TOWARDS AN UNDERSTANDING OF CLIMATE CHANGE VULNERABILITY AND ADAPTATION IN THE KAIPARA CATCHMENT OF AOTEAROA NEW ZEALAND

CLIMATE ASSESSMENT FOR THE SOUTHWEST (CLIMAS)
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Participants at the community meeting, Otamatea Marae, Kaipara Catchment. June 2017.

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EXECUTIVE SUMMARY

This report discusses use-inspired, qualitative research into climate change vulnerability and adaptation in Aotearoa New Zealand's Kaipara Catchment, as part of the CLIMAS fellowship.

Why was this research needed?

All over the world, social scientists are calling for more holistic studies of climate change vulnerability (the state of being at risk of harm) and adaptation. Social scientists point out that many studies on climate change are heavily influenced by climate science and often assume that vulnerability arises primarily because people are exposed to physical hazards like sea level rise. There is growing evidence to suggest that climate change vulnerability is a complex phenomenon that arises because of the interaction between climatic hazards and socio-economic, political, and cultural issues. Often, the most marginalized groups in society are the most vulnerable. Social scientists note that many scientifically focused studies of climate change can lead to incomplete understandings of climate change vulnerability, which can lead to ineffective adaptation strategies.

These concerns are very relevant in the Kaipara Catchment in the north of Aotearoa New Zealand. In common with other adaptation strategies around the country, climate change adaptation policies in the Kaipara Catchment are driven by climate science, with little consideration given to the social or cultural dimensions of climate change vulnerability and adaptation. The Kaipara Catchment is, however, an area that will greatly benefit from more holistic approaches to climate change, given that many communities in the region experience financial, social, political, and cultural marginalization.

Research design and methods

My research project engages with this need. It was designed to provide information to the Integrated Kaipara Harbour Management Group (IKHMG), an indigenous-led collaborative that is seeking more information about how communities in the region can best adapt to climate change, as part of its larger mission to restore the resilience of the Kaipara environment and communities.

The research was focused by two research questions:
1. How will Kaipara communities be impacted by climate change on a socio-economic, political, or cultural level?
2. What do Kaipara community members see as the most appropriate strategies to address or adapt to these impacts?

I was particularly interested in examining who is vulnerable to what impacts, and how ongoing social, economic, political, and cultural issues and/or processes of marginalization might be driving these impacts and peoples' adaptation preferences and options.

The research was conducted using a community-based participatory research framework, where community members contribute to the design (and collection or presentation) of the research. Data was gathered from 73 people in the Kaipara Catchment using a mixed-methods ethnographic approach involving three months of fieldwork in the Kaipara Catchment. I conducted 34 semi-structured interviews, held one community meeting, and engaged in multiple instances of participant observation.

Target audience and stakeholders

The primary stakeholder involved with the research is the IKHMG, who are hoping to use the data gathered to collaborate with local government to design community-informed climate change adaptation policies. Because the IKHMG has a wide membership including representatives from tribal organizations, local, regional, and national government, regional non-profits, government research organizations, farmers and other interested community members, the research will be useful to many different 'stakeholders'.

The main audiences of the research include the management committee and other members of the IKHMG, communities in the Kaipara Catchment, local and regional government, and the Governance and Policy team at Manaaki Whenua (Landcare Research) a government unit that conducts research on the intersection of indigenous society and culture and environmental issues.

Key outputs and outcomes

The research has resulted in two written pieces of work and two oral presentations. First, I wrote a report for the IKHMG that outlines the main research findings, and details the social impacts of climate change within Kaipara communities, community members' preferred adaptation strategies, and provides some recommendations for future action. I also wrote my Masters thesis using this research. The thesis examined the production of climate change vulnerability in the Kaipara with a special focus on the role that marginalization plays. Finally, I gave two presentations during my stay in the Kaipara: one to a gathering of IKHMG members, and the second to the Governance and Policy team at Manaaki Whenua.

The main outcomes are that the IKHMG is more informed about how climate change will impact communities in the region, and has a record of preferred adaptation strategies. Additionally, the research has helped to begin a dialogue about community responses to climate change, which the IKHMG are interested in pursuing through future research and community meetings. Finally, the research has made a contribution to the literature on climate change vulnerability and adaptation in Aotearoa, and provided me with further research experience and a solid network of contacts in the area.

Lessons learned about use-inspired research

Conducting this project has helped me to further appreciate the importance of ensuring that the research is as useful as possible for the stakeholder or end-user. First, I learned that it is challenging but very important to try and represent research participants' perspectives and ideas as accurately as possible. Second, I learned the value of making sure that research reflects topics and issues the stakeholders and end-users are interested in learning about, and is presented back to stakeholders in a way this is easily understood and appropriate.

Next steps

I plan to continue conducting use-inspired, participatory research on climate change in partnership with the IKHMG. I hope to conduct my doctoral research at the University of Auckland and return to the Kaipara for a closer examination of vulnerability and adaptation. While the final direction will be decided in collaboration with the IKHMG I am particularly interested in studying Māori (indigenous) perspectives on climate change, in order to contribute to the small but growing movement within Aotearoa on indigenous climate justice.

INTRODUCTION

This report discusses the details and outcomes of my CLIMAS fellowship year, during which I conducted, wrote, and presented about about use-inspired, qualitative research on the impacts of climate change and preferred adaptation strategies for communities in the Kaipara Catchment of northern Aotearoa New Zealand.

Why was this research needed?

Social scientists are increasingly turning their attention to the topic of climate change. Social scientists point out that existing research into climate change is often dominated by particular epistemic biases that can lead to restricted, incomplete, inaccurate, or inadequate understandings of key concepts such as climate change vulnerability (the state of being at risk from harm due to climate change) and adaptation (Hulme 2011; Veland et al 2012; Cameron 2012). As Veland et al (2012: 1, 11) and Hulme (2011: 247, 265) note, the orientation and biases of climate change research are more than an academic problem: research that produces inaccurate understandings of concepts like vulnerability may be translated into adaptation policies and strategies that are (at best) ineffective or (at worst) reproduce and compound existing inequalities and injustices.

The scientific framing of vulnerability is a prominent issue within these debates. On a global scale, research into climate change is mostly driven by climate science and – due to a preoccupation with climatic modeling and mapping rather than human experiences and narratives – is often based upon the underlying assumption that physical, climatic hazards (such as sea level rise and increasing temperatures) are the sole factors determining the risk or vulnerability of a group or country to the effects of climate change (Hulme 2011: 247, 265; Liverman 2009: 283; Oliver-Smith 2013: 279; Parsons & Nalau 2016: 82).

There is growing evidence to suggest that climate change vulnerability is a complex phenomenon that results from more than exposure to climatic hazards, and is not equally distributed amongst groups in society (Cutter & Finch 2008; Cutter 1996; Endfield 2008: 3-4). As scholars working from within the theoretical perspectives of social vulnerability and political ecology show, climate change vulnerability is the product of socio-economic and political systems and reflects deep-rooted inequalities within society (Cutter & Finch 2008; Marino 2015; Shearer 2012; Liverman 2015; Yeh al 2014: 62; Faas 2016; Maldonado 2014). Groups who already experience social, economic, and political marginalization (such as exclusion from decision-making and living with financial hardship or limited resources) can be far more vulnerable to harm from climate change than non-marginalized populations (Marino 2015; Maldonado 2014; Oliver-Smith 2016). Marginalized groups may experience greater physical exposure to hazards, be more deeply affected by hazards, and less able to adapt successfully (Adger 2006).

Scientifically-driven climate change adaptation strategies can overlook the social dimensions of climate change vulnerability and can lead to maladaptation where the root causes of vulnerability are not adequately addressed (Hulme 2011: 247, 265; Liverman 2009: 283). If marginalized groups and communities are to adapt to climate change successfully into the future there is a pressing need for scientific perspectives on climate change to be

supplemented with contextual research into the social drivers of vulnerability, which considers community experiences and narratives, and pays special attention to how inequality and social injustice contribute to vulnerability and what, if anything, can be done to address this. These considerations are highly relevant in Aotearoa New Zealand (hereafter referred to as Aotearoa).

Although a handful of studies are based on community experiences of climate change and examine the relationship between climate change vulnerability and the influence of socio-economic and political systems (for example, King et al 2012, King et al 2010, Jones et al 2014, and Manning et al 2011) climate change research in Aotearoa is dominated by scientific enquiry (Parsons & Nalau 2016: 82; Cronin et al 2011). Climate science informs national adaptation frameworks and policy guidelines which local government use in planning to help communities adapt to climate change (for example, Mullan et al 2016; Pearce et al 2016). Because of Aotearoa's colonial history, and ongoing issues such as rural poverty and agricultural debt, indigenous health and economic disparities, and contentions over indigenous people's (Māori) sovereignty and decision-making (Jones et al 2014; Murton 2006; Parsons and Nalau 2016) there is a great need for more studies that highlight human experiences of climate change and examine how issues such as these may contribute to climate change vulnerability and/or necessitate specific adaptation strategies, especially within the country's most marginalized populations.

The northern portion of Aotearoa's Kaipara Catchment is an area that will greatly benefit from more the more holistic approaches to climate change vulnerability and adaptation described above. The Kaipara Catchment is a predominately rural landmass of approximately 6,400 square kilometers that surrounds the Kaipara Harbour in the North Island (Makey 2010: 61). With future climate change, the northern Kaipara is predicted to become hotter, drier, and up to 20% more drought-prone, and experience increasing problems with coastal inundation, erosion, and river flooding (Pearce et al 2016: 53-57, 70-74, 82-89; Mullan et al 2016: 13).

Although local authorities have integrated climate change into planning decisions, most adaptation strategies remain closely allied with scientific understandings of vulnerability (Northland Regional Council 2015 & 2016; Kaipara District Council 2015; Whangārei District Council 2015). Existing research shows that many Kaipara communities – especially communities that are isolated and/or predominantly indigenous – are home to people with lower personal median income and have higher unemployment rates than the national average, are amongst the most deprived in the country, and continue to experience difficulties with claims on and management of natural resources (NZ Stats 2013a-c; Atkinson et al 2013; Murton 2006). At the same time, very little is known about how climate change will affect communities in the Kaipara on a social, economic, cultural, or spiritual level, and until my research was conducted, there had been no studies on the social drivers of climate change vulnerability and adaptation, and few avenues for Kaipara community members to contribute to the design of adaptation strategies (Makey 2010: 364).

The Integrated Kaipara Harbour Management Group (IKHMG) – an indigenous-led multi-stakeholder organization working towards integrated management, restoration, and social development of the Catchment and its communities – is actively seeking more information

about how climate change will impact on communities in the region and how communities can best adapt. The IKHMG hopes to use this information to help prepare communities to address climate change successfully, and to advocate for climate change adaptation planning that focuses on community concerns and aspirations, and promotes community resilience by accounting for the root causes of vulnerability.

PROJECT DESIGN AND METHODS

My research project sought to engage with the need for greater understandings of the social dimensions of climate change in the northern Kaipara. During the summer of 2016 I established a research partnership with the IKHMG, while I was interning with Manaaki Whenua (Landcare Research), a government research agency in Aotearoa. I was introduced to key members of the IKHMG at this time, and became aware of the IKHMG's desire for more information about the social dimensions of climate change in the region. Given my interest in applied environmental anthropology, I proposed that I use my Master's thesis research project to generate data for the IKHMG.

Data for this research project was gathered to answer two overarching questions:
1. How will Kaipara communities be impacted by climate change on a socio-economic, political, or cultural level?
2. What do Kaipara community members see as the most appropriate strategies to address or adapt to these impacts?

I was particularly interested in examining who is vulnerable to what impacts, and how ongoing social, economic, political, and cultural issues and/or processes of marginalization might be driving these impacts and peoples' adaptation preferences and options.

This research project was guided by a community-based participatory research (CBPR) framework. CBPR is a collaborative process where research seeks to meet a community-identified need, and involves the participation of community members in the project design (and in some cases) collection, analysis, and presentation of data (Strand et al 2003: 5; Sluka and Robben 2012: 21-26; Stanton 2014: 574). Being change-oriented CBPR seeks to provide information that can be used by the community to take action (Strand et al 2003: 5). In this case, the research was designed in collaboration with the IKHMG, and sought to provide information that can be used to inform and advocate for the design of locally appropriate, community-based climate change adaptation strategies.

Data were gathered using a mixed-methods ethnographic approach. Ethnography refers to the qualitative approach that is used by anthropologists to gather data. Ethnographic research seeks to contextualize and understand the experiences of people through prolonged contact with research participants in the research site, and can therefore be used very effectively in studies like this to draw attention to the complexity of phenomena such as climate change vulnerability (Malinowski 1922: 47-50; LeCompte 2010: 1-6). To this end, I spent three months gathering ethnographic data in the northern Kaipara between May to August of 2017.

Most of my data collection occurred in the Northland region of the Kaipara Catchment, especially the Kaipara District and western segment of Whangārei District, or territories of the Māori sub tribes (hapū) Te Uri O Hau, Te Roroa, and Te Urioroi. A small amount of data was also gathered in or about the southern Hokianga (Waipoua) and southern Kaipara (Rodney) for comparison. The study area – hereafter mostly referred to as 'the Kaipara' or 'the northern Kaipara' – is illustrated below in figure 1.1.
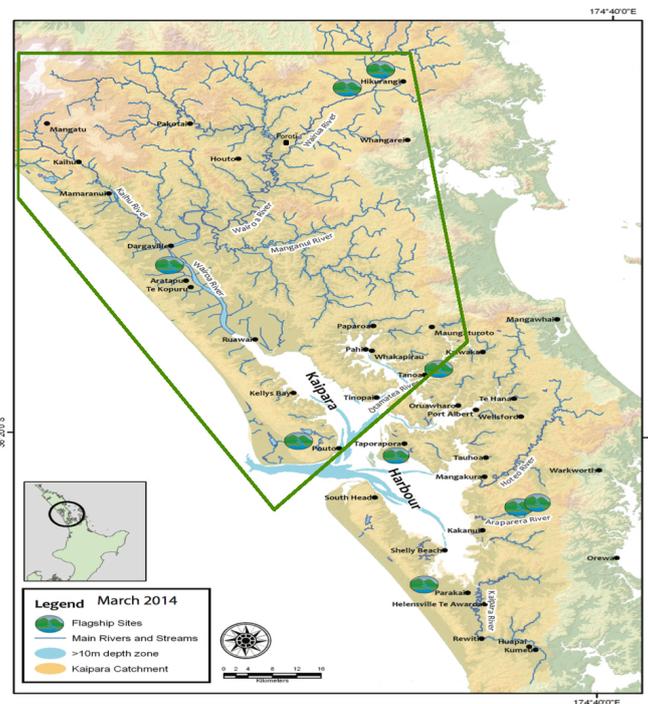

Figure 1.1 The study site in the northern Kaipara. Image reproduced with the permission of the IKHMG 2017.

During the course of the research data was gathered from a total of 73 people, the majority of whom live and work in the Kaipara. 53 of these people shared information during 34 semi-structured interviews, which normally lasted between 30 minutes and two hours. Semi-structured interviews allow for the exploration of key themes in a flexible manner (Bernard 2011: 156; Fife 2005: 95-101). During the interviews participants were invited to identify on a map an area within the Kaipara that they felt comfortable talking about, then open-ended questions were asked to them about their understandings of the area, what changes they have experienced there, how climate change may impact (or is impacting) upon it, and what could be done (or is being done) to address these impacts.

About halfway through the research period, a community meeting or 'hui' was held at the Otamatea Marae (Māori meeting house) to enable group discussion of climate change. Twenty people affiliated with the IKHMG took part with most based in the northern and middle of the Catchment. Participants listened to a presentation about expected climatic changes in the Kaipara based on official projections developed by Pearce et al (2016) and NIWA (2017), and were guided through a series of discussion topics including what they wanted to see come out of the research, how climate change may impact their lives, and appropriate solutions to impacts. Finally, data was collected through participant observation during events such as a volunteer day with the Department of Conservation and during

extended interviews or site visits with research participants. Participant observation allows the researcher to both build theories and triangulate data through participation in and detailed observation of everyday situations and activities (Sluka and Robben 2012: 4; Musante 2015: 251; Morse 2015: 1214).

TARGET AUDIENCES AND STAKEHOLDERS

As indicated above, the main stakeholder involved in this research project is the IKHMG. While the IKHMG is managed by a few key individuals, it is in fact a collective of organizations and groups including representatives from iwi (tribal) and hapū (sub tribal) bodies, local, regional, and national government, government research agencies, farmers' networks, regional non-profits, the primary industries (including fishing and farming), and local communities. Because of the IKHMG's extensive membership and networks, I have been lucky to work with multiple 'stakeholders' during this research project, all of whom have an interest in the findings.

The research is targeted at a variety of audiences including:

- The IKHMG management committee, which hopes to use the research to direct its planning efforts around climate change. The management committee is keen to take an active role in helping communities throughout the Kaipara prepare for and adapt to climate change. This research project represents a first step in this direction.

- The wider IKHMG network including community members.

- Local and regional councils (government bodies). Council representatives from Northland and Auckland regions and Kaipara District contacted me during my stay in the Kaipara. Councils demonstrated significant interest in learning more about the social drivers and implications of climate change vulnerability from a planning perspective.

- The Governance and Policy Team at Manaaki Whenua. Manaaki Whenua is predominantly focused on scientific enquiry, and the Governance and Policy team is looking to expand its understandings of climate change from a social science perspective, with a view to applying this lens to future research projects on climate change. My project has helped the team to learn more about moving in this direction.

OUTPUTS AND OUTCOMES DURING THE FELLOWSHIP YEAR

A. Outputs

This research project has resulted in two written products, and several presentations. Firstly, I recently produced a report for the IKHMG that outlines the main findings of the research. The report details how community members' financial, physical, mental, cultural and spiritual wellbeing may be disrupted with climate change, and identifies the most vulnerable

groups of people including farmers, people living in isolated communities, those with limited income, and Kaipara Māori. The report also discusses how these impacts are intensified by ongoing anthropogenic issues in the region, including widespread landscape transformation, agricultural intensification, limited rural service provision and job opportunities, and marginalization of community members from decision-making. Finally, the report highlights community members' preferred adaptation strategies – such as encouraging socio-economic development and catchment restoration – and provides some recommendations for future action by the IKHMG. This report will be circulated to all stakeholders and members within the IKHMG network, as well as other research participants and interested parties.

The second major piece of written work was my Masters thesis. The thesis focused on the formation of climate change vulnerability in the Kaipara, using the theoretical lens of political ecology. Using four case studies, I proposed that climate change vulnerability must be understood as a social process in the Kaipara, that is the combined result of processes of marginalization. Certain residents of the Kaipara have become more vulnerable to the effects climate change because they experience financial hardship, have limited access to services and resources, and have been excluded from natural resource management and decision-making. My thesis is openly available via the University of Arizona's repository, and will also be circulated to those in the IKHMG network and research participants.

While in the Kaipara I gave two presentations on my initial research findings. The first of these was to attendees at the IKHMG quarterly meeting about halfway through my fieldwork. The quarterly meetings provide a venue for the key members of the IKHMG and its networks to update other members on projects and events. The meeting was attended by approximately forty people that represented Kaipara communities, iwi and hapū organizations, local and regional government, environmental non-profits, and farming businesses. I presented for ten minutes, and took several questions and suggestions. I then integrated the issues raised and suggestions into my research design. The second presentation was given at the close of my fieldwork to members of the Governance and Policy team at Manaaki Whenua. The presentation lasted about thirty minutes and provided an informal and interactive venue for me to share findings and key lessons learned with the team who are at the forefront of indigenous-led environmental research in Aotearoa.

B. Outcomes

The outcomes of this research and the fellowship year include:

- The IKHMG and wider Kaipara community are more informed about the potential impacts of climate change on communities, and have a record of community preferences for adaptation. While the information gathered does not pertain to all communities in the northern Kaipara, it provides an indication to key members of the IKHMG, local policy-makers, and community members of the kind of issues that will need to be considered when designing adaptation policies.

- The community meeting has started a dialogue between community members about climate change impacts and adaptation. This initial meeting has provided impetus for

further meetings, and created a model that may be used by the IKHMG to facilitate future meetings as progress is made with designing adaptation strategies.

- Both my thesis and the report to the IKHMG have made a contribution to the literature on climate change vulnerability/adaptation and marginalization. There is a growing interest in studying the social dimensions of climate change in Aotearoa and my research will add to this field. In addition to providing academic audiences with further studies of climate change vulnerability in Aotearoa, my research may also prove useful for communities or groups elsewhere in Aotearoa or the Pacific that are seeking to deal with issues of marginalization at the same time as adapting to climate change.

- On a personal note, I have been blessed to establish a solid network of contacts within the Kaipara and further afield that may prove very useful as I progress through future research projects and begin my career back in Aotearoa. I have also gained valuable experience with conducting participatory, use-inspired research, managing a budget, and conducting professional presentations.

LESSONS LEARNED ABOUT USE-INSPIRED RESEARCH

Conducting this research project has enabled me to learn several lessons about use-inspired research. I hope to pursue a career in community-based, use-inspired environmental research after completing my PhD, and so these lessons will continue to inform my practice well into the future, and hopefully make me a more successful researcher.

One of the major challenges I faced during this research was trying to accurately represent community members' perspectives in my field notes, thesis, report to the IKHMG, and presentations. Having a background in sociocultural anthropology, I am very aware that researchers can easily misrepresent research participants' stories, understandings, and feelings, which can lead to mistrust between research participants and the researcher, and even cause harm for research participants. I felt enormously privileged that the IKHMG and wider Kaipara community had put their trust in me to carry out research on their behalf, and so I was determined to ensure that my work was as accurate and useful as possible.

Having this motivation led me to take extra-detailed field and interview notes, conduct follow-up interviews with several research participants that I felt I needed clarification from on some issues, and constantly ask myself questions like "did they really say that?" while I was writing up my notes, thesis, and reports. Through this process, I learned that it is very important to arrive at interviews or data collection opportunities with a fresh and open mind, to stay totally present while interacting with research participants, to write up notes the same day, and to not be afraid of asking research participants to clarify things they have said with further questions. In the future, I plan to record and fully transcribe my interviews, as I feel that this would add another level of depth to my understanding, and ensure that I have grasped the participants' point of view as much as I am able.

Another important lesson I learned is that for use-research to be really useful, it must reflect the type of information that the stakeholder desires, both in terms of content and topic, and

in terms of how the information is presented back to the stakeholder. I learned this lesson because my research participants often responded positively when I asked each of them individually what they would like to see come out of the research project. Asking this question at the beginning of each interview and during the community meeting opened up the possibility for research participants to share with me the most important issues they felt needed addressing through the research, and to give me guidance on how the research should be shared back with the community.

An interesting observation that came out of the responses to these questions is that community members within the Kaipara often feel that academics use too much jargon, and rarely convey information in simple terms, meaning that even if academic research might be useful for communities, it is hard for community members to understand the findings. This made me extra aware of the need to keep my written and oral reports to the IKHMG and communities simple and concise, and put my findings in terms that would be easily 'digestible'. Another observation that community members made is that they prefer listening to an oral presentation accompanied by images as opposed to reading a written report. Although I have already given one presentation to the IKHMG and wider community, I am planning to give a follow up talk at an IKHMG meeting in mid 2018 to present on my final research findings and seek input for future research directions.

NEXT STEPS

I plan to continue working on climate change impacts and adaptation in the Kaipara at the doctoral level. I hope to complete my PhD at the University of Auckland and to pursue my research partnership with the IKHMG. I am planning to focus my doctoral research on a more discrete group of people or geographic location within the Kaipara, with a view to gathering more in-depth data that will help the IKHMG and Kaipara communities to better prepare for climate change. I plan to continue using a community-based participatory research framework, and therefore the final direction of my work will be heavily influenced by the needs and desires of the IKHMG.

I am, however, particularly interested in learning more about how climate change will affect Māori iwi, hapū, and whānau (families) in the Kaipara, and helping to highlight Māori perspectives and voices within the design of adaptation strategies. There is a small but growing movement for inclusion of indigenous concerns, worldviews, knowledge, and aspirations within climate change adaptation planning in Aotearoa, and I am keen to contribute to this. More critical studies need to be added to this literature, especially with a focus on understanding how the legacy of colonialism and contemporary issues such as rural poverty, unemployment, health disparities, and challenges to sovereignty have shaped indigenous vulnerability to climate change and appropriate and achievable adaptation pathways. I hope to begin scoping visits in the Kaipara in late 2018, and to undertake a substantial period of fieldwork during 2019-2020.

Thank you again for this fantastic opportunity!

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