Humanitarian and Developmental Research Engagement during COVID-19: A Remote Research Approach

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ABSTRACT

Background: Floods and storms are the most common natural hazards. Communities in remote, riparian areas are the most vulnerable in such disasters, particularly when local populations lack reliable energy and early warning systems for hazard response. Our study will investigate energy and flood resilience issues in such communities and use remote methods to enable research continuity in intra and post-pandemic contexts.

Methods/Design: A two-round Delphi process will be used to interview 16 participants from Nepal and Greece to understand their priorities and preferred solutions for energy and flood resilience issues. In Round One we aim to understand the current capabilities and vulnerabilities of our focus communities in these areas. In Round Two, we seek feedback on potential options that are either market-available/evidence-informed solutions or co-developed conceptual systems. Remotely deployed semi-structured interviews are the principal method for both rounds. The Round Two structured comparative review also employs choice-based conjoint analysis and SCORE analysis.

Discussion: By collecting information from both professionals and non-experts, we aim to understand what options are perceived as reliable, realistic and appropriate for flood-prone communities. The remote research design enables continuity and community access to development-focused research and its outputs, and a flexible, cost-effective approach for researchers and partner organizations.

Keywords: Delphi method, choice-based conjoint analysis, SCORE analysis, humanitarian engineering, sustainable development, renewable energy, flood

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1. Background

1.1 Introduction to the literature

Water-based disasters such as floods and storms are the most frequent types of natural disasters (CRED, 2020). They affect the highest number of people worldwide, particularly in riparian settlements where early warning systems and energy generation and/or distribution infrastructures are limited or poorly developed (CRED, 2020; Wahlstrom & Guha-Sapir, 2015). Reliable and sufficient energy supply drive increases in community capability, including sustainable development (Howells et al., 2017), and disaster resilience (Phillips, 2017). Energy insufficiency (including interruption and supply limits) is a common issue in remote communities in both low and high-income countries (Howells et al., 2017). Off-grid renewable energy systems such as small-scale hydropower generators and solar energy panels offer a solution, especially if linked with localized early warnings (Schismenos et al., 2020, 2021a).

Despite the progress in research and product variations for energy generation and flood early warning at the local level, such systems are not always efficient and sustainable for a range of reasons (technical, social, economic, administrative, etc.) (Ikejemba et al., 2017). As a result, they frequently fail over time as they cannot support (or be supported by) end-users in a realistic manner (Schismenos et al., 2021c). The need for robust design, implementation and maintenance of such systems is critical. The integration of these functions could provide greater advantages to local end-users, particularly where these systems are co-developed and managed by community members to address priority needs in their contexts (e.g. reliable, sustainable energy including emergency power). Based upon these needs, the study will draw upon technical and community engagement models, and theoretical frameworks to structure the engagement process with a panel of community and professional stakeholders, determine key needs in the communities of interest (remote, riparian communities) and potential development and management options that may be available to such communities.

1.2 Community participation and remote research

Community engagement in humanitarian and developmental research is important as it increases plurality in thinking, fairness in decision-making and trust between involved stakeholders. Moreover, it has an important role in community self-determination as it supports access to, and ownership of, research processes and their products, such as social programs or physical assets (Georgeou & Hawksley, 2020; Schismenos et al., 2021b). In this study, the active participation of community members in the processes is essential for the detailed analysis and acceptance of the suggested solution. Participatory Action Research (PAR) is a suitable approach to support the engagement and active participation of a range community stakeholders (e.g. community members and professionals) regarding research-related issues, and who represent a diversity of views regarding their community and its needs. This method typically employs a three-phase process: (i) ideation information development, (ii) ideation process development and (iii) co-design development (Hur, Cassidy & Thomas, 2013). The PAR is commonly used to evaluate community needs within local contexts and systems (Gautam & Phaiju, 2013; Lebel et al., 2019).

A key limitation of PAR is where physical access to communities is restricted, such as interaction with remote communities or during crises such as the COVID-19 pandemic. As a result of COVID-19 restrictions, research studies in many fields, including humanitarian, engineering, environmental and clinical, have been postponed, or otherwise altered, often in ways that diminished or excluded community participation (Schneider et al., 2020). International research projects involving sites in more than one country have been particularly impacted. Remote research methods have been increasingly deployed during this period to permit research continuity and community access, albeit this likely reflects the acceleration of an existing trend regarding such approaches (Richardson, Godfrey & Walklate, 2021). These frameworks are appropriate for our study and will allow us to examine how community and professional stakeholders (hereinafter, panel members) of communities vulnerable to natural hazards perceive the local establishment of a renewable energy source and its uses.

This article details how we will assess community and professional perceptions of energy needs and flood hazard preparedness at the local level including possible applications with existing energy generation and flood early warning, and conceptual systems that could integrate these functions. The views of panel members will be gathered remotely, using the Delphi method - a structured communication technique that can be used for needs/capability assessments and process development including potential community and technical solutions. Our methodology presents a pragmatic approach that can be adopted by other humanitarian and development researchers unable to conduct face-to-face interviews and in-situ field-work due to pandemics and other restrictions to physical access.

2. Methods/Design

2.1 Aims

Our study aims to determine what are the priority energy and flood resilience needs in remote, riparian communities in low and high-income countries. To achieve that, we will investigate whether market available energy and flood warning systems or conceptual prototypes designed for local-level applications are an acceptable solution for the panel members. An additional aim is to confirm whether remote research is an acceptable approach to conduct interviews in the context of pandemic restrictions. Positive findings can contribute to humanitarian, development, engineering, energy generation/distribution, and flood resilience programs that can respectively improve and save lives, especially among vulnerable groups such as the elderly and those with mobility issues which affect timely evacuation. This research could also enhance collaborations between community groups and professionals, particularly in locations or conditions where a physical interaction is not realistic.

2.2 Research questions

Research questions were drawn in five discrete areas of the study:

(i) Evidence-based literature (literature review, including 'grey' literature)

- What does the available literature indicate are the elements of efficient and sustainable off grid renewable energy systems within remote, riparian communities experiencing energy insufficiency and flood risks?
- What does the available literature indicate are the elements of efficient and sustainable localized flood early warning systems for floods in such communities?
- Are hybrid systems detailed in the literature?

(ii) Community energy needs

- What do panel members perceive to be the current status regarding electrical power supply under normal and extreme (flood) conditions?
- Is renewable energy nominated as a preferred energy source? - What types and preferred features?

(iii) Community flood-hazard needs

- What do panel members perceive to be key vulnerabilities regarding flood risk and community warning/response?

- Is flood early warning nominated as a priority for dealing with floods? - What types and preferred features?

(iv) Preferred community assets

- What do panel members perceive would be the most useful asset for their community – What system type and attributes based on strengths, challenges, opportunities, responses and effectiveness?
- What are panel members perceptions of a conceptual system which combines renewable energy generation and flood warning services?

(v) Remote research

- What are panel member perceptions of remote research regarding participation, understanding, access, and refinement?

2.3 Selection of community sites

Our focus communities and sites will be:

(i) Dhuskun village, Tripura Sundari Rural Municipality Ward no.3, Sindhupalchowk District, Bagmati Province, and Sunkoshi River in Nepal, and

(ii) Aggitis village, Drama Regional Unit, Eastern Macedonia and Thrace Region, and Aggitis River in Greece

These proposed sites have been identified as meeting the study selection criteria. Specifically, they are small, remote, riparian communities, with poor/no flood early warning mechanisms, and which experience power insufficiency, particularly during extreme weather events. Their local economy is dependent on agriculture and ecotourism, income sources that are highly affected by floods and power outages. While this research has greater applications in community development and disaster resilience in low-income countries where flood impacts are more intensified, the recent floods in Germany[1], the United States[2], and China[3] showed that flood extremes can affect everyone. Accurate early warning and continuous energy generation under any conditions are essential to support remote communities who are often incapable of evacuating in time. Thus, this study includes communities in both low and high-income countries, and this will allow a comparison of community perspectives in these regions.

2.4 Selection of methods

The study will examine community perceptions of available off-grid renewable energy and early warning systems, and conceptual hybrid systems. Based on the findings of both peer-reviewed and 'grey' literature, a review process with panel members from a range of demographic and socio-economic backgrounds will occur using the Delphi method. The Delphi method typically takes place via several rounds of survey-based review and feedback. Outcomes may include improved processes, prototypes, optimized technologies, or determinations of non-viability (Brent & Kruger, 2009; Dick, 1991; Helmer-Hirschberg, 1967). In our study, this will occur in two rounds of a survey following an individual work format (participants work individually, without discussion).

[1] https://www.theguardian.com/world/2021/jul/19/german-villages-could-be-left-with-no-drinking-water-after-floods

[2] https://www.nytimes.com/2021/09/03/nyregion/nyc-ida.html

[3] https://www.bbc.com/news/world-asia-china-57861067

The main data collection method for both rounds will be online semi-structured interviews. In Round Two, this will be augmented with two structured review formats; choice-based conjoint analysis (CBCA) and strengths, challenges, opportunities, responses, and effectiveness (SCORE) analysis. These frameworks will support a systematic, comparative analysis across different options, including single market-available/evidence-informed solutions, their combination, and the co-development of conceptual prototypes (via CBCA), and detail any strengths, challenges, opportunities (or risks), responses, and effectiveness of the preferred option (via SCORE analysis). The thematic analysis will then be used for data analysis. These methods and the rationale regarding their selection are detailed below.

Delphi method

The Delphi method is commonly used in needs assessments and prototype development studies. It provides equal access and contribution opportunities to all participants (Brent & Kruger, 2009; Dick, 1991). Through this method, disagreements are used for pooled information and shared understanding (Dick, 1991). It does not require face-to-face interaction and is often conducted remotely (Dick, 1991), making it a suitable method for community research during pandemics and other contexts affecting community access and safety. It has been found to be an efficient strategy for community consensus regarding priority needs and development proposals (Brent & Kruger, 2009; Helmer-Hirschberg, 1967), and is a preferred method compared to other decision-making techniques, such as multi-voting, as it limits the range of responses and results in 'close to expert consensus' (Helmer-Hirschberg, 1967).

In our study, a two-round interview is considered appropriate to order to understand community needs and then assess processes and resources that may address these needs. Round One aims to identify community vulnerabilities and capabilities through local stakeholders' perceptions. Round Two is informed by Round One and suggests appropriate humanitarian and developmental interventions that are acceptable to local communities. This approach provides a suitable pathway for researchers to acquire the necessary technological, humanitarian, social and environmental knowledge 'through the eyes' of local participants – a step that is often absent in engineering-based solutions.

For the panel composition, we suggest a mix of both professionals and non-experts who are familiar with their community and local needs. We propose the size of 16 participants (eight per community) for the panel as this is an acceptable number of participants for projects using the Delphi method. Ogbeifun et al. (2016) state that the size of a Delphi panel can be as small as three members, depending on the topic and expertise of panel members. In health applications, size can be as low as four panel members (Cantrill, Sibbald & Buetow 1996, p. 69), while other studies have presented data from several Delphi studies which involve participant panels with three or four members (Skulmoski, Hartman & Krahn 2007). It should be highlighted that the Delphi method has received unfounded criticism due to its panel size, as it is often confused with conventional qualitative surveys (Mullen, 2003).

Consistent with previous research the selection of participants should be based on their familiarity with their community, and expertise. Other studies using the Delphi method indicate that selecting participants who are knowledgeable about the focal topic is more critical than the number of panelists (Cantrill, Sibbald & Buetow, 1996; Grisham, 2009; Mullen, 2003). In the current study, energy insufficiency and flood risk in the proposed communities are the issues of focal interest.

While the Delphi method usually involves groups, it is also recommended for one-to-one interviews and questionaries (Skulmoski, Hartman & Krahn, 2007). Van Dijk (1990) investigated different methodological approaches to using Delphi including individual interviews, surveys and focus groups. They found that individual interviews offer important advantages for both participants and researchers, including the ease of oral expression compared to written expression, and the freedom to express one's own view, in a manner that is not disturbed, interrupted, or changed by others (as in the group interview). Importantly, individual online interviews provide safety for the participants during the COVID-19 pandemic, thus, we will be using them in this study.

Remote research

Remote research involves any research process in which the primary researchers and participants do not physically interact (in person) but do so digitally, via videoconferencing, emails, phones and other electronic devices. These media have multiple benefits, allowing researchers to determine participants' perceptions, activities and behaviors safely, through distance, and often in manner convenient to both parties. In order to increase the validity of the contextual information (e.g. in an interview), researchers often prefer a live interaction with study participants, an approach known as time-aware research (Asjes, 2014). The rapid development of videoconferencing and cell phone technology permits cost-effective access and, importantly, has been shown to be acceptable to participants for these purposes (Asjes, 2014; Richardson, Godfrey & Walklate, 2021). In our study, while most research activities (interviews with panel members, project meetings, etc.) will be conducted remotely, some lab and field testing that requires real-time data and is necessary (e.g. river monitoring under different seasonal conditions, hydrogeological analysis) will be taken in-situ with the assistance of local partners.

Semi-structured interviews

Semi-structured interviews are a common method of data collection in qualitative studies as they provide in-depth exploration of a topic, as well as the latitude to explore related issues that emerge in the course of the interview which can further add to our depth of understanding. They also help understand the 'reality' of the interviewees. In societies like Nepal, were status and gender play a major role in social relations, a group discussion could affect results (e.g. female participants may not express their opinions openly, if men participate; local residents may not disagree with professionals or other participants higher in hierarchy). In this sense, individual, open interviews can support genuine plurality in opinions and provide fair and open expression to all participants (Georgeou & Hawksley, 2020).

Choice-based conjoint analysis

Choice-based conjoint analysis, also known as discrete choice experiment, is suggested in this study (Round Two) because it helps understand how participants value individual options, products and services based on different attributes including features, functions and advantages. The goal of CBCA is to determine which combination of limited number of attributes is the most influential on respondent choice or decision-making. The combination of limited number of attributes is usually presented in either a 'table' or a 'catalogue' format (Mansuy, Verlinde, & Macharis, 2020; Tanujaya et al., 2020). Participants must choose only one option based on preferable attributes, typically by answering a question similar to '*if these were the only options, which one would you prefer?*'.

The CBCA is used in many of the social, health, and applied sciences including marketing, product management, healthcare, and operations research. Lebeau et al. (2012) used this method to estimate the market potential for hybrid electric vehicles in Flanders, Belgium, and to formulate recommendations for the further deployment of electric vehicles. Mansuy, Verlinde, & Macharis (2020) used this method to understand the preference of consumers for electronic and electrical collection services - focusing on mobile phones, coffee machines and washing machines as examples. Lee, Huh & Yoo (2018) used CBCA to investigate the value given by people to the attributes of the installation of small-scale solar power plants in South

Korea. Tanujaya et al. (2020) used this method to understand and measure the opinion of the public and local inhabitants living near renewable energy projects in South Korea.

This method presents many strengths for studies with similar research topics to ours. It is used frequently in testing customer acceptance of new product designs/prototypes (Lee, Huh & Yoo, 2018). It is suitable for gathering information for the optimization of existing or developing products (Mansuy, Verlinde & Macharis, 2020; Tanujaya et al., 2020). It is a preferred technique for cross-country and cross-community analysis (Ebers et al., 2017; Tanujaya et al., 2020), and there is a growing interest in using CBCA in health policy and planning studies in low-income countries (Mangham, Hanson & McPake, 2009; Spilker et al., 2020).

However, the CBCA may present some weaknesses such as the fact that it is primarily found in studies involving participants from high-income countries. According to Mangham, Hanson & McPake (2009) the reasons for the limited use of CBCA in low-income countries potentially relate to different cultural settings, language barriers between participants and researchers, low level of literacy, and unfamiliarity with research techniques. To address the challenges noted, Mangham, Hanson & McPake (2009) suggest pre-testing the CBCA-based questionnaires, and participant selection where education and socio-cultural effects are minimized. In our study we will address these potential issues by including two communities (Dhuskun and Aggitis villages) with similar contextual characteristics (riparian, remote) and vulnerabilities (energy insufficiency during weather extremes, and high flood risk). We will also address potential socio-cultural limitations/variations by:

(i) conducting interviews in local languages (i.e. Nepali and Greek) to minimize any language barriers,
(ii) selecting participants who have the educational/occupational background necessary to respond to our question sets (basic knowledge or higher), and providing educational materials prior the interviews (i.e. a task orientation module)
(iii) preparing our Round Two questions based on participants' responses from previous round and include an orientation module before the interviews; these action increase participants' familiarity with the topic and process.
(iv) validating Round One and Two interview question sets with local residents, professionals, and a psychometrician before we interview our panel members (Burton & Mazerolle, 2011; Collingridge, 2021).

Given this approach, we suggest the CBCA which, compared to other similar techniques such as rating-based conjoint, best-worst conjoint, and ranking-based conjoint analyses better matches with our research design.

SCORE analysis

The SCORE analysis is suggested in Round Two as it evaluates decisions, technology, and other entities of concern on five main variables corresponding with its identifying acronym. It is mainly used in business and organization related studies. Despite being a relatively new model, and not as popular as SWOT (strengths, weaknesses, opportunities, and threats) analysis, we select this method for the following reasons:

- According to Njoh (2016), SWOT has received criticism that contains pejorative labels [W (weakness) implies inadequacy; T (threats) implies a sense of danger]
- Njoh et al. (2019) argued that SWOT is rather too simplistic and does not add significant value for analytic purposes
- Njoh et al. (2019) successfully used this method in a community-based solar energy project

We should note that SCORE, SWOT, and NOISE (needs, opportunities, improvements, strengths, and exceptions) are used in decision-making, business and energy related studies. However, in our study we suggest the use of SCORE because we find this method as the most appropriate to provide a detailed review of the attributes in our options.

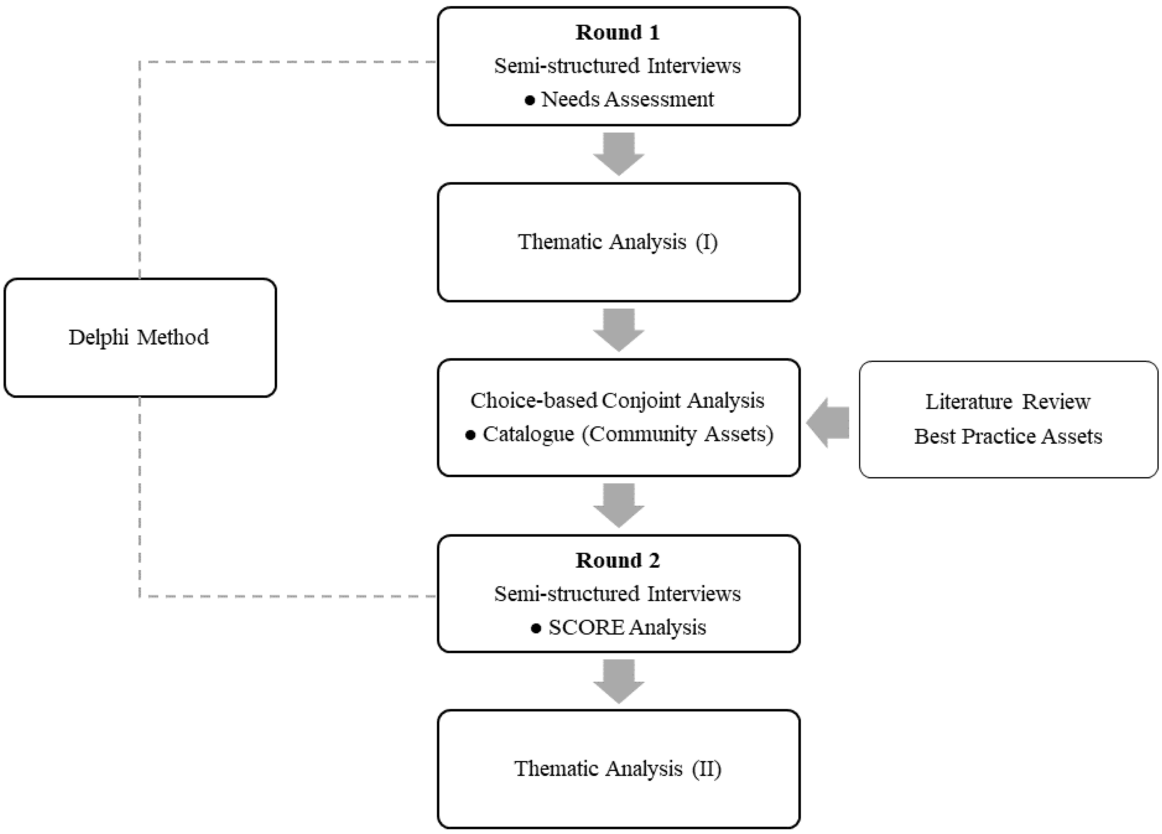
Thematic Analysis

We consider the Braun & Clarke's (2014) approach to thematic analysis as the most appropriate method to analyze data derived from the Delphi process and semi-structured interviews. This approach allows in-depth exploration of the perceptions of community and professional stakeholders. It is also suited to research in areas which have limited theoretical and empirical background.

2.5 Study design

A two-round semi-structured interview using the Delphi method, and delivered remotely, is considered to be the most appropriate approach to engaging panel members in the context of the pandemic and to address our research questions. This approach is augmented with review and decision-support frameworks, specifically, CBCA and SCORE analysis. Thematic analysis will be used to analyze the interview data. Figure 1 visualizes our study design.

Figure 1. Visualization of study design.



2.5.1 Project steering and risk management committee

A project steering committee with oversight of the research plan, its deployment, review, and risk assessment and management aspects will be made up of representatives of three organization:

i. Western Sydney University, School of Social Sciences - Humanitarian and Development Research initiative (HADRI) in Australia (overall responsibility),
ii. International Hellenic University, UNESCO Chair on Conservation and Ecotourism of Riparian and Deltaic Ecosystems (responsibility for the community site in Greece), and
iii. Kathmandu University, Department of Mechanical Engineering - Green Hydrogen Lab (responsibility for the community site in Nepal).

This includes the principal researcher (SS) operating remotely from Australia, as well as members in-situ in Nepal and Greece.

2.5.2 Risks during data collection

Working with committee and panel members at our respective sites, country specific protocols for COVID-safe research will be developed and regularly reviewed to ensure processes are compliant with required health practices. In addition, we will seek recommendations from panel members regarding energy and flood warning systems' features and uses in Dhuskun and Aggitis villages. The participants will provide us with their feedback. Interaction with the principal researcher (SS) will be virtual (online, one-to-one interviews). Should participants experience distress or anxiety in relation to the topic of floods (for example), they will be able take a break or, if they prefer, to withdraw from the research project without any consequence.

2.6 Recruitment and data collection

2.6.1 Participants

For this study, gender equality, wide age distribution, fair distribution between professionals and community stakeholders, and representation of people with disability needs will be major factors for the selection of participants. These factors guarantee plurality in opinions, as well as a wider representation of different groups within the communities (Georgeou & Hawksley, 2020).

The panel will consist of 16 members (eight from Dhuskun, and eight from Aggitis, respectively). All panel members will have specific knowledge of the selected site and community needs.

<u>General categories/roles of panel members:</u>

- Resident of the selected community (e.g. local business owner, homemaker, retired person);
- Academic with knowledge of the selected community;
- Emergency management professional/representative (e.g. civil protection authority, fire/police department);
- Technology expert

<u>Inclusion criteria</u>

- Knowledge of local community (either Dhuskun or Aggitis).
- 'Fitting' in one of the roles described above (based on experience, occupation, etc.)

Exclusion criteria

- Unfamiliarity with the local communities, sites and needs.
- People who are not adults

2.6.2 Recruitment

Our partners at International Hellenic University and Kathmandu University will recommend a list of individuals who would be appropriate members for our research panel, and who would be interested in participating as panel members. The principal researcher (SS) will email each person and provide them with information about the research (invitation email and participation information sheet). If needed, the researchers will have further conversations (via email or teleconferencing) with potential participants in order to provide more about the research as required.

The potential participants will have two weeks to consider whether they would like to participate in the research. When a potential participant shows interest, the researchers will be responsible for screening them. The screening will be either online (interview or email) or via the phone. This will take place before consent is requested. The potential participants will be notified of the decision (accepted or rejected) by the principal researcher (SS) within a two-week period after they have expressed their interest in participating in the research. If accepted, a consent form will be sent to them to sign.

2.6.3 Reimbursements and/or tokens policy

For this study, no reimbursements will be offered. It is important participation be voluntary (i.e., a contribution to local community benefits). It should be noted that, for the participants in Nepal, as there is limited internet coverage and access to a computer, we will cover reasonable expenses incurred due to participation (e.g., transport to Kathmandu University campus where there is a computer and internet access which enable participation in the research. The expenses could also cover refreshments and a meal). For the participants in Greece, no such expenses are required, as the participants will be interviewed at their own home/office (via teleconferencing or phone).

2.6.4 Privacy protection

In this study, basic identifying and demographic information will be gathered during the recruitment process and at the point of consent [name, age, gender, work, any primary carer role, marital and family status (i.e. number of children), familiarity with specific site (yes/no), some knowledge/awareness of local renewable energy sources (yes/no), some knowledge/awareness of usual flood warnings (yes/no)]. All of this information will remain confidential, but is necessary to the analysis, as it informs our understanding of participants' views and concerns (e.g. carer roles with children could be at higher risk during flood hazard events). During the data analysis, a unique code (pseudonym) will be generated to identify specific individuals. Thereafter, all data outputs and any reporting of the data relating to individuals will be in a de-identified form.

2.6.5 Data collection

The panel members will participate in two rounds of interviews, both of which include an initial orientation. Table 1 presents a general description of each round.

Table 1. Round One and Two description

ROUND 1	ROUND 2
Orientation	
Here, the principal researcher (SS) will provide initial orientation to the project: • the focus of the research • the topics it will cover • the requirements of panel members • how their insights about local community needs and capabilities can assist the research	Here, the principal researcher (SS) will present a 'catalogue' of market available/evidence-informed, and conceptual options regarding: • panel solutions identified in Round 1 • potentially applicable market or technical solutions
Semi-structured interviews (online 'one-to-one' questions)	
The purpose of this section is to gather information regarding: • perceptions of energy reliability • satisfaction with current energy access • perceived need for other energy solutions/options including renewable energy • flood risks and local site conditions (e.g. areas of higher flood risk, historic events) • understanding of current flood warning approach and capabilities • perceived need for improved local flood response/warning systems • perceptions of other needs greater than energy/flood issues (e.g. COVID-19 response)	From the 'catalogue', panel members will be asked: • to identify the most useful and feasible option for their community (only one option, subject to panel's perception of greater community need) • to provide further feedback on the selected option via SCORE analysis • other relevant perceptions of the preferred option (i.e. there is interest/willingness to participate and trial the option in their community) • whether a combination of systems or a hybrid system could feasibly support identified community energy and flood-related needs

2.6.5 Follow up

Follow up with participants after data collection will be conducted using two approaches. Firstly, we will send a letter (newsletter) that provides a summary of the study and its key findings. A second letter and/or email will alert interested participants to related publications, conference papers, etc.

4. Discussion

This paper details a humanitarian and development research design that addresses restrictions to community research engagement that have occurred due to the COVID-19 pandemic. The research aims to explore the perceptions of community and professional stakeholders regarding energy availability and flood hazard risks in Dhuskun and Aggitis. It also investigates what options may be feasible and acceptable in these communities (i.e. those that could be trailed or further developed in local contexts) in order to identify potential solutions with ecological validity from informed local sources.

We will apply the Delphi method (two rounds) in data collection process, and link our research with frameworks that focus on PAR and remote research. In Round Two we will use the CBCA, and SCORE analysis to evaluate the feasibility of market-available and evidence informed options, as well as the development of conceptual systems. Lastly, we will employ thematic analysis to derive our primary data from the completed interviews. The combination of methods is an appropriate way to support our research in energy and flood disaster management remotely. Importantly, our research design is flexible, cost-effective, and could guide other researchers in the field who face similar issues.

Due to the COVID-19 restrictions, visits to Dhuskun and Aggitis villages are only possible though our local partners in Nepal and Greece. These visits include the seeking of panel members, atmospheric and hydrological data collection (e.g. water flow and level data, precipitation data, etc.), visits to local energy generation and/or distribution plants, etc.

Declarations

Competing interests: The authors declare that they have no competing interests.

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Ethics approval: Ethical approval for this research has been granted by the Western Sydney University Human Research Ethics Committee (HREC Approval Number: H14269). This research meets the requirements of the National Statement on Ethical Conduct in Human Research 2007 (Updated 2018).

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