1897756>
- Wilson E, Kenny A, Dickson-Swift V (2018) Ethical challenges in community-based participatory research: a scoping review. *Qual Health Res* 28(2):189–199. <https://doi.org/10.1177/1049732317690721>

Acknowledgements

This work was conducted as part of the SeMPER-Arctic project (Sense Making, Place Attachment and Extended Networks as Sources of Resilience in the Arctic), a research project that received a grant as part of the Belmont Forum called “Arctic Resilience” (2019) for which the author’s work was funded by the Dutch Research Council under project number ALWPP.1. I acknowledge the support of the wider international SeMPER-Arctic project team for creating the conditions for writing this article and providing an inspiring and supportive academic environment. I am grateful to Joy Burrough-Boenisch for linguistic and stylistic improvements.

Author contributions

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

Funding

Open access funding provided by University of Bergen.

Competing interests

The author declares no competing interests.

Ethical approval

This study was performed in compliance with Semper Arctic’s Data Management Plan that was approved by the data management officer of the faculty of Geosciences of Utrecht University and by the Netherlands Organisation for Scientific Research (NWO) (15 June 2020). Utrecht University’s Ethics and Privacy Quick Scan for research projects involving human participants of the interview procedure and protocol confirmed that all ethics requirements for recruitment, anonymisation, and consent procedures were met satisfactorily (3 May 2022). Approval was granted by the Science-Geo Ethics Review Board (SG ERB) of Utrecht University (Review Geo S-24.002R).

Informed consent

Informed consent to participate in this study was granted by all participants.


Additional information

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1057/s41599-024-02942-5>.

Correspondence and requests for materials should be addressed to Roxana Roos.

Reprints and permission information is available at <http://www.nature.com/reprints>

Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

 **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2024