



UNIVERSITY OF GOTHENBURG

Disaster preparedness on hurricanes in Negril, Jamaica

“Preparedness is key, you know, in all cases, preparedness is key.”

- Respondent 1

Sofie Eriksson

Bachelor thesis in Global Studies

University of Gothenburg, Institution of Global Studies

Spring term 2024

Supervisor: Dr Bart Klem

Abstract

Small Island Developing States (SIDS) are exacerbated vulnerable to natural hazards and impacts of climate change due to their particular cultural, socioeconomic, historical and geographic features. Despite evidence that disaster preparedness can reduce the consequences of hazards, preparedness is low in most populations. The aim of this thesis is to understand practices of preparedness, expectations of communication and perceptions of governmental adaptive measures in the community of Negril, Jamaica. Through the conceptual framework of community resilience and aspects of actual preparedness, intentions to prepare and perceived preparedness this study contributes to the understanding of a specific cultural and geographic context of hurricane preparedness. This study has a bottom-up approach guided by three research questions answered by empirical data collected through semi-structured interviews. The data was transcribed, coded and analyzed through a thematic analysis. Findings show that the community performed several actions of actual preparedness. Social networks are emphasized as the community plays an important role in spreading information. However, concerns are illustrated in questioning the effectiveness of disaster communication and management. Further findings illustrate short-term measures of prioritizing economic interests above environmental issues. Several suggestions of improvements to increase community resilience are presented and discussed. The study highlights the importance of including different perspectives to recognize and understand vulnerabilities of the local context to achieve effective disaster preparedness implementation.

Keywords: Vulnerability, Community resilience, Adaptation, Natural Hazards, Disaster Preparedness, Hurricane Preparedness, Bottom-up approach, Jamaica

Acknowledgements

I would like to express my deepest gratitude to the people in Negril who participated in this research, dedicated their time and provided me with important perspectives and meaningful conversations. Thanks to your willingness to share experiences, knowledge and thoughts this study has been enriched with empirical insights. Without your involvement, this study would not have been possible. I am thankful to the generous and kind persons who helped me find and initiate contact with the participants of this study. You all have contributed to my knowledge, experiences and heartwarming time in Jamaica for which I am truly grateful. I would like to thank my supervisor Dr. Bart Klem for your time, guidance and helpfulness in finishing this thesis. Last but not least I am grateful to my family and friends for your encouragement and support throughout this process.

Table of contents

Abstract.....	1
Acknowledgements.....	2
1. Introduction.....	4
1.1 Background.....	5
1.2 Problem formulation.....	6
1.3 Aim and research questions.....	7
1.4 Delimitations.....	7
2. Literature review and conceptual framework.....	8
2.1 Literature review.....	8
2.2 Conceptual framework.....	11
2.2.1 Definitions of Vulnerability, Adaptation and Resilience.....	12
2.2.2 Disaster preparedness.....	12
2.2.3 Community resilience.....	13
3. Methodology.....	14
3.1 Method of data collection.....	15
3.2 Method of data analysis.....	16
3.3 Limitations.....	17
3.4 Sampling.....	18
3.5 Ethical considerations.....	19
4. Results and analysis.....	21
4.1 What are the practices of hurricane preparedness by the people in Negril?....	21
4.1.1 Experiences of previous hurricanes.....	21
4.1.2 Practices of preparedness.....	23
4.2 What kind of communication do people expect in the event of a hurricane?..	26
4.2.1 Communication.....	26
4.2.2 Community and vulnerability.....	29
4.3 What perceptions does the community have on governmental adaptive measures?.....	31
4.3.1 Infrastructure and priorities.....	31
4.3.2 Environmental aspects.....	34
5. Concluding discussion.....	36
6. References.....	40
7. Appendix: Interview guide.....	44
7.1 Questions for local people.....	44
7.2 Questions for organization and agency.....	45

1. Introduction

Small Island Developing States (SIDS) are more vulnerable to natural hazards and impacts of climate change due to their particular features which separate them from other developing countries (Robinson, 2018, p. 79-81). SIDS are characterized by geographical location, physical size, extreme economic openness, low adaptive capacity and proneness to natural disasters with a concentration of the population living along coastal zones (Lewis, 2022). The two dozen island nations of 40 million people that constitute the Caribbean region are affected in several ways by climate change where vulnerability to natural disasters caused by climate change is a critical challenge (Bueno et.al., 2008, p. 2). Climate change impacts such as rising sea levels, increasing hurricane intensity and higher temperatures have economic, social and ecological consequences which threaten lives, property and livelihoods. Higher temperatures and increasingly severe storms have devastating impacts on both tourism and infrastructure in the region. This ultimately imposes great risks for private and public economies. Also, it implies challenging social effects on employment, education, infrastructure and healthcare (Bueno et.al., 2008, p. 2).

SIDS have many similarities, for instance, natural resource dependency and isolated coastal communities (Kelman et al., 2015, p. 31). Multidimensional historical, cultural, socioeconomic and political factors influence the Caribbean region's global position. Through generations, Caribbean nations have been inherently disadvantaged due to their struggle with liberation from oppressive and exploitative structures such as the heritage of colonialism, slavery, imperial domination, neocolonialism and dependency. Moreover, the phenomenon of globalization creates an increasing interdependence across national boundaries and pressures the Caribbean region to be integrated into the emerging global society (McGregor, 2003, pp. 1-12). In many rural districts, accelerating globalization processes increase already precocious situations across the world as forces are often above regional and national regulatory structures (Wilson, 2010, p. 365). Furthermore, voices of SIDS communities have identified observations from experiences of changing climate and possible solutions from their abilities that require external help. These voices and knowledge tend to be unrecognized in the global political arena and show the importance of bottom-up approaches to acknowledge different perspectives (Kelman et al., 2015, p. 31; Gibson & Wisner, 2016, pp. 664, 676).

1.1 Background

Jamaica is located in the Caribbean and is considered a Small Island Developing State due to its characteristics. According to Wisner et al. (2003, pp 78-79), there are clear links between vulnerability and pressures of the global economy. In the 1980s-1990s, Jamaica's government wanted to reduce its large foreign debt and intervened in the financial sector by implementing structural adjustment policies. For example, it resulted in high mortgages and due to the government's high import duty costs of construction materials and rent control, residential construction quality and quantity declined rapidly. Costs became high for property owners because they ignored maintenance of the properties whereas builders tried to keep the costs of constructions low to make any profit. This made safety suffer and increased the population's immediate vulnerability to natural hazards (ibid). In 1988 Hurricane Gilbert damaged more than 100,000 low-income households, and more than 28,000 poor households were destroyed or severely damaged which resulted in costs of 558 million US dollars. An estimated 50,000 children under the age of four suffered from malnutrition in Jamaica preceding the years of Hurricane Gilbert in 1988 and Hugo in 1989. Budget cuts in the educational and healthcare sectors as well as the government's own mitigation and preparedness programmes were due to economic constraints. Moreover, part of the foreign debt burden that resulted in the governmental implementation of structural programmes was due to loans to pay for previous hurricane damages (Wisner et al., 2003, pp 78-79). The risks of climate change will impose increased exposure to vulnerabilities in many communities where disasters have severe impacts on people's lives. The effects of a disaster are not equally distributed among different societal groups which enlightens vulnerabilities of a society. This makes disaster management and preparedness important to improve resilience where the inclusion of local perceptions and practices is important to achieve effective and sufficient policy-making (Wisner et. al., 2003, p. 49; Lavell et al., 2012, p. 46).

Since the 1980s Jamaica has had one government agency that is responsible for disaster management which is the Office of Disaster Preparedness and Emergency Management (ODPEM). The agency is responsible for taking action to reduce the impact of disasters and emergencies on the Jamaican population and the economy through integrated management systems. It has a coordinating role in executing relief operations and emergency response in disaster events (Government of Jamaica, 2024). Also, it aims to maintain a national Public Education and Awareness Programme where the main objectives are to encourage public

interest and participation in disaster management and ensure the population has the necessary information to protect lives and property. Through events such as lectures for hotels and government offices and celebration- and awareness days for the public and in schools, the programmes promote the value of prevention, mitigation and preparedness (Carby, 2005). Located in the coastal area in the parish of Westmoreland on the west coast of Jamaica, the community of Negril is in a hurricane-prone geographical position. Negril is known for the Seven Mile beach and clear water that attracts thousands of tourists every year. The vulnerabilities of being a hurricane-prone coastal area and depending on tourism require adaptive measures to mitigate the impacts of climate change (Robinson, 2018, p. 79-81). The tourist sector attracts investors and developers to build hotels located on the beach which are vulnerable to hurricanes and storms. Furthermore, the loss of tourism is also a socioeconomic vulnerability to the community itself.

1.2 Problem formulation

The event of natural- and other hazards becomes a disaster when it is combined with vulnerability in terms of societal factors. Despite evidence that loss of life and property can be reduced by disaster preparedness, preparedness is low in most populations (DeYoung & Peters, 2016, p. 250). To understand the potential lack of preparedness, it is important to acknowledge mechanisms behind social-ecological resilience to natural disasters as uncertain hazards increase in frequency in the face of climate change (Gómez-Baggethun et. al., 2012, p. 648). Understanding vulnerabilities and considering the local context is an important aspect of achieving effective disaster preparedness. Disaster laws and policies must be centered around equity and vulnerability to identify and leverage structural solutions enabling more equitable and resilient societies (Raju et.al., 2022, pp. 1-2). The community of Negril in Jamaica is in a hurricane-prone position in the sense that it is located in a coastal area. A seven-mile-long beach stretches along the community where buildings such as hotels and residences are constructed on the beach creating further vulnerabilities. The tourist sector is a big economic interest which is also vulnerable to natural hazard threats such as hurricanes. Lei et al. (2014, p. 625) state that there is a need for empirical case studies related to vulnerability, resilience and adaptation to provide insights for decision-making within the context of climate change. Also, as voices and knowledge of SIDS communities related to climate change tend to be unrecognized (Kelman et al., 2015, p. 31), this study aims to contribute with an empirical bottom-up case study that highlights voices from a SIDS

community. This is by focusing on understanding preparedness through the lens of community resilience and governmental adaptive measures in the local context of Negril, which could contribute to disaster planning and policy-making in the area.

1.3 Aim and research questions

Even though disaster preparedness improves resilience towards natural hazards, which are increasing in the face of climate change, most populations lack efficient preparedness. This thesis aims to understand practices of preparedness, expectations of communication and perceptions of governmental adaptive measures in the local area of Negril. Through the lens of the concepts of community resilience and different aspects of preparedness, this study contributes to the understanding of a specific cultural context in the area of hurricane preparedness. The paper will answer the following research questions:

- What are the practices of hurricane preparedness by people in Negril?
- What kind of communication do people expect in the event of a hurricane?
- What perceptions does the community have on governmental adaptive measures?

1.4 Delimitations

The geographic position and complex Caribbean history of colonialism and dependence affect the region's position in the global structure. However, it is important to emphasize how, as Lewis (2022) states, SIDS are not homogenous as they all have cultural, social, political and economic differences. Interest in the global concepts of Small Island Developing States and Climate Change was narrowed down to hurricane preparedness in Jamaica due to its hurricane-prone position. Interest in climate-related disasters and social challenges related to SIDS comes from personal experiences of having previously lived in Jamaica for a year. Disasters have severe impacts on people's lives in different aspects of local communities. Vulnerabilities of society are revealed as disaster effects are not equally distributed among societal groups. This makes disaster management and preparedness important to improve resilience. The inclusion of local perceptions and practices is also important to achieve effective policy-making. This study further aims to contribute by providing empirical data from a specific context which can be useful to disaster planning in the area. The study was

delimited to focus on a smaller coastal area of Negril where in-depth empirical data was collected to reach the aim of analyzing local hurricane preparedness. The specific area has been affected by hurricanes and severe storms on several occasions, but not in recent years. Moreover, this study is delimited by its timeframe, geographic location, available resources and choice of method. Numerous theoretical frameworks and concepts could be used to analyze the subject of disaster preparedness, focusing on hurricanes. However, the choice of the theoretical framework was made by considering relevance and ability to analyze the themes that emerged from the results of collected data.

2. Literature review and conceptual framework

2.1 Literature review

According to Foucault, knowledge conspires with power structures and is formulated in systematic ways of speaking and thinking. Power permeates society and is understood as a game of exchange played by unequal and moving relationships that are created and indefinitely present (Axelsson & Qvarsebo, 2017, p. 16). Power creates the opportunity to shape, direct and control which can both limit and regulate as well as liberate and enable (Börjesson & Rehn, 2009). Social structures such as gender, race and class are hierarchical systems of power that benefit some and oppress others. Oppressive norms and mechanisms of social structures can normalize the oppression and marginalization of different groups (Andersson, 2020, pp. 20-25). Caribbean nations have been inherently disadvantaged due to struggles of liberation from oppressive and exploitative structures which have resulted in increased vulnerability (McGregor, 2003, pp. 1-12). Whereas many coastal areas rely on natural resources, voices and knowledge of SIDS communities related to climate change and possible solutions tend to be unrecognized (Kelman et al., 2015, p. 31). In fields such as sustainable development and climate change vulnerability is recognized to highlight power relations and provide perspectives of, for instance, marginalized and oppressed groups (Kuran et al., 2020, pp. 1-2). Some communities are more affected by disasters than others which depend on vulnerabilities and access to sufficient resources. Social and political constructions of social injustice and marginalization create structural systems of inequalities. These structures resulting in marginalization and vulnerability include power and governance where inequalities are deliberately created (Raju et al., 2022, pp. 1-2).

Historically, the field of climate change adaptation and disaster studies has undergone several paradigm shifts from focusing on post-event response to pre-event mitigation and later emphasizing resilience building instead of vulnerability reduction. These paradigm shifts show limits in which the field mutates from problems and approaches in specific times and places (Grove, 2013, pp. 612-614). The concepts of vulnerability, adaptation and resilience were born in the discourse of the Cold War where neoliberal economics, liberal democracy and globalization were seen as winners of the ideological contest of describing societies and their environments. The relation between disaster management and the risks that people face, due to different reasons of structural inequalities and vulnerability, was given attention in the 1980s. Including perspectives from Marxist political economies that claimed disasters resulted from uneven economic relations rather than exceptional disrupting events in otherwise stable everyday life. This recognition enabled a switch in disaster management to address factors of under-development related to structural inequalities to build resilience to disasters, resulting in a more bottom-up view (Ayers et al., 2013, p. 200; Grove, 2013, pp. 612-614).

Following the downfall of the Soviet Union, the non-western regions were described in a more positive way than they previously had been, now as resilient with capacities to resist, learn, organize, change and adapt. It was more important to stress what made regions resilient instead of vulnerable (Bankoff, 2018, pp. 221-222). In the 1990s the concept of vulnerability was to be seen as “an effect of broadly construed structural relations that produce vulnerability and create entitlements, such as race, gender, and age, in addition to class relations” (Grove, 2013, p. 614) which forms systematic inequalities. This affected the area of disaster management in the sense of reducing the effects of systemic inequities. It yielded a focus on preparedness mitigation measures and post-event reconstruction rather than removing the root causes of vulnerability. Focus on structure is however discussed to be disempowering as it fails to consider the adaptive capacity of disaster victims (Grove, 2013, p. 615).

Contemporary disaster management is increasingly stressing resilient building techniques, for instance, collaborative learning and participatory education to develop trust. Knowledge and confidence are seen to be required to make necessary adaptive decisions as well as reflexive governance and adaptive management (Grove, 2013, p. 615). Nevertheless, scholars have criticized the concept of resilience for having several unintended political effects. For

instance, critics imply that it directs attention and resources away from addressing structural inequalities that reinforce processes resulting in vulnerability and therefore, continuing neoliberal thought of living with rather than challenging risks (ibid). Moreover, Raju et al. (2022, pp. 1-2) argue that the discourse of climate-related natural hazards separates disasters from vulnerability. Blaming nature or the climate for hazards deflects responsibility as the narrative is used to justify reactive disaster laws and policies. The discourse then creates a deflection of responsibility as governments blame nature instead of addressing human-caused vulnerability. It results in the continuation of the inequitable status quo as the most vulnerable groups repeatedly are most affected by disasters. This becomes problematic as social systems of hierarchical power structures create a social, political and economic status that in turn affects and determines the difference and disproportionated impacts of a disaster. Vulnerability is a product of social and political constructions of, for instance, social injustice and marginalization. These structural processes include power and governance where inequalities are deliberately created. For instance, a natural hazard becomes a disaster in areas of poor infrastructure with a lack of social support systems that cause disproportionate impacts for vulnerable groups. In addition, when several hazards occur simultaneously, it pushes already vulnerable groups into further vulnerability. An example of this is the COVID-19 pandemic in combination with other natural hazards, lack of access to healthcare systems and poor governance regarding risk management. This has affected many parts of the world and exacerbated impacts (Raju et al., 2022, pp. 1-2).

Literature on disasters and risk reduction emphasizes the importance of considering the social production of vulnerability in understanding natural disasters. Wisner et al. (2003, p. 49) define hazards as natural events affecting different places separately or in combination at different times. A disaster is a result of the interaction of vulnerabilities and a hazardous event. It is considered a disaster as a significant number of vulnerable people suffer severe damage from a hazard and where recovery requires external aid. Ayers et al. (2013, pp. 199-200) connects development to climate-related disasters. Natural hazards are unevenly distributed and people are disproportionately impacted as some groups are more vulnerable than others. Climate-related disasters are therefore a matter of development. Human-influenced climate change has had the most severe consequences on small island developing states and the poorest countries. The development context relates to disasters as different group's socioeconomic development affects the access to resources and therefore, adaptive and resilient capacity.

Therefore, as Raju et al. (2022, pp. 1-2) suggest, disaster laws and policies must be centered around equity and vulnerability to identify and leverage structural solutions enabling more equitable and resilient societies. Accordingly, Gibson and Wisner (2016, pp. 664, 676) agree with recognizing community-based knowledge and capacity for organization and action. They emphasize the importance of engaging in conversations about everyday risks and involving local perspectives in disaster management. They reflect on the bottom-up approaches founded as mirrors to top-down monitoring approaches. For instance, the United Nations disaster framework has been criticized for implementing top-down approaches which have failed to acknowledge the voices of local people and rather assume they need to be educated and informed. Approaches that gather local knowledge and practices are discussed to influence development. Thus, the role of empirical evidence is important as it can be used to influence and motivate governments to act more effectively (Gibson & Wisner, 2016, pp. 664, 676).

This qualitative case study has a bottom-up approach, focusing on the empirical perspectives of hurricane preparedness and has been conducted within the area of global studies. It touches on areas of climate change, vulnerability, resilience, adaptivity and disaster preparedness. Unequal distribution of resources and structural injustices have to be considered in understanding preparedness and disasters which are related to elements of power structures and justice and therefore, this is a relevant area within the field of global studies.

2.2 Conceptual framework

This study will use the concepts of disaster preparedness and community resilience to analyze collected empirical data. The concepts were chosen after the received data was transcribed and coded and was considered relevant to the results by the researcher. By defining the concepts, transparency aims to be increased in stating how they are perceived by the researcher and how it is used in analyzing findings. There is also a definition of recurring concepts of vulnerability, adaptation and resilience. Disaster preparedness requires definition as it is the main area of research as well as it connects other used concepts in this study. Community resilience is relevant considering the interview discussions that focused on community, communication and governmental adaptive measures. The concepts contribute to

understanding social networks, practices and perceptions regarding hurricane preparedness in Negril which are presented in the result.

2.2.1 Definitions of Vulnerability, Adaptation and Resilience

Vulnerability is defined as the propensity to be negatively affected and “the characteristics of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from the adverse effects of physical events” (Lavell et al., 2012, p. 32). Vulnerability is a result of conditions arising from diverse processes of social, economic, political, historical, environmental and natural resource, institutional and cultural systems (ibid).

Adaptation comprises both maximizing beneficial opportunities and minimizing harm in response to disturbance. It highlights the notion of trying to control changes to adapt to future uncertainties (Lei et al., 2014, p. 614).

Resilience is defined as “the ability of a system to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner” (Lei et. al., 2014, p. 613).

2.2.2 Disaster preparedness

The concept of *disaster preparedness* includes the development of emergency and contingency. For instance, evacuation from exposed circumstances, early warning and aid, and planning for shelter and food supplies for affected populations (Lavell et al., 2012, p. 36). It is also seen as a bridge between disaster risk reduction and disaster management and includes disaster mitigation. Mitigating is important to avoid ‘the second disaster’, the adverse effects on health and livelihoods due to insufficient response, existing planning or unforeseen circumstances (ibid). Most populations lack sufficient preparedness due to the fact that people do not wish to acknowledge that they are at risk and therefore, avoid preparedness activities (DeYoung & Peters, 2016, p. 254). Nevertheless, some studies show that participants have felt a sense of being in control after engaging in preparedness activities. Factors important in disaster preparedness are *actual preparedness*, *intentions to prepare* and *perceived preparedness* which implies the engagement in preparedness behavior, how a person plans to engage and how prepared people consider themselves to be (ibid). Even though they are related there is a difference between them. Actual preparedness is the action of having food and water supplies or flashlights/radio whereas intentions to prepare and

perceived preparedness do not necessarily indicate actual actions of preparedness being made. Also, trust in the government during disasters can have different outcomes, considering contextual factors such as cultural climate and type of hazard. However, it still plays an important role in how well a community deals with crisis (DeYoung & Peters, 2016, pp. 255, 260).

2.2.3 Community resilience

Community is defined as a social system of interactions of a group sharing identity and sense of belonging, a network of relations within a defined geographical space. There can also be communities and extended networks such as regional members of crisis management embedded in relations of power within a larger community (Wilson, 2010, p. 365; Kruse et al., 2017). As mentioned above, resilience is defined as “the ability of a system to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner” (Lei et al., 2014, p. 613). According to Kruse et al. (2017, p. 2321), resilience has a relational feature as it is held in and produced through social interactions by social-ecological and technological systems, co-produced with individual imagination. The community becomes integral with resilience as the interactions of relevance to those at risk are at the local level and influenced by institutions and non-local actors. By incorporating social subjective factors such as beliefs and perceptions, as well as institutional and governance settings, it shapes the capacity of communities to build resilience and goes beyond a pure social-ecological understanding (ibid). Community is an important level of building resilience that can amplify outcomes of individuals and the wider population. Community resilience is influenced by elements of resources and capacities, social context, actions and learning as well as governmental policies and responsibilities (Kruse et al., 2017, p. 2321). Barrios (2014, p. 329) further claims that communities are also shaped depending on the relationships in which they engage with aid organizations and governmental agencies. He further states that disaster programmes require accounting for the emergent and relational nature of communities to address long-term disaster causes and impacts.

Moreover, according to Gómez-Baggethun et al. (2012, pp. 640, 646) traditional knowledge and shared systems of beliefs of ecology can contribute to improving collective responses to crises and preserve the resilience of social-ecological systems. Also, declining ecosystems could induce social and economic crises in the event of environmental extremes. Shared

systems of local beliefs are important to maintaining long-term social-ecological resilience by maintaining the ecosystem's capacity to provide beneficial protection. Similarly, Lei et al. (2014, pp. 622-624) suggest that lessons learned from a crisis or disaster could enable improvements based on these gained experiences. For instance, realizing and recognizing vulnerabilities can help to reduce them and allow communities to gain flexibility and options in response to potential future risks.

Vagueness and variations in meaning in both the resilience and community concepts make it hard to measure community resilience processes and outcomes (Kruse et al., 2017). The aim of this study, however, is not to measure community resilience but to use it as a framework for analyzing collected empirical data. Community resilience is used as a bottom-up approach to understanding the empirical subjective perspectives of practices, expected communication and perceptions of governmental adaptive measures in terms of hurricane preparedness. Further how the findings relate to the concepts of vulnerability, adaptation and disaster preparedness.

3. Methodology

This research has a qualitative case study design focusing on hurricane preparedness in the coastal community of Negril in Jamaica. Data collection was done through a field study by conducting semi-structured interviews with three local people in Negril, the environmental organization Jamaica Environment Trust (JET) and the local governmental agency Negril Environment Planning Agency (NEPA). A qualitative case study design through respondent interviews is preferable to reach the aim of generating in-depth empirical data. Further, to understand participants' interpretation of the social reality hence involvement in the context of hurricane preparedness in Negril, Jamaica (Bryman, 2012, p. 30).

The study has an abductive approach, meaning a combination of inductive and deductive approaches (Bryman, 2018, p. 478). The case study entails the complexity of a single case with an abductive approach using a theoretical understanding of the context based on the perspectives and worldviews of those of study (Bryman, 2012, pp. 66, 401). Nevertheless, a common criticism of the qualitative case study design is its lack of validity, transparency and reliability. The size of the study might not be seen as representative where results can be generally applied as the subjectivity of the researcher influences the study and its results

(Bryman, 2018, pp. 484-486). The subjectivity of qualitative research questions whether the results of the study are repeatable, in other words, it is an issue of replication and reliability (Bryman, 2012, p. 46-47). Nevertheless, the purpose of this study is not to produce generalized findings but to understand the specific context of the geographic area in Negril, Jamaica. It has an interpretative approach, thus, it aims to provide a deeper understanding of the social context from the perspective of the social actors (Bryman, 2012, p. 560). Therefore, the paper seeks to analyze hurricane preparedness in areas of local practices, communication and perception of governmental adaptive measures. The interpretative standpoint of the research is evident in subjective views on chosen theories and perception of results. As it is based on how reality is interpreted it requires caution and detailed explanations (Bryman, 2012, pp. 31, 111). Through a qualitative research design the study will contribute to understanding the sense of knowledge, perceptions and opinions of certain aspects of hurricane preparedness in Negril.

3.1 Method of data collection

The method of semi-structured respondent interviews for empirical data collection was motivated by the qualitative research design of the study. Semi-structured interviews were chosen due to their ability to deepen understanding of the participants' context which was the aim of this study. Also because of the possibility to ask follow-up questions. Contrary to quantitative research which uses a clear set of questions to maximize the key concepts of reliability and validity, qualitative research emphasizes the interviewee's perspectives. Specifically, this method can achieve rich answers based on experiences, tendencies, feelings, and detailed insights of individual participants by using guiding questions (Gill et al., 2008; Bryman, 2012, p. 470). Therefore, the researcher can use comprehensive data from interviewees about the research topic. Besides, the social interaction and interplay between the researcher and interviewees can be seen as an advantage in conducting empirical data (Galletta, 2012). However, semi-structured interviews require sophistication, empathy, sensitivity and flexibility of the interviewer to have effective conversations (Adams, 2015). This was considered previously and during the interviews and made the researcher self-aware as importance was laid on only asking relevant questions, listening attentively, being empathic and looking out for signs of any discomfort.

Five semi-structured interviews were conducted with one governmental environment agency, one environment organization, a local hotel owner and two local residents in Negril to receive different perspectives on local hurricane preparedness. Different views were motivated to enrich the study with nuance as disaster preparedness intersects with all levels of society. The semi-structured interviews were based on an interview guide with specific themes and questions to be able to answer the research questions. The method of semi-structured interviews is flexible and gives the interviewee freedom to formulate answers as they prefer and gives space for unexpected themes to arise. Although it is important to keep the interview relevant to the subject of interest (Bryman, 2018, pp. 563-567). Additionally, the interview guide was based on initial open-ended questions, intermediate questions and ending questions. This is to make interviewees freely convey their thoughts and feelings and contribute to different perspectives on the research issues (Turner, 2010, Bryman, 2012, p. 479). The initial aim was to conduct five interviews with at least one environmental organization and local residents which was achieved. The interviews lasted between 20-60 minutes and were held individually with the researcher and the respondent. Due to the extent and time limit this study was not able to achieve theoretical saturation as the number of interviews was delimited. Therefore, the amount of collected data affects the ability to generalize and is not representative of the whole population (Bryman, 2018, p. 508). The positionality of the researcher is important to consider in using the method of semi-structured interviews, hence this is further discussed in section 3.5 Ethical considerations.

3.2 Method of data analysis

The abductive approach of the study enables an explanatory framework for the analysis through theoretical concepts, as well as being flexible and open for eventual themes to arise. Therefore, empirical data were analyzed through a qualitative thematic analysis where themes and categories relevant to the research- question and focus were identified (Bryman, 2018, p. 702). Nevertheless, the method has been criticized for being vague in the explanation of how themes are developed and identified. Importance is emphasized to specify how themes are significant and meaningful for the focus of the study. Therefore, it is important to be transparent and motivate the chosen themes for the analysis (Bryman, 2018, pp. 706- 708). Analysis of the empirical data was performed based on the six steps presented by Bryman (2018, pp. 707-709) on thematic analysis. It implies the researcher to read through the material; code the material; develop codes to themes; rank and name themes; analyze

possible relations between concepts and themes; and motivate the significance, importance and relevance of the themes.

The interviews were recorded with consent and thereafter transcribed for a thorough review to reduce the risk of misinterpretations of the answers and to facilitate the analysis. The transcription was followed by coding of the data where repetitive and relevant content was marked, identified and divided into themes and categories. Coding facilitated the analysis and answered the research question, thus, without losing the social context or fragmenting the data (Bryman, 2018, pp. 577, 700-701). To reach transparency when coding and transcribing, quotes were used to motivate and explain the relevance to the study's focus. The five semi-structured interviews were thoroughly transcribed word for word. Subsequently, the researcher read through to find repetitive findings in quotes from the respondents which resulted in themes relevant to answer the research questions. Themes to answer the first research question are experiences of previous hurricanes and practices of hurricane preparedness. The second research question is answered through themes of communication, community and vulnerability. The themes answering the third research question are infrastructure and priorities and environmental aspects. All developed themes are motivated to have relevance to answer the research questions and have intersectional features that are important to and enable them to connect to all research questions and conceptual framework. The theoretical framework of the concepts of disaster preparedness and community resilience was motivated based on relevance to the social context of the study, found themes, and the ability to analyze the results for deeper understanding.

3.3 Limitations

The timeframe of 10 days of finding participants and collecting data in Negril, the extent of the research as well as limited contacts constrains the depth and quantity of data collection. The researcher's background knowledge of the context in which the society of Negril practices hurricane preparedness is limited. This in turn limits the research where a deeper background knowledge might have resulted in different findings. The transportation options in the area are restricted by needing to use route taxis that only drive specific routes. This constrains the geographical area of research and hence affects the amount and selection of participants. The spoken language is Patois, which the researcher is familiar with by having previously lived in Jamaica for a year. Though, most of the interviews were done speaking English which is not the first language of either the researcher or respondent. Thus,

communication was hampered at times in terms of limited understanding of languages. This might cause misunderstandings and inaccuracies to occur in interviews, transcription and coding. Additionally, the time constraints of the study and the chosen method of thematic analysis being a time-consuming process are possible to have affected the content of coding and themes.

3.4 Sampling

Data collection was done through semi-structured interviews where participants of the research were conducted via convenience sampling, a non-probability sample selected because of its availability to the researcher (Bryman, 2012, p. 210). The sample in this study consists of one environmental organization, one government environmental agency, one hotel owner and two local residents. It is not possible to generalize findings using convenience sampling methods as the sample may not be representative of the population which affects the reliability of the study. In other words, the results will not be representative of all persons in Negril or be comparable to other parishes or areas in Jamaica. This affects the external validity of the study as the result cannot be generalized beyond the specific context of research (Bryman, 2012, p. 47). However, these findings could provide empirical data for future research and links to be made to existing research in the area (Bryman, 2012, pp. 201-202).

The Jamaica Environment Trust (JET) is an environmental organization working with education and awareness of climate change and law and advocacy regarding policies. The organization was selected to contribute with an organizational perspective of the perception of hurricane preparedness in Jamaica and addressing eventual issues. The governmental agency Negril Environment Planning Agency (NEPA) was chosen to contribute with perspectives from the governmental sector active in the area of research. Convenience sampling was combined with snowball sampling which is a form of convenience sampling where the first participant is selected and recommends other participants relevant to the area of study. From the researcher's social network, two respondents were found by snowball sampling as the contacts for two persons interested in participating were given. Additionally, one participant was chosen by random sampling, which is also a form of convenience sampling as the respondent could not be predicted but can contribute with relevant data

(Bryman, 2018, pp. 497, 504). The respondent was approached at Seven Mile Beach in Negril and asked about interest in participating in the study which the respondent approved.

The age span was decided to be middle-aged, 30-60 years old, and was made to receive data on experiences, practices, expectations on communication and perception of governmental adaptive measures of hurricane preparedness in Negril. A sample of younger people was not considered to be equally able to contribute with the necessary data required to reach the aim of the study. This is due to a lack of experience with hurricane events. No participant was older than 60 which was not intentionally decided. Sampling was based on persons working and residing in the coastal area of Negril as the event of a hurricane would directly affect their socio-economic situation. The sampling is not representative of the population of Negril as it consists of four middle-aged women, however, one middle-aged male was included. Neither did the study consider aspects such as economic status or education level as it was not considered necessary to answer the study's research questions. Nevertheless, it could have contributed further dimensional insights to the study.

3.5 Ethical considerations

The study is aligned with the ethical principle guidelines of Swedish research from "Vetenskapsrådet" (Vetenskapsrådet, 2017). Following the principles of Diener and Crandall (1987), this study considered anonymity, integrity, confidentiality, do no harm, deception and informed consent (cited in Bryman, 2018, p. 170).

Following the ethical principles, before the interviews, the respondents were informed of the purpose of the study, how the data was used and that participation was voluntary and anonymous. Data security and confidentiality are crucial, thus participant names are kept hidden throughout analysis and reporting (Bryman, 2018, p. 136). The respondents had full rights to withdraw their participation at any time and this was informed by a consent form that was also signed. The collected data were available for the respondent at any stage of the study and it was possible to do a respondent validation if requested. The respondents also received contact information from the researcher if contact would be necessary. These steps were to ensure confidentiality, deception and informed consent. Moreover, with the participant's consent, the interview was audio recorded using recording devices and the respondents had the choice to remain anonymous (Bryman, 2018, pp. 170, 466). Participants

were informed about the purpose of recording, which is to ensure accurate capture of their responses and to facilitate it throughout the analysis. Following the interview, audio recordings were transcribed word-for-word to ensure the accurate representation of participants' responses. The interviewer made sure to pay attention to signs of discomfort from the respondent. This happened in one interview where the respondent felt anxious and stressed, the researcher responded by explaining again the purpose of the study and that participation was voluntary and anonymous. It also was made sure that the respondent gave consent to participate. Following, the respondent felt better but still gave signs of being stressed which made the researcher end the interview earlier than planned. However, this was not a problem regarding the content of the collected data.

Importance is emphasized on the fact that this study is subjective and originates from subjective perspectives as a researcher, which is one of the criticisms of qualitative research. According to Bryman (2018, pp. 484-486), qualitative research is criticized for lacking reliability, validity and transparency. Therefore, to ensure transparency and reliability it is important to be self-aware of biases, and assessments and to be transparent throughout the process as biases could negatively affect the study. Despite this, there is still the possibility of unconscious mistakes and biases to be present. The positionality affects the reliability of the study as qualitative research depends on the researcher (ibid). As qualitative research is subjective, the interpretation of empirical data differs depending on the researcher, for instance, someone with a different matter of sex, ethnicity or age might reach different results. The study has emphasized reflexivity in reflecting the implications of chosen methods, values, biases and decisions. Also, it entails sensitivity not only to the social settings in which the research is conducted but also to the researcher's social, cultural and political context (Bryman, 2012, p. 393). The relation between the interviewer and respondent was considered as the positionality of the researcher influencing the interactions in interviews and the study as a whole. On the one hand, the position as a Swedish, white, female with limited knowledge of the context may have affected the interviews negatively in perceiving me as an inexperienced researcher. On the other hand, after understanding previous experiences of living in the context, being able to speak Patois and interest in the subject created a bond and trust with the respondent.

To increase internal validity (Bryman, 2012, p. 390) the interview guide was carefully designed to ensure that the respondents understood the questions as they were made to be

interpreted. No questions were asked outside the realm of the study to ensure integrity. Accordingly, time was given to the respondent to reflect and respond to the question, ensuring comfort and that the question was interpreted correctly. Considerations that social vulnerability and previous experiences of hurricanes could be sensitive subjects were made forming the interview guide and during interviews. For example, as DeYoung and Peters (2016, p. 252) state, people do not wish to acknowledge that they are at risk and therefore, avoid preparedness activities. This is important to consider concerning the ethical principle of doing no harm and integrity. As a person might realize and acknowledge their position as vulnerable after the interview, it could affect them negatively. In the case of sensitive issues, where persons for example might not perceive themselves as being in a vulnerable position, the discussion regarding hurricane preparedness and vulnerability, could cause the respondent to become upset and could impact the course of the interview (Bryman, 2012, p. 475). Therefore, emphasis was placed on being empathetic and listening attentively to what and how responses were said, not putting any pressure on and reading eventual discomfort or avoidance by the interviewee.

4. Results and analysis

This thesis aimed to understand practices of preparedness, expectations of communication and perceptions of governmental adaptive measures in the local area of Negril. The results present the collected empirical data and are structured by connecting the found themes to the three research questions guiding the study. The data is analyzed and discussed by connecting it to the conceptual framework of community resilience and three aspects of disaster preparedness; actual preparedness, intentions to prepare and perceived preparedness.

4.1 What are the practices of hurricane preparedness by the people in Negril?

An interview guide that was used to collect the data through semi-structured interviews, the interview guide consisted firstly of questions surrounding experiences of previous storms. This is to first discuss and awaken memories that lead to a conversation about the practice of preparedness.

4.1.1 Experiences of previous hurricanes

Respondent 1 reflects on past experiences of disasters like Hurricane Gilbert in 1988 and Hurricane Andrew in 1992, highlighting the importance of passing down knowledge and experiences from previous generations. She emphasizes the role of anecdotal information, community stories, and personal experiences in shaping preparedness efforts as she notes that people who have not experienced a hurricane will not know how to prepare even when they are told how to. She further explains

...also media, listen, we used to, we have a song about Gilbert you know, I mean my staff never lived through Gilbert so they don't even know but there's a song 'While Gilbert water come inna mi room...' Gilbert was devastating.

- Respondent 1

Respondent 4, who works on the beach, talked about his experience of hurricanes and noted that if a hurricane would come suddenly people would not be prepared and he worried about getting hurt in case another hurricane would hit Jamaica. He talked about his experiences of hurricanes and storms and said "Five minutes, it just last for five minutes and everything was tear down, yeah just five minutes everything was gone, everything." He further stated "We were out of electricity for almost one year in some places and like shops and house really, I think a couple people died too. It was a dangerous time."

Lei et al. (2014, pp. 622-624) suggest that experiences from a crisis or disaster could enable improvements based on lessons learned. For instance, realizing and recognizing vulnerabilities by experiencing them, can help to reduce them and allow communities to gain flexibility and options in response to potential future risks. The respondents above talk about experiences that lived with them from previous hurricanes through experiences and anecdotal information. It lives with them as a reminder of potential consequences of natural hazards whereas they state that people without these experiences might not understand the risks. Gómez-Baggethun et al. (2012, p. 640, 646) show the importance of traditional knowledge and shared systems of beliefs of ecology to improve collective responses to crises. The results can be seen as a sign of a shared system of thought surrounding hurricanes and their impacts which is seen to be an important factor in building community resilience towards disasters. Perceived preparedness, intentions to prepare and actual preparedness are other important

variables in disaster preparedness which implies the engagement in preparedness behavior, how a person plans to engage and how prepared people consider themselves to be (DeYoung & Peters, 2016, p. 254). Looking at community resilience (Kruse et al., 2017) and disaster preparedness (DeYoung & Peters, 2016) in the sense of shared systems of thoughts, it can be discussed to influence perceived preparedness, intentions to prepare and actual preparedness in how one perceives hurricanes and their effects on self and community. The respondents seem to have a certain extent of respect for the impacts of hurricanes which contribute to, at least, their perceived preparedness and intentions to prepare and might also influence their actual preparedness. Nevertheless, there is also a concern about people not being prepared due to a lack of experience.

4.1.2 Practices of preparedness

Practices of preparedness are shown as some persons state that they are equipped with gas stoves and chainsaws to be able to cut trees to mitigate damage to electric lines or buildings in the event of a disaster. Respondent 1 talked about how communities are encouraged to have management plans of preparedness but it is not required. Her perception is that many places therefore would not necessarily know what to do and where to go in the event of a disaster. The results show a demand for improvements, some suggestions for this are strategic places with generators in the community for anyone to use, improved communication systems and a siren at the beach. Respondent 2, a hotel owner, newly purchased a water truck to be able to get her own water in case of a disaster. During the interview, she realized she needed to review the staff emergency plan and put it in her notes during the discussion. Participants talk about preparation in terms of having several bottles of clean water, food supplies, flashlights with batteries and candles in their homes at all times but it is not specifically in case of a hurricane.

Oh of course, you wanna have food stuff in the house, things that you can cook, warm up easily with gas, you know you still have your gas under your stove that doesn't get taken away so you have the ability to cook and fix yourself something to eat even though the electricity is out and bottles of water is a pretty standard thing in Jamaican households, anyway there's not a big scramble most people keep them on hand all the time just be sure.

- Respondent 3

All participants mentioned going to a safe place, most respondents would stay at their own homes as they considered it safe. However, respondent 4, the same person mentioning worry of getting injured in case of a hurricane, said “Well I would try to find somewhere safe like you know church I don’t know... school, but somewhere but when a big storm like that come people always go churches and schools yeah, safe place.” When he was asked whether he knew where exactly he would go, he did not mention a specific location. Later he mentioned that sometimes the churches and schools would get full and he believed the community would need more safe places for people to go. Moreover, he talks about having a house in another parish that would be a safe place to go but it does not have insurance which means in case of any damages by a hurricane, it would all be gone.

Here, it is clear that vulnerabilities are considered in how one would respond to the event of a hurricane. Respondent 3 explains that she has bottles of water filled at all times, and she keeps stock which implies actions of actual preparedness (DeYoung & Peters, 2016). The perception that Jamaican citizens are generally prepared for disasters, not hurricanes specifically, by having food and water supplies indicates that there could exist actual preparedness among many persons. Despite this, it could also be the perception of the community’s preparedness which does not necessarily result in actual preparedness. In that sense, the perceived preparedness could also affect actual preparedness in the case that there is the expectation that people have stocks of water and food supplies which they in fact might not have. Therefore, in the event of a hurricane, the people in the community might not be as prepared as supposed and consequences could be worsened.

Respondent 4’s answer about requiring shelter could be seen as perceived preparedness or intention to prepare but there is an issue of lack of information about the specific location. Also, the fact that these places might get full would increase an already vulnerable position in case of a hurricane. There is a difference in preparedness between respondent 4 and the others, where the position of respondent 4 might be more exposed to end up in a vulnerable situation. This is due to his response that he would seek protection in a shelter and he shares feelings of worry of getting hurt in the event of a hurricane. He mentions that one makes sure to have food and water but he does not mention whether he stocks to be prepared. Whereas, for instance, respondent 3 states that she would seek protection at her home, that she has a stock of supplies and that she feels completely safe. As DeYoung and Peters (2016) state,

sometimes there is a sense of being in control after engaging in preparedness activities. In this case, it seems like respondent 3 performs actual preparedness and feels safe. Whereas respondent 4 has more of intentions to prepare and where his perceived preparedness might not lead to actual preparedness and he feels worried. However, no data proves that respondent 4 would be in a more vulnerable situation as the study did not consider aspects of for example economic status which could be a contributing factor of vulnerability.

Considering what has been said in the results above there is a perceived preparedness and indicators for intentions to prepare (DeYoung & Peters, 2016) on the community level in terms of designated shelters and encouragement of disaster plans. Whereas individual persons of the community perform actual preparedness by having for instance food and water supplies. Notwithstanding, there is a spoken desire for improvement of actual preparedness showing in several suggestions of the community such as more shelters and information surrounding shelters. Kruse et al. (2017) state how institutional and governance settings shape the capacity of communities to build resilience. Based on the results, to increase disaster preparedness and community resilience in Negril there might be a need for further actual preparedness in the sense of adaptive measures such as the development of emergency and contingency coordinating, which Lavell et al. (2012) proposes.

A long time has passed since there was an actual hurricane in Jamaica and when asked, the respondents reflect on whether it has impacted people's preparedness. A couple of respondents do not think it has mattered and that Jamaicans are still as prepared. Others believe that it has resulted in people becoming more relaxed about hurricanes and that it has had consequences on preparedness. Respondent 1 is concerned that Jamaicans were more prepared back in the day. Respondent 5 said, "because we haven't had a major major hurricane since so I think we've kind of been a bit laid back." She further states "Well this is my personal opinion, if Negril was to get like a major hurricane I think we're doomed like we would be doomed". Several persons also said that they realized flaws in different aspects of the preparedness of the community and private during the interview. This could be an indication that the conversation about hurricane and disaster preparedness is important and is needed to realize inefficiencies and improve preparedness. Respondent 5 said, "Okay, yeah I think, this discussion kind of opened my eyes to a lot of inefficiencies like things that we as a community can improve on, but how to get them done though".

Comparing the suggestion from Lei et al. (2014, pp. 622-624) that experiences from a crisis or disaster could enable improvements based on lessons learned, the results of this study point to a lack of experiences resulting in a relaxed and laid-back attitude towards hurricanes. It is illustrated both as respondents state it, but also in several reactions of the respondents in realizing insufficiencies through participating in the interview that they have not noted before. This might have influenced the practices of preparedness in the community and therefore, it might also affect community resilience. This could also be drawn to Gómez-Baggethun et al. (2012) and Lei et al. (2014) standpoints of the importance of traditional knowledge and shared systems of thought to improve collective responses to crises. Also how a crisis creates improvements and flexibility by experiences and lessons learned. It may also be able to turn it the other way around in discussing however, in this case, the more relaxed attitude towards hurricanes could be a shared system of thought. This could in turn also negatively influence the community's resilience and actual preparedness. Where these experiences and lessons no longer are present in the community's systems of beliefs. These results also indicate the importance of engaging in conversations about everyday risks that are emphasized by Gibson and Wisner (2016), to increase awareness and enhance the ability to build resilience.

4.2 What kind of communication do people expect in the event of a hurricane?

During interviews, questions of communication were connected to the importance of community and vulnerability. The community plays an important role as being part of information spreading and it is also affected by vulnerabilities and communication.

4.2.1 Communication

Respondents mention concerns about the effectiveness of communication during disasters. The role of agencies like the Meteorological Office (MET) and Office of Disaster Preparedness and Emergency Management (ODPEM) are discussed. One of ODPEM's aims is to maintain programmes of public interest and participation in disaster management ensuring the population's information to protect lives and property (Carby, 2005). Nevertheless, three respondents are not familiar with ODPEM while two discussed that the agency requires improvements. Respondent 5 discussed the role of government agencies like ODPEM and local authorities in disaster management. She has the opinion that ODPEM

could do better regarding community outreach and that they rely too much on social media in their communication. Suggestions of improvements are disaster communication, public education campaigns, and community outreach as they are considered essential for increasing resilience and ensuring that individuals are informed and prepared for potential disasters.

So you have the usual warnings MET office, but MET office I think have failed us in the past. Where there was an event about three years ago, maybe a little bit longer, people went to work and there was a category 1 (storm) that hit us because they just thought it was rain. Nobody understood the seriousness of it [...] but it was a category 1 kind of far away but I remember I was at home with the kids and my husband was on the road, he went to work because they never advised us.

- Respondent 1

Issues such as the community's reliance on media communication are being questioned by several participants and the importance of effective disaster communication is highlighted. Respondent 1 expresses the need for structural communication systems as she said "we still depend on social media I don't know what we would do if you know, if internet goes". Most people think they would be reached by the information of an incoming hurricane in the form of people in the community using verbal exchange and checking up on each other if they are updated on the information. There are also WhatsApp groups where information is spread but it would be for business people only which means only a certain circuit is reached. Nevertheless, there is no organized spreading of verbal or media information in the community and all respondents reconsider their answers after a discussion about vulnerable groups and the question if everyone is included in the community.

Like somebody, like, like, only information we get is if it's coming on the news channel, on the news channel but we don't have no one telling you like face, when you hear on the radio and tv then they chat chat about it.

- Respondent 4

Discussions occur surrounding vulnerable groups in the community of Negril and their access to information where improvement suggestions such as text message alerts, sirens at the beach, reconsideration of present inadequate basic information such as shelters and a structural communication system. An organized and structural communication system is

perceived by the respondents to increase resilience and preparedness. Respondent 4 expresses that it would be different if more people were reached by the information as they would have a better opportunity to organize and prepare and Respondent 3 agrees.

As I said I think we do need a central warning system, that would be lovely I think that if we get warning system on cell phones would be great and strategically places some type of community setting generators where people can go even during these times that they can have access to electricity.

- Respondent 3

According to DeYoung and Peters (2016), trust in the government plays an important role in how well a community deals with a crisis. At the same time, studies on trust in government and disasters have different outcomes which means lower trust in government does not necessarily result in a lack of preparedness. However, community resilience is influenced by governmental responsibilities and policies (Kruse et al., 2017, p. 2321). These responsibilities include emergency and contingency development, such as early warning, aid and planning for shelter and food supplies for affected populations (Lavell et al., 2012). These measures are directed to governments which influence the capacity to access resources and are therefore actions of actual preparedness and thus affect community resilience. The communication question is an interesting factor. Firstly, there is a spoken emphasis on the importance of community by the respondents, which also shows in the fact that verbal exchange of communication is relevant to all participants. Secondly, respondents express concern about the effectiveness of ODPEM and MET's role in communicating in case of a hurricane. There is no expected governmental communication separate from general radio, news channels and social media which also is shown to be vulnerable as it requires electricity. This is evident as respondent 4 mentioned in his experiences how some areas were out of electricity for almost a year. It is not evident that there is a lack of governmental trust, or governmental intentions to prepare regards to planning or management for information spreading. However, there is a lack of actual preparedness regarding outreach of the information from governmental agencies and other stakeholders. Several participants have not received information about shelters (as results also show under research question 1).

People are required to seek information on their own and rely, to some extent, on verbal exchange of information. This could indicate intentions to prepare and perceived

preparedness as there is no evidence of actual preparedness regarding communication spreading. It also illustrates the importance of social networks and relations which could be an indicator of existing community resilience in Negril. DeYoung and Peters (2016) argue that increased responsibility for others could enable preparedness initiatives and activities as well as cohesiveness can increase effective crisis communication and coordination. In this case, community resilience might increase as a result of insufficient communication and trust in government, as social networks therefore depend on each other to spread and receive accurate information.

4.2.2 Community and vulnerability

Systems of power create norms and mechanisms of social structures that can normalize oppression and marginalization and thereby result in increased vulnerability among certain groups (Andersson, 2020, pp. 20-25). Differential vulnerabilities of various groups during natural disasters are discussed by several participants where the elderly, fishermen, disabled, LGBTQI community, and children are mentioned. Lack of access to information, resources, and safe shelters would exacerbate their vulnerability. The importance of addressing vulnerabilities and the need to develop more inclusive disaster planning and ensure access to safe shelter for all members of the community are underscored. Suggestions are given for expanding resources, like shelters, to accommodate more people affected by storms. Respondents also identify a lack of conversation in the community about recognizing vulnerabilities and different needs of persons which in turn could result in exclusion of already vulnerable groups through lack of access to resources such as shelters.

For the disabled, especially for the physically, very physically disabled there are challenges because a lot of our shelters for example are not, they're schools, they're just retrofitted to be and they're not even retrofitted they're just labeled for the event as a shelter. And so you may not have ramps, you may not have assistance, if they're not accompanied by somebody to help them no assistance would be provided to them.

- Respondent 1

Respondent 3 also mentions the lack of ambulances in the community and discusses whether the access to medical help would be adequate in case of a hurricane, she said: "there's only one ambulance here and you can imagine what chaos that would be trying to get to people in

emergency, one, there is only one“. Respondent 1 who works at the environmental organization JET has done projects implementing adaptation plans in local communities and she highlights the importance of understanding vulnerabilities. She states “It's to be able to implement those measures that are in the adaptation plan that would make them resilient but you do need to understand your vulnerabilities and plan for them”. There is a strong emphasis by all respondents on community solidarity and support during and after storms. They state that the community comes together to support each other which could be signs of community resilience. Participants mentioned inviting friends and family to wait out storms in safer homes, as well as the collective efforts to assist with cleanup and recovery after major events. Respondent 3 said, “A lot of your friends, relatives, neighbors who live in less substantial housing will ask to come wait it out with you so you gonna have to prepare to have company on top of everything else.”

As previously mentioned, Kruse et al. (2017) argue how governmental policies and responsibilities influence a community's access to resources and capacity to adapt and enable opportunities for actual preparedness. Additionally, Gibson and Wisner (2016) highlight the importance of engaging in conversations about everyday risks and involving local perspectives in disaster management. The results show concern for the lack of sufficient numbers of ambulances and inclusive shelters. These concerns require authorities' consideration and understanding of the vulnerabilities and needs of different groups in disaster planning and management. Based on the results, there is a demand for a conversation about needs and inclusiveness on both the local level to acknowledge needs and encourage participation. Consequently also at the governmental level to enhance inclusiveness in disaster management and coordination.

Compared to previous concerns of efficient communication, which has an individual dimension of opportunities to find information through verbal exchange and social contacts, access to medical care and shelter does not have that dimension. As vulnerable groups are already in an exposed situation due to marginalization as a result of systematic power structures they will inherently be more affected by the event of a hurricane. To enable more equitable and resilient societies, disaster laws and policies are required to be centered around equity and vulnerability to identify and leverage structural solutions (Raju et.al., 2022, pp. 1-2). The responsibility to assist the whole population with opportunities for actual preparedness in a community is therefore embedded within the governmental mission.

Furthermore, it raises the question of whether marginalized groups find themselves included in the community and could benefit from resources of community resilience. People experiencing a sense of community inclusiveness might be better prepared and less affected by events of crisis or disaster. Whereas marginalized groups may not be included in the social networks required to be reached by information or access to the resources of actual preparedness. To be able to change systematic power structures that reinforce exclusion of vulnerable groups there is an emphasis on having comprehensive conversations about- and realizing vulnerabilities in the community.

4.3 What perceptions does the community have on governmental adaptive measures?

To further understand practices and expected communication there was also an emphasis on acknowledging perceptions of governmental adaptive measures regarding hurricane preparedness. This was useful to get an idea of the motives and attitudes towards both measures taken and suggestions presented in all themes.

4.3.1 Infrastructure and priorities

The conversation delves into the importance of resilient infrastructure and building standards in coastal regions. Respondents 2 and 3 both reflect on the construction methods used in their property to withstand storms and compare them to practices in other countries. There is an emphasis on the significance of resilient infrastructure. The interviews also touch on the need for more widespread adoption of such building standards and the role they play in reducing vulnerability to storms. Respondent 3 states that her house is built by hurricane specifications with concrete and plexiglass which makes her feel completely safe. On the one hand concrete block houses with hurricane specifications are a result of adaptations made to increase resilience towards storms. On the other hand, respondent 1 mentioned challenges in understanding the threats of climate change, such as more intense hurricanes. As she underscores the importance of implementing risk measures in development planning, not just recognizing it, she states “Preparedness is key, you know, in all cases, preparedness is key.” She further explains

The challenge is that while we recognize, we said we’ve understand that climate change is a real threat to Jamaica and it will bring more intense hurricanes and even

flooding. Right now if we only have heavy rain the whole of Kingston would flood out and what that means, we still have not acknowledged that in our development approach.

- Respondent 1

Several respondents criticize the development of infrastructure as developers are not considering eventual natural hazard risks and how it may affect the community, individual people and the economy. The importance of local community participation in disaster management and preparedness is emphasized by all respondents. Respondent 1 said Community-Based Organizations (CBOs) and Community Development Committees (CDCs) are encouraged to have management plans, conduct drills, and engage with members but this is not a requirement. Respondent 5 works at the governmental agency NEPA which focuses on environment planning in Negril. NEPA is responsible for monitoring developments and informing developers about the possible consequences and risks of natural hazards. She states that they are in charge of environmental permits for hotels as they are required to have an emergency response plan. These plans are supposed to detail what to do in events considered as disasters, such as hurricanes, flooding and tsunamis. NEPA do inspections to ensure that staff have knowledge of these emergency plans and if they do not, the hotel can be sent to court. The woman states that most hotels follow the policies as they would not want to go to court for something that would benefit them in case of a disaster.

You have areas that are severely flood prone then you have the storm surges that will, that will affect the properties because most of the properties unfortunately are constructed close to the high water mark so that is something that we do try to monitor.

- Respondent 5

There is also a discussion about interests where respondent 1 states that economic interests are prioritized above environmental aspects. There is also a lack of action and governance after recognizing an environmental issue. She said that disaster-prone areas have been mapped out with what would happen in case of a disaster whereas there are no actions taken. Challenges related to governmental planning, coordination, and community engagement are acknowledged by respondents, including issues with response times and community participation. Respondent 1 points out the importance of holding the government accountable

due to its economic interests above others “Government will tend to work in the interest, it’s supposed to work in the interest of the people but it generally works in the interest of how it can contribute to the macro economics.”

The importance of proactive measures to mitigate the impact of future storms is emphasized. Several participants mentioned the beach as the biggest vulnerability of Negril because of the environmental aspects of the community being open towards the sea. Constructions are built on the beach and have nothing to protect them from wind and water in case of a hurricane. The beach and water are also the main tourist attractions which makes it even more vulnerable to the community and micro- and macroeconomics. Respondent 2 is a hotel owner and says her biggest worry in case of a hurricane is if her business will be standing. She also mentioned concerns about the ability to pay her staff and if the tourists will come back in the event of a hurricane. Respondent 5 agrees as she said

The buildings being as close as they are (to the water) they could possibly go and then if you don’t have these buildings, if you don’t have the tourist product, if you don’t have the sand what’s gonna attract guests here? You understand so I don’t think there is enough that’s done to protect Negril's tourism product.

- Respondent 5

Lei et al. (2014, p. 623) emphasize the importance of changing mindset from short-term recovery to long-term adaptation and planning in disaster response to reduce vulnerability and build long-term resilience. The perception of the respondents is that governmental measures are focused on economic interests above long-term measures that would increase community resilience. For instance, the tourist sector such as hotels is required to implement disaster emergency plans. This is only encouraged but not required on the community level. This could be a sign of prioritizing the protection of the tourist sector above the local population. Requirements on emergency plans and construction improvement as a result of experienced hurricanes are however actions of actual preparedness (DeYoung & Peters, 2016). Even so, there are still challenges of insufficient governance in the sense of inaction which are referred to by respondents as not recognizing and implementing measures of environmental issues in development plans. Recognizing and understanding environmental issues are important.

Further implementation of these issues in disaster plans could indicate intentions to prepare but still lack actual preparedness if actions are not taken. Also, even as priorities are focused on economic interests and developers require planning for eventual disasters, challenges of construction being built in hurricane-vulnerable areas are still present. This can also be connected to the economic interests that were shown by the Jamaican government in the 1980s-1990s as priorities were made to reduce its large foreign debt and intervene in the financial sector by implementing structural adjustment policies. This resulted in high import duty costs of construction material and rent control which resulted in a rapid decline in residential construction quality and quantity. This made safety suffer and increased the population's immediate vulnerability to natural hazards. In 1988 Hurricane Gilbert damaged more than 100,000 low-income households which resulted in costs of 558 million US dollars (Wisner et al., 2003). Prioritizing economic interests in instances like these cases can be seen as a short-term mindset, decreasing community resilience. According to Lei et al. (2014), short-term measures are unsustainable in the sense of being both costly and irrational as they only create temporary resilience. Short-term measures could also be discussed as perceived preparedness rather than actual preparedness. This is because it recognizes climate risks and provides mitigation measures, potentially perceived as building long-term community resilience, but are in reality only temporary quick fixes.

4.3.2 Environmental aspects

As two of the identified vulnerabilities in Negril are the beach and tourism sectors, discussions touch on environmental issues such as global warming, beach erosion, and the vulnerability of coastal areas. There's an acknowledgement of the need for sustainable practices, extended knowledge of the surrounding environment and adaptation strategies to mitigate the impact of climate change. Included in respondent 1's work at the environmental organization JET is to use different kinds of events as a platform to advocate and start a conversation for environmental issues, for instance, mangrove removal due to development building. Protecting natural resources like mangroves can help reduce coastal erosion and storm damage. This highlights the interconnectedness of environmental conservation and disaster resilience. Respondent 1 states "we don't understand the importance of nature and why we need to use it to help us to be more resilient." Respondent 5 who works at the governmental environment agency NEPA agrees and suggests "Mangrove replanting

programmes and more public education as to how the natural resource can actually help to, you know, prevent significant damage from a hurricane”.

Several respondents mentioned the general attitudes regarding the environment and that it contributes to environmental ignorance and short-term “quick-fix” thinking. There is an emphasis on improved public education to increase knowledge and awareness about nature. This could improve resilience in the aspect of understanding how the environment could be used as a protective measure.

The prime minister two years ago, in his budget debate, made a comment which I think is a true reflection of the government’s attitude and generally the public’s attitude, which is we are the masters of the environment. I have a problem with that, because that means I can dominate and do what I want with it but if I have a different approach, understanding that this environment is critical for my health, for being productive, and we have shown when things happen negatively how it affects productivity. If we simply recognize that connection I think we would have a different approach.

- Respondent 1

She also emphasizes the importance of long-term planning instead of quick fixes which she experiences as a recurrent phenomenon in Jamaica.

I think the attitude towards the environment, and this is not just a government attitude, this is generally the public’s attitude that we are okay with something until it has negative like serious negative repercussions and that’s when it becomes a problem.

- Respondent 1

Referring to the challenges discussed above regarding prioritized interests, connections can be made to the general attitudes towards the environment. Lei et al. (2014) claim that long-term planning is required to achieve resilience. Current environmental attitudes may maintain the prioritizing of economic interests above environmental adaptation whereas the second mentioned in a long-term perspective could benefit community resilience. Kruse et al. (2017) mention how community resilience is influenced by governmental responsibilities and policies where in this case respondents have identified governmental and general attitudes of

being “masters of the environment”. These attitudes are shown in for instance mangrove removal to build developments to benefit the tourist sector and therefore benefit economic interests. Instead, there is a request for a change in attitudes as respondents believe that public education including environmental issues would generate an understanding of the benefits of natural resources, such as mangroves, which could increase community resilience. Governmental attitudes and adaptive measures could also be a factor influencing the trust in the government which according to DeYoung and Peters (2016) is an important part of disaster preparedness. The perception of several respondents is that environmental ignorance is a general attitude. These respondents, and most likely more of the population, disagree with these attitudes. It is possible that this could create distrust against the government in achieving sufficient adaptive measures of disaster preparedness. However, that aspect would need further research.

Declining ecosystems could induce social and economic crises in the event of natural hazards (Gómez-Baggethun et al., 2012). Therefore, replanting programmes of mangroves and public education could be seen as long-term measures of actual preparedness. On the one hand, it would provide ecological protection towards hurricane-vulnerable areas. Therefore it could protect both the community and the economic interests of the tourism sector. On the other hand, it could also contribute to understanding of these environmental benefits. It could influence positive environmental attitudes and in turn, increase community resilience.

However, a change in attitudes could be hard to reach. How would it be achieved? And from what level does it start? On the one hand organizations like JET could advocate and implement education programmes to influence attitudes. This in turn may embrace a bottom-up approach of local participation and a demand for governmental policy- and attitude change. On the other hand, the implementation of government programmes and policies through governmental agencies like ODPEM may affect attitudes and behaviours through a top-down approach. According to Grove (2013), collaborative learning and participatory education could also develop trust, reflexive governance and adaptive management to make necessary adaptive decisions. Therefore, it might be necessary to face these challenges in both ways. Recognizing vulnerabilities and the environment's benefits on both governmental and communal levels. Also implementing adaptive measures of long-term planning in disaster development is an act of actual preparedness. Approaches from all levels could thereby increase community resilience and actual preparedness.

5. Concluding discussion

Small Island Developing States are more vulnerable to natural hazards and impacts of climate change due to multidimensional historical, cultural, socioeconomic and political factors. Caribbean nations have many similarities such as natural resource dependency and isolated coastal communities. The coastal area of Negril has a hurricane-prone position with the tourist sector being an economic interest and therefore enhancing vulnerability in several aspects. The purpose of this study was to understand practices and experiences of hurricane preparedness, the expected communication in the event of a hurricane and the community's perceptions of governmental adaptive measures in the local area of Negril. This by collecting empirical data through semi-structured interviews of different perspectives in the community. The results were thematically analyzed by using the concepts of community resilience and disaster preparedness which include factors of perceived preparedness, intentions to prepare and actual preparedness.

Conclusions can be expressed by answering the research questions that have been used to guide this study. The first research question was: *What are the practices of hurricane preparedness by the people in Negril?* Findings show that people perform actual preparedness in making sure to have stock of water and food supplies and persons living in concrete houses built by hurricane specifications felt safe. Previous experiences have caused worry of the community facing consequences in the event of a hurricane. There are actions of actual preparedness on the community level such as designated shelters, encouragement for disaster plans and requirements for hotels to implement emergency plans. Another finding is that a long time has passed since the last hurricane, which could have influenced the general attitude and shared system of thought toward hurricanes to be more relaxed. This is discussed to potentially have consequences on preparedness. Also, several participants acknowledge that the interview made them realize several issues regarding the community's preparedness. Even though actions of actual preparedness are present, there are suggestions for improvements such as placing generators in several locations to be reached by the community in the event of electricity going out. Additionally, improved information regarding for instance shelters could increase community resilience. More about information spreading and communication are discussed under research question 2.

The second research question was: *What kind of communication do people expect in the event of a hurricane?* The conclusion to this question is that the community plays an important role in spreading information. Social networks and verbal exchange seem to be the biggest source of information spreading in the area. Governmental communication relies mostly on social media, radio and TV. Concerns regarding the effectiveness of communication during disasters illustrate that the governmental agency ODPEM for example, could improve community outreach. This is to ensure that the community are informed and performs actions of actual preparedness. Even though the relational aspects of the community are important, governmental measures are required to improve community resilience in accessibility to resources. Social power structures create inequalities in the forms of exclusions and marginalization of groups in which vulnerabilities increase. Questions are raised about whether marginalized groups are included in the community and would benefit from aspects of community resilience. Recognizing, understanding and considering vulnerabilities is discussed to result in more inclusive emergency planning, regarding for instance shelters. This could also challenge the reinforcement of marginalizing inequalities in social systems. Suggestions for further improvement are warning systems such as a siren at the beach and emergency text message alerts. Nevertheless, there is a discussion that insufficient governmental communication increases community resilience. This as the community requires more comprehensive responsibility for each other. More about governmental measures are discussed in question 3.

The third research question guiding this study was: *What perceptions does the community have on governmental adaptive measures?* Findings from the results show that experiences and knowledge from previous hurricanes have influenced measures and practices of preparedness. It can be connected to actual preparedness in the way of constructing developments, for instance, concrete houses with plexiglass windows built by hurricane specifications. All participants emphasized the importance of community participation in disaster preparedness and management. On the community level, disaster emergency plans are encouraged but not required. Whereas in the tourist sector emergency plans are a requirement which could illustrate how economic interests are prioritized above community protection. Furthermore, implications of prioritizing economic interests are discussed in how developers evade considering natural hazard risks in development constructions.

Also, respondents reflect on governmental and general attitudes. Prioritizing economic interests above environmental issues are identified for instance mangrove removal to build developments to benefit the tourist sector. Instead, suggestions for a change in attitude and increased knowledge about the environment through public education could change the perceptions and relationship to nature. By acknowledging how natural resources can benefit and provide protection towards natural hazards, replanting programmes of mangroves could be a long-term solution for increased community resilience. Therefore, there is a desire for governmental long-term planning of actual preparedness in adaptive measures. This could be beneficial to economic interests in protecting the tourist sector and increasing community resilience. Challenges of present short-term solutions are discussed to be quick fixes that illustrate intentions to prepare and perceived preparedness.

Concluding remarks of this study can be made that other parishes and communities in Jamaica will not have the same forms of preparedness and priorities. Due to Negril being a coastal area highly dependent on the tourist sector, it will be different from inland communities. Results therefore can not be generalized to other parishes with different variables. Moreover, future research could focus on measuring community resilience and preparedness capacity in the area. Collecting empirical data from vulnerable groups could be done to receive information about access and opportunities for actual preparedness. Also, further research can be made on how attitudes affect trust in the government and how present communication affects community resilience in Negril.

This study has broader implications than the local context of hurricane preparedness in Negril. It illustrates the incorporation of community with institutional and governance settings as well as ecological factors to build long-term resilience. It highlights the importance of considering different perspectives in the area of disaster preparedness. Such as communication, trust in government as well as attitudes, local practices and perceptions of measures already taken. It further emphasizes the importance of conversations regarding future risks to realize and address present vulnerabilities and challenges to increase the ability to prevent eventual hazards from becoming disasters. Additionally, it draws connections between several aspects of community resilience and societal power structures, governmental engagement and variables of disaster preparedness. Disaster laws and policies must be centered around equity and vulnerability, to identify and leverage structural solutions and to

enable more equitable and resilient societies. The empirical insights provided by this study can therefore be useful to policymakers in disaster planning and disaster management.

6. References

- Adams, W. C. (2015). Conducting semi-structured interviews. *Handbook of practical program evaluation*, pp. 492-505. <https://doi.org/10.1002/9781119171386.ch19>
- Andersson, E. (2020). *Reconstructing The Global Political Economy: An analytical guide*. Bristol University Press.
- Axelsson, T & Qvarsebo, J. (2017). *Maktens Skepnader och Effekter: Maktanalys i Foucaults Anda*. Studentlitteratur: ISBN 978-91-441095-7-2
- Ayers, J., Huq, S., & Boulter, S. (2013). Disasters and Development. *Natural Disasters and Adaptation to Climate Change*. pp. 199-208. Cambridge University Press.
- Bankoff, G. (2018). Remaking the world in our own image: vulnerability, resilience and adaptation as historical discourses. *Disasters Vol. 43(2)* pp. 221-239. <https://doi.org/10.1111/disa.12312>
- Barrios, R.E. (2014). 'Here, I'm not at ease': anthropological perspectives on community resilience. *Disasters Vol. 38(2)* pp. 329-350. <https://doi.org/10.1111/disa.12044>
- Bueno, R., Herzfeld, C., Stanton, E, A. & Ackerman, F. (2008). *The Caribbean and Climate Change The Cost of Inaction*. Stockholm Environment Institute—US Center Global Development and Environment Institute, Tufts University. <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/latin-america-and-caribbean/regional---caribbean/Bueno-et-al.--2008.--CC--Costs-of-Inaction-Ex.-Summary.pdf>
- Bryman, A. (2018). *Samhällsvetenskapliga metoder* (tredje upplagan). Liber.
- Bryman, A. (2012). *Social Research methods* - 4th Edition. Oxford University Press.
- Börjesson, M. & Rehn, A. (2009). *Makt*. Liber AB.

- Carby, B E. (2005-04-29). *Jamaica's experience with Hurricane Ivan: the case for mitigation and preparedness programmes*. Retrieved 2024-04-04 from <https://reliefweb.int/report/jamaica/jamaicas-experience-hurricane-ivan-case-mitigation-and-preparedness-programmes>
- DeYoung, S.E., & Peters, M. (2016). My Community, My Preparedness: The Role of Sense of Place, Community, and Confidence in Government in Disaster Readiness. *International Journal of Mass Emergencies and Disasters Vol. 34 (2)*, pp. 250-282. <https://journals.sagepub.com/doi/epdf/10.1177/028072701603400204?src=getfr>
- Galletta A. (2012). *Mastering the Semi-structured Interview and Beyond: From Research Design to Analysis and Publication*. New York University Press.
- Gibson, T., & Wisner, B. (2016). “Lets talk about you ...”: Opening space for local experience, action and learning in disaster risk reduction. *Disaster Prevention and Management, 25(5)*, 664–684. <https://doi.org/10.1108/DPM-06-2016-0119>
- Gill P., Stewart K., Treasure E. & Chadwick B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal, Vol. 204 (6)*, pp. 291–295. [doi:10.1038/bdj.2008.19](https://doi.org/10.1038/bdj.2008.19).
- Gómez-Baggethun, E. Reyes-García, V., Olsson, P., & Montes, C. (2012). Traditional ecological knowledge and community resilience to environmental extremes: A case study in Doñana, SW Spain. *Global Environmental Change. Vol. 22 (3)*, pp. 640-650. <https://doi.org/10.1016/j.gloenvcha.2012.02.005>
- Government of Jamaica. (2024). *Office of Disaster Preparedness and Emergency Management (ODPEM)*. Retrieved 2024-04-08 from https://www.localgovjamaica.gov.jm/local_govt_entity/office-of-disaster-preparedness-and-emergency-management-odpem/
- Grove, K.J. (2013). Adaptation Machines and the Parasitic Politics of Life in Jamaican Disaster Resilience. *Antipode Vol. 46(3)* pp. 611–628 <https://onlinelibrary-wiley-com.ezproxy.ub.gu.se/doi/pdf/10.1111/anti.12066>

- Kelman, I., Lewis, J., Gaillard, J.C. & Mercer, J. (2015). Island contributions to disaster research. *Global Environment. Special Issue: Small Island and Natural Hazards. Vol. 8 (1)*, pp. 16-37.
- Kruse, S., Abeling, T., Deeming, H., Fordham, M., Forrester, J., Jülich, S., Karanci, A. N., Kuhlicke, C., Pelling, M., Pedoth, L., & Schneiderbauer, S. (2017). Conceptualizing community resilience to natural hazards – the emBRACE framework. *Natural Hazards and Earth System Sciences, Vol. 17(12)*, pp. 2321-2333.
<https://doi.org/10.5194/nhess-17-2321-2017>
- Kuran, C. H. A., Morsut, C., Kruke, B. I., Krüger, M., Segnestam, L., Orru, K., Nævestad, T. O., Airola, M., Keränen, J., Gabel, F., Hansson, S., & Torpan, S. (2020). Vulnerability and vulnerable groups from an intersectionality perspective. *International Journal of Disaster Risk Reduction, 50*, 101826. <https://doi.org/10.1016/j.ijdr.2020.101826>
- Lavell, A., M. Oppenheimer, C. Diop, J. Hess, R. Lempert, J. Li, R. Muir-Wood, & S. Myeong. (2012) Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 25-64.
https://www.ipcc.ch/site/assets/uploads/2018/03/SREX-Chap1_FINAL-1.pdf
- Lei, Y., Wang, J., Yue, Y., Zhou, H. & Yin, W. (2014). Rethinking the relationships of vulnerability, resilience, and adaptation from a disaster risk perspective. *Natural Hazards. Vol. 70*. pp. 609–627 . <https://doi.org/10.1007/s11069-013-0831-7>
- Lewis, C. (2022). Climate Change and the Caribbean: Challenges and Vulnerabilities in Building Resilience to Tropical Cyclones. *Climate (Basel), Vol. 10 (11)*.

- McGregor, D. (2003). "The Environment and Ecology" in Understanding the Contemporary Caribbean (Hillman & Agostino—Eds.) IanRandlePublishers.
- Raju, E., Boyd, E. & Otto, F. (2022). Stop blaming the climate for disasters. *Communication Earth & Environment* Vol. 3(1). <https://doi.org/10.1038/s43247-021-00332-2>
- Robinson, S. (2018). Adapting to climate change at the national level in Caribbean small island developing states. *Island Studies Journal*, 13(1), pp. 79-100.
- Turner III, D. W. (2010). Qualitative interview design: A practical guide for novice investigators. *The qualitative report*, 15(3), 754.
- Vetenskapsrådet. (2017). *God forskningsred.* Retrieved 2024-05-12 from https://www.vr.se/download/18.2412c5311624176023d25b05/1555332112063/God-forskningssed_VR_2017.pdf
- Wilson, G. (2010). Multifunctional 'quality' and rural community resilience. *Transactions of the Institute of British Geographers*. Vol. 35(3). pp. 364-381
<https://www.jstor.org/stable/40890993>
- Wisner, B., Blaikie, P., Canon, T., & Davies, I. (2003). Introduction to *At risk: Natural hazards, people's vulnerability and disasters*, 2nd ed. London: Routledge.
https://www.preventionweb.net/files/670_72351.pdf

7. Appendix: Interview guide

7.1 Questions for local people

Basic information:

name, age, occupation/position, where you live, family members

Experiences

Have you experienced a hurricane?

What do you remember from that?

Did you experience the storms in August, 2021?

What happened? How did it affect you and your property?

How did it make you feel?

Did it change you in any way? How?

Did it affect your community? How?

Practices

How would you prepare for a hurricane or tropical storm?

Why do you do this?

Where did you learn that?

How quick would you act?

What do you worry about in case of a hurricane or severe storm?

Community

Is the community important in situations like a hurricane? Why?

How would you describe your vulnerability against hurricanes and severe storms?

How would you describe the community of Negril's vulnerability?

What would you and your community need to improve its resilience towards severe storms and hurricanes?

Does it make a difference to preparedness that it hasn't been a hurricane in a long time?

Communication

Do you get information about an incoming hurricane or severe storm?

From where?

What does the information say?
How many warnings do you get?
Is the information relevant and sufficient?
Is there anything else you think should be included in the information?
What do you think about ODPEM's hurricane management?

External help

What does the aid / help look like after a Hurricane?
What organizations stepped in?
Did you receive any kind of help, assistance or aid?
- from family, friends, community, government, organizations
Do you have any insurance? Does it cover storm/hurricane compensation?
Do you think there is a difference between living by the coast and somewhere else? Why?
Is there something you would have needed?

7.2 Questions for organization and agency

General information

Name, age, occupation and position
Tell me about the organization and your work
How do you use law and advocacy to influence society and politics?
Can you explain how you work with public participatory processes?
How do your education programmes work?
How many members do you have? How do they participate in organizational work?
Why is your work important?
Which are the biggest challenges?
What is the best thing?

Natural hazards - Hurricanes

How do you work with natural hazards such as Hurricanes affecting the island?
The last severe storm in Jamaica was in August 2021- Elsa, Ida and Grace
How did it affect people in Jamaica?
Did it affect your work?

Communication

How does preventative alarming communication work in case of a hurricane?

What do you think about the system?

Is it something that would need to change or add to it?

Is the local communities and participation an important part of disaster resilience?

Why/How?

What do you think about the government's hurricane management?

Vulnerability

Does your education programs include information on hurricane preparedness? Why or why not?

Which group is the most vulnerable to severe storms and hurricanes?

How?

Why?

What do you think they would need to increase preparedness and resilience towards hurricanes?

What does the adaptive capacity look like in Jamaica?

What would Jamaica need to improve its resilience towards severe storms and hurricanes?

What does the aid / help look like after a Hurricane?

What organizations step in?

Is there special policies or aid for vulnerable groups or areas?

- to build preparedness and after a hurricane

Is there anything you as an organization could do/are doing to help vulnerable groups?

I am focusing on the coastal area of Negril, do you have any specific information or knowledge of mitigation and adaptation in that area?