CLIMATE STORIES

AS A MEANS OF INCREASING PUBLIC PARTICIPATION IN CLIMATE CHANGE ADAPTATION IN ALBANIA

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Climate Stories as a Means of Increasing Public Participation in Climate Change Adaptation in Albania

An Interactive Qualifying Project Report submitted to the faculty of WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science

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- CLIMATE STORIES TEAM

ABSTRACT

This project assisted Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in collecting and sharing the climate stories of Albanians regarding floods in Shkodër and heat waves in Tirana. The project's purpose was to help residents connect extreme weather events to climate change and encourage public participation in adaptation efforts. Our team conducted twenty-six interviews in Shkodër and Tirana and analyzed the interviews to find impactful stories. The interviews provided insight on the extent of awareness and adaptations to floods in Shkodër and heat waves in Tirana and revealed challenges that prevent effective adaptation. We developed Climate Cards, postcard-like card sets, for GIZ to use to drive conversation and action among residents about climate resiliency in Albania.

AUTHORSHIP

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Findings	Mark & Kayla	Madison & Bella	Kayla
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The contents of each chapter labeled with "ALL" represent all team members acting as editors. This report is the result of a collaborative writing process where sections were divided up between all four authors and drafted. The resulting drafted sections were then combined and edits were made on each section by all authors.

EXECUTIVE SUMMARY

Figure 1 : Shkodër in the aftermath of the 2010 floods (Gjuraj, 2010)

Earth's climate is changing at an unprecedented rate. Human activities such as deforestation, industrialization, and the burning of coal and other fossil fuels have accelerated these changes and have led to global temperature increases, alterations in atmospheric composition, and a rise in sea levels. As a result, there has been an increase in the frequency, intensity, and duration of extreme weather events such as floods, heat waves, and droughts.

Projections by the United States Agency for International Development (USAID) show that a changing climate will negatively impact Albania's agricultural industry, energy and infrastructure sectors, water resources, coastal regions, ecosystems, and the health of the country's population. In fact, the effects of climate change are already being felt throughout various regions in Albania. In 2010 and 2011, for instance, the Shkodër region was devastated by floodwaters when continuous rainfall, fast-melting snow from the mountains, and the unexpected release of water from the Drin Hydropower System caused the banks of Lake Shkodër, Buna River, and Drin River to overflow (Figure 1). The floods displaced 14,200 people, directly impacted the lives of 59,604 people, forced six health centers and multiple national roadways to shut down, and drowned 3,710 domestic animals (Dickinson et al., 2017). In the capital city of Tirana, rapid urbanization after the fall of the communist regime coupled with poor urban planning has compounded the impacts of the urban heat island effect (Figure 2). As a result, many residents face significant difficulties in coping with prolonged periods of high air temperatures since one's socioeconomic status is intrinsically linked to available adaptation options.

The Albanian government has begun working with partners such as our sponsor, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), to improve the nation's preparedness for the impacts of climate change. GIZ would like to explore other initiatives to involve local actors and communities in the decision-making process and the implementation of adaptation initiatives.

Our project focused on how GIZ can utilize Climate Cards to inspire action on the part of individuals and communities about flood and heat wave adaptation. Our team developed Climate Cards (discussed in detail later) from our research collecting climate stories.

Goal and Objectives

Our goal was to collect the climate stories of Albanian individuals to help residents connect extreme weather events to climate change, provide GIZ with a tool to translate public understanding about climate change into participation in adaptation efforts and sustainability programs, and to enable GIZ to represent and account for residents' experiences of climate events. To accomplish our goal, we developed the following objectives:

1. Determine expert and local perspectives of flooding in Shkodër and heat waves in Tirana

2. Document strategies that local Albanian municipalities in Shkodër and individuals in Tirana have used to reduce their vulnerability to climate impacts

3. Develop Climate Card sets that will help residents connect extreme weather events to climate change and contribute personal experiences to encourage discussions on flood risk management and heat wave adaptation planning in Albania.

Figure 2: A cloudy haze of pollution hangs over the region of Tirana (Taylor, 2019)

The Interview Process

We conducted semi-structured interviews with 15 experts and locals in Shkodër and 11 experts and locals in Tirana, Albania (Figure 3a & Figure 3b). In Shkodër, we interviewed residents in Ana e Malit, Bërdicë, and Dajç. We selected these municipalities based on GIZ's vulnerability assessments, which indicate that these communities are heavily impacted by floods in the region. In Tirana, we interviewed residents in Allias, Pazari i Ri, and Stacioni i Trenit. We identified these neighborhoods based on information from experts we interviewed such as an environmentalist, a climate strike organizer, and our translator, who labeled the locations as heat wave hotspots. Our colleagues at GIZ introduced our team to two translators: Arbana, a resident from Shkodër and Farmir, a resident from Tirana. Through our GIZ colleagues and attending a few climate action events, our team contacted seventeen experts and set up

Figures 3a & 3b: Location of interviewees from the Shkodër (left) and Tirana (right) regions

interviews by phone and email. Then with help from our translators and after expert interviews, our team was able to set up local interviews.

Accompanied by our translators, we made two visits to the municipalities of Shkodër and neighborhoods of Tirana. During these first interviews, we sought stories from residents' flood and heat wave experiences. During our second visits, we confirmed the stories we had selected for our Climate Cards with the residents we previously interviewed.

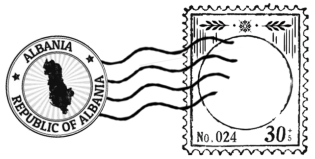
Through our interviews, we collected stories about the impacts of flooding and heat wave events in Shkodër and Tirana, respectively. After conducting these interviews, our team analyzed and selected the most impactful stories of Albanian residents' experiences to use in our outreach materials and findings. Accomplishing this required partially transcribing our notes from

the interviews by re-listening to the audio clips, and identifying stories that most represented the negative impacts of climate change and revealed the adaptations individuals and communities made. After transcribing all our notes, we began our coding process. To code, we recorded when interviewees mentioned or discussed any of our predetermined topics such as “lack of education” and “ideas locals have” based on a color-coded chart. This enabled us to turn our qualitative data into quantitative data.

Our team then created a deliverable, called Climate Cards, that have a story on one side and a corresponding picture on the other (Figure 4). These Climate Cards capture neighborhood perspectives and adaptations based on the impacts of climate change, and serve as an educational tool to share the experiences of Albanians in one part of the country with other neighborhoods across Albania. In addition to being a platform to share people’s stories, our team aimed for the Climate Cards to generate productive discussions within communities and between locals and officials, as well as spur individuals to adopt practices that reduce the negative climate impacts.

I am the lead of the village for 16 years... I was distributing the bread for the families on the boat, the [flood] flow was very rapid and quick, and [it] overthrew my boat, and I was saved [by] a miracle... If the army would not be here supporting and helping us, the whole village would have drowned.

- Village Leader of Ana e Malit



Climate change projections display a decrease in annual rainfall but an increase of intensive rain episodes.

Figure 4: Example of a Climate Card

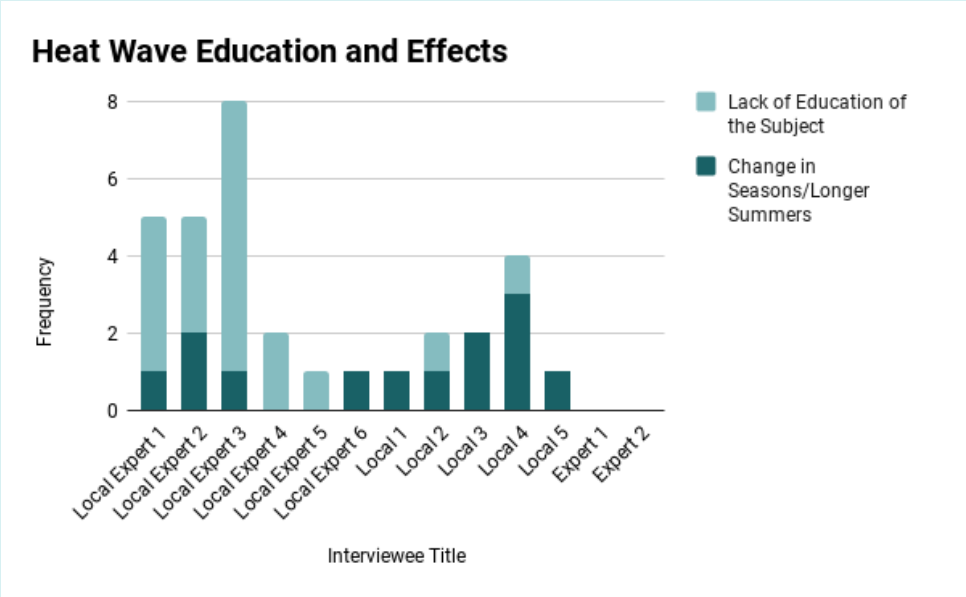


Figure 5: Chart on heat wave education and effects

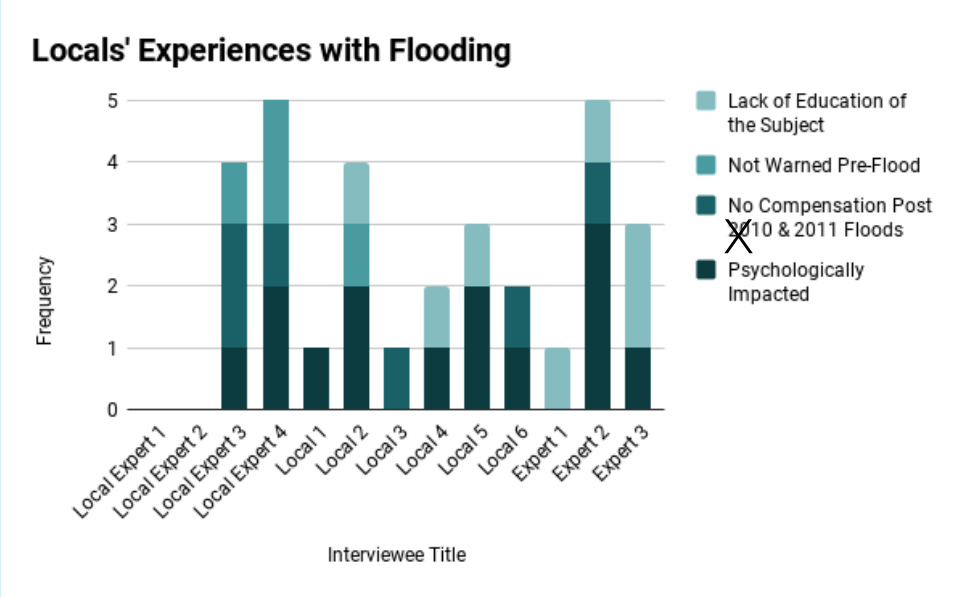


Figure 6: Chart on locals' experiences with flooding

Findings

From our interviews, we found that throughout Albania, although residents are aware of climate events such as flooding and heat waves, there is a lack of public participation and education about the phenomena of climate change leading to an absence of action in communities. As demonstrated in Figure 5 and Figure 6, there was a high frequency of interviewees who mentioned a lack of education about climate change in both Shkodër and Tirana.

Both experts and locals were aware of the changing weather and shifting seasons, but residents failed to make a clear connection between the negative impacts they experience and climate change. In the case of heat wave episodes an urban planner we interviewed described Tirana as a "big city that developed very fast, but there was a lack of planning during this time because the need to build was so big that people just kept building.

Now, there are not a lot of public spaces or green spaces" (Margjeka, personal communication, October 31, 2019). The lack of changes made by the local, regional, and national government proves that there is still much improvement that the government can do to support residents and communities on climate crisis events such as flooding and heat waves. This exemplifies the need for our Climate Cards as they show residents the connection between the climate event taking place in their municipality or neighborhood and how they can participate to reduce climate impacts.

Resident interviewees knew about the occurrence of flooding and heat waves, and they adapt to the best of their abilities, but they do not connect these environmental changes to the climate crisis. One resident we interviewed from the municipality of Dajç exclaimed "families themselves have also taken measures to be safe, they have boats. Almost every family has boats in order to evacuate some of the animals, the most important of them, because most of the time the animals are drowned in the water" (Dajç 1 Interview, 2019). Residents made adaptations such as elevating their homes and building boats in preparation for flooding events and avoiding Skanderbeg Square during heat waves as the concrete absorbs the heat. These actions are meant to reduce their vulnerability to flooding and heat wave events. However, these adaptations are mainly temporary and only address the immediate impacts of floods or heat waves. In order to prevent these problems from occurring, individuals and institutions must address climate events at the root of the issue, which is our human impact on the climate.

Our project aimed to close this knowledge gap and show residents that flooding and heat waves are a result of climate change and to point out steps that individuals and communities can take in adaptation efforts. It is our hope that the Climate Cards we developed can be used to increase public participation in adaptation efforts and help build climate resilience in Albania.

Figure 7: Team members interview a resident of Dajç

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Throughout the report, our team included photographs of landscapes in Albania to show what is at stake if climate events such as flooding and heat waves continue. We do not consider these figures; our team used them as additional visuals in our report, and we do not directly reference them in our text. Any photographs not cited were taken by our team members.

INTRODUCTION

Figure 1.1: A cloudy haze of pollution hangs over the region of Tirana (Taylor, 2019)

1.0 INTRODUCTION

The earth's climate has always been in flux. Paleoclimate records of the last 1,000 years indicate that the planet's climate varies naturally due to factors such as solar and volcanic activity, and earth's orbit and CO_2 levels (National Oceanic and Atmospheric Administration [NOAA], n.d.). According to the National Centers for Environmental Information, these factors drive climate system changes such as ice ages and warmer glacial periods.

However, climate scientists around the world agree that the environmental changes observed in the last 100 years are highly unusual and are very likely due to human activity (National Space and Aeronautics Administration [NASA], 2019). Mankind's continued industrialization, burning of coal and other fossil fuels, deforestation, and other landscape changes are the primary cause of this rapid change in climate (Gutowski et. al, 2013; NASA, 2019). In fact, due to this human activity, global average surface temperatures have increased by more than 0.9˚C since 1906 and global sea levels have risen by 17 cm since the 20th century (National Geographic, 2019; European Environment Agency [EEA], 2011). Other impacts of a changing climate include changes in precipitation patterns, an increase in the prevalence and duration of floods and heat waves, and more frequent and intense natural disasters (NASA, 2019).

The Intergovernmental Panel on Climate Change (IPCC), a multinational group of over 1,300 scientists, has forecasted a global temperature rise of 1˚C to 5˚C over the next century if greenhouse gas emissions continue unabated. Additionally, temperature increases will not be uniform regionally and "the extent of climate change effects on individual regions will vary over time and with the ability of different societal and environmental systems to mitigate or adapt to change" (Gutowski et.

al, 2013; NASA, 2019). Projections by the United States Agency for International Development (USAID) show that a changing climate will negatively impact Albania's agricultural industry, energy and infrastructure sectors, water resources, coastal regions, ecosystems, and the health of the country's population. Albanian residents feel climate change impacts throughout the country, as documented by the pictures from local news sites (Figure 1.1 & Figure 1.2).

The Albanian people are feeling the impacts of a changing climate. Extreme weather events such as flooding, droughts, and heat waves have caused substantial financial and structural damage in regions such as Shkodër and Tirana, and pose a significant threat to Albania's economy, ecosystems, and people (BalkinInsight [BIRN], 2018; Dickinson et. al, 2017; Mejdini, 2015; Porja, 2013).

Recognizing Albania's vulnerability, the national government has begun work to adapt to the impacts of climate change. International organizations working together in partnerships strengthen the process of confronting climate change and its impacts. Our project sponsor, GIZ, is an agency of the German government that has worked closely with the Albanian government to improve the country's climate preparedness since 1988 (GIZ, 2019a). GIZ works with local partners to introduce new strategies of climate change preparedness and planning that incorporates the views of local Albanians. For example, GIZ is working to prevent and minimize the effects of flooding in Northern Albanian regions such as Shkodër by designing and implementing a comprehensive flood risk management plan (Figure 1.3). To develop the flood risk management plan, GIZ spoke with residents impacted by flooding events in Shkodër to gather their experiences.

Figure 1.2: One of fifteen wildfires blazing across Albania at one time ("Exit- Explaining Albania", 2017)

Figure 1.3: Shkodër in the aftermath of the 2018 floods (GIZ, 2018)

From this, GIZ aims to create subsequent flood prevention policies that are effective in reducing Shkodër residents' vulnerability to flood events. Tools that GIZ uses to learn about residents' perspectives on flood risk include interviews, climate games, and case studies (Mansaku, personal communication, September 12, 2019).

Expanding on this work, GIZ would like to develop other initiatives that help the organization integrate scientific and local knowledge to develop adaptive solutions that account for Albanian neighborhoods' values and priorities, with regard to climate change. One initiative that GIZ is interested in exploring is the use of climate stories as a tool to incorporate local perspectives into climate discussions as a way to adjust climate policies to align better with local attitudes. Although they take many forms, through audio or video clips climate stories are useful in conveying the emotional and personal impacts of climate change. In countries such as the United States, climate stories have been useful in generating discussions on resilience strategies, mobilizing individual action, and providing a platform for impactful stories.

Our goal was to collect the climate stories of Albanian individuals to help residents connect extreme weather events to climate change, provide GIZ with a tool to translate public understanding about climate change into participation in adaptation efforts and sustainability programs, and to enable GIZ to represent and account for residents' experiences of climate events. To accomplish our goal, we developed the following objectives:

OBJECTIVE 1

Determine expert and local perspectives of flooding in Shkodër and heat waves in Tirana

OBJECTIVE 2

Document strategies that local Albanian municipalities in Shkodër and individuals in Tirana have used to reduce their vulnerability to climate impacts

OBJECTIVE 3

Develop Climate Card sets that will help residents connect extreme weather events to climate change and contribute personal experiences to encourage discussions on flood risk management and heat wave adaptation planning in Albania.

Figure 1.4: Team members interview dairy farm worker in Bërdicë

Through interviews with experts and locals, we hoped to collect stories about the impacts of flooding and heat waves events in Shkodër and Tirana, respectively. Satisfying our objectives enabled us to learn about residents' observations of climate change and residents' characterization of the issue's urgency. This also assisted our team in providing outreach materials about the strategies residents use to reduce their vulnerability. After conducting these interviews, our team analyzed and selected the most impactful stories of Albanian residents' experiences. Our team then created a deliverable, called Climate Cards that has a story on one side and a corresponding picture on the other. These Climate Cards capture neighborhood perspectives and adaptations based on the impacts of climate change, and serve as an educational tool to share the experiences of Albanians in one part of the country with other neighborhoods across Albania. In addition to being a platform to share people's stories across Albania, our team aimed for the Climate Cards to generate productive discussions within communities and between locals and officials, as well as spur individuals to adopt practices that reduce the negative climate impacts.

CONTEXT

2.0 CONTEXT

This chapter discusses the impacts of climate change in Albania, the work that various agencies have undertaken to prevent future catastrophes, and GIZ's efforts to build local communities' climate resilience and increase Albania's climate preparedness. Section 2.1 examines the change in climate in Albania since the 1960s, the toll that extreme weather events have had, and presents predictions for the country's future given current climate trends. Recognizing this development as a threat to its people, economy and diverse ecosystems, the Albanian government has begun working in conjunction with organizations like GIZ to improve the nation's preparedness for the impacts of climate change. Section 2.2 identifies GIZ's interest in pursuing this project and the key stakeholders importance in the effort to improve climate preparedness in Albania. The last section makes the case for the use of climate stories as a means of encouraging individual and community action to reduce the impacts of climate change and as a tool to spur collaboration among the key stakeholders. It looks at the efficacy of climate stories around the world, explains GIZ's interest in using climate stories as a community engagement technique, and explores how they can be effective in Albania.

2.1 Climate Change Impacts in Albania

Albania is a small country located along the Adriatic Sea in Southeast Europe (Figure 2.1) (Woodcock, 2016). One-tenth the size of Italy, Albania borders Montenegro and Kosovo to the north, North Macedonia to the east, and Greece to the south ("Size of Albania compared to Italy", n.d.). Hills and mountains with elevations of more than 200 meters cover almost three-quarters of the Albanian landscape; the Dinaric Alps span the entire northern and central portions of the country while the Pindus Mountains dominate the southern landscape (Prifti & Biberaj, 2019). West of the mountains and stretching about 30 miles inland from the Adriatic sea, low, fertile plains allow the country's agricultural and industrial sectors to develop (Prifti & Biberaj, 2019). Like many Mediterranean countries, the Albanian climate features warm, dry summers, and mild, wet winters.

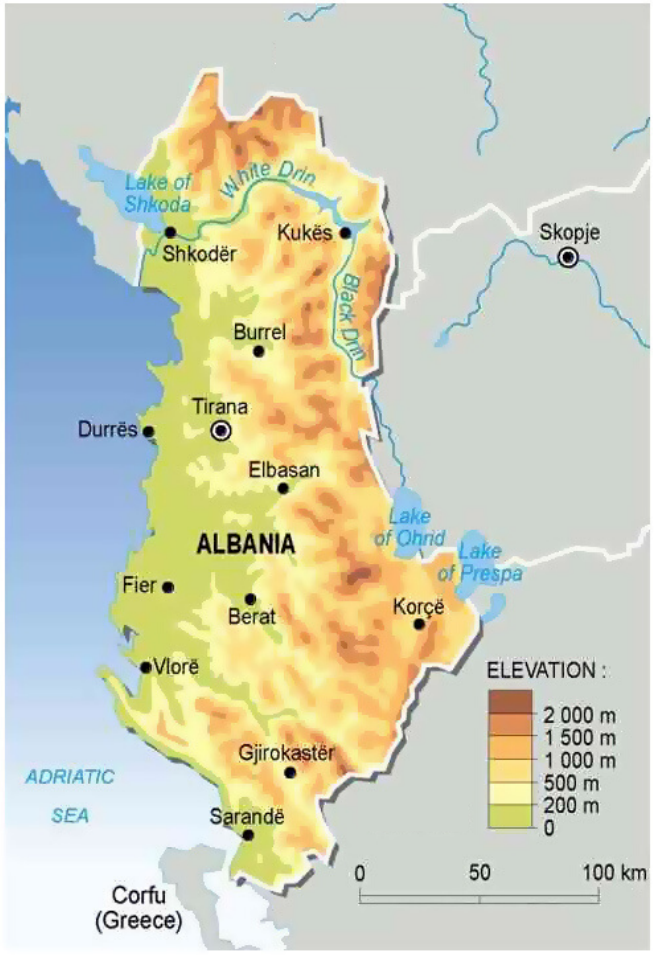

Figure 2.1: Map of Albania (World Bank, 2011)

Due to differences in elevation, local climates can vary across the country (Prifti & Biberaj, 2019). Proximity to the Adriatic and Ionian seas causes the western region of the country to have an average daily temperature high of 29˚C and a low of 20˚C in August. On the other hand, the mountainous regions have an average daily temperature high of 33˚C and an average daily temperature low of 22˚C in August ("Average Weather in Shkodër", 2019).

For the past several decades, Albania has suffered from an increase in the intensity and frequency of droughts, floods, and heat waves—extreme weather events that may be exacerbated by climate change. Heat waves are an example of climate impacts that are generally shorter-lived than droughts and defined as consecutive days with high air

Figure 2.2: Areas vulnerable to heat waves in Tirana

temperatures over a region (Porja, 2013; GRID-Arendal, 2019). Heat waves are usually less well-known among the population because their effects are not as visual as those of other climate events like droughts and floods, however, heat waves have considerable impacts on the health and well-being of Albanian residents. Data published by the *Journal of Earth Science and Climate Change* showed that 61 heat wave episodes took place in Shkodër and Tirana between 1982 and 2012. Further analysis revealed the frequency of heat wave events had increased in the last two decades and that 74% of the recorded episodes took place after 1996 (Porja, 2013). Direct impacts of heat waves include heat stress, heat stroke, and heat related deaths, particularly among the elderly and individuals who have a reduced ability to care for themselves (Ministry of Health, n.d.). Heat waves can exacerbate pre-existing conditions such as “cardiovascular, respiratory and renal diseases,

diabetes, neurological disorders and psychiatric illness" (United States Agency for International Development [USAID], 2016; Ministry of Health, n.d.). The article "Urban Heat Islands (UHI) mitigation in densely urban city of Tirana, Albania" notes that urban regions typically have higher temperatures than rural areas (Dervishi et al., 2012).

Tirana's high population density and air pollution (Figure 1.1) make the heat island effect in the region a large public health concern (Dervishi et al., 2012; Taylor, 2019). Additionally, the building boom in Tirana post-communist era led to excessive tall buildings and lack of green spaces throughout the city which contribute to the heat wave episodes (Margjeka, personal communication, October 31, 2019). The heat island effect is the build-up of heat in an urban area due to inefficient air circulation, heat generation and reflection from buildings and vehicles, as well as a lack of vegetation (Environmental

Figure 2.3: Identified areas in Shkodër impacted by flooding (GIZ, 2015c)

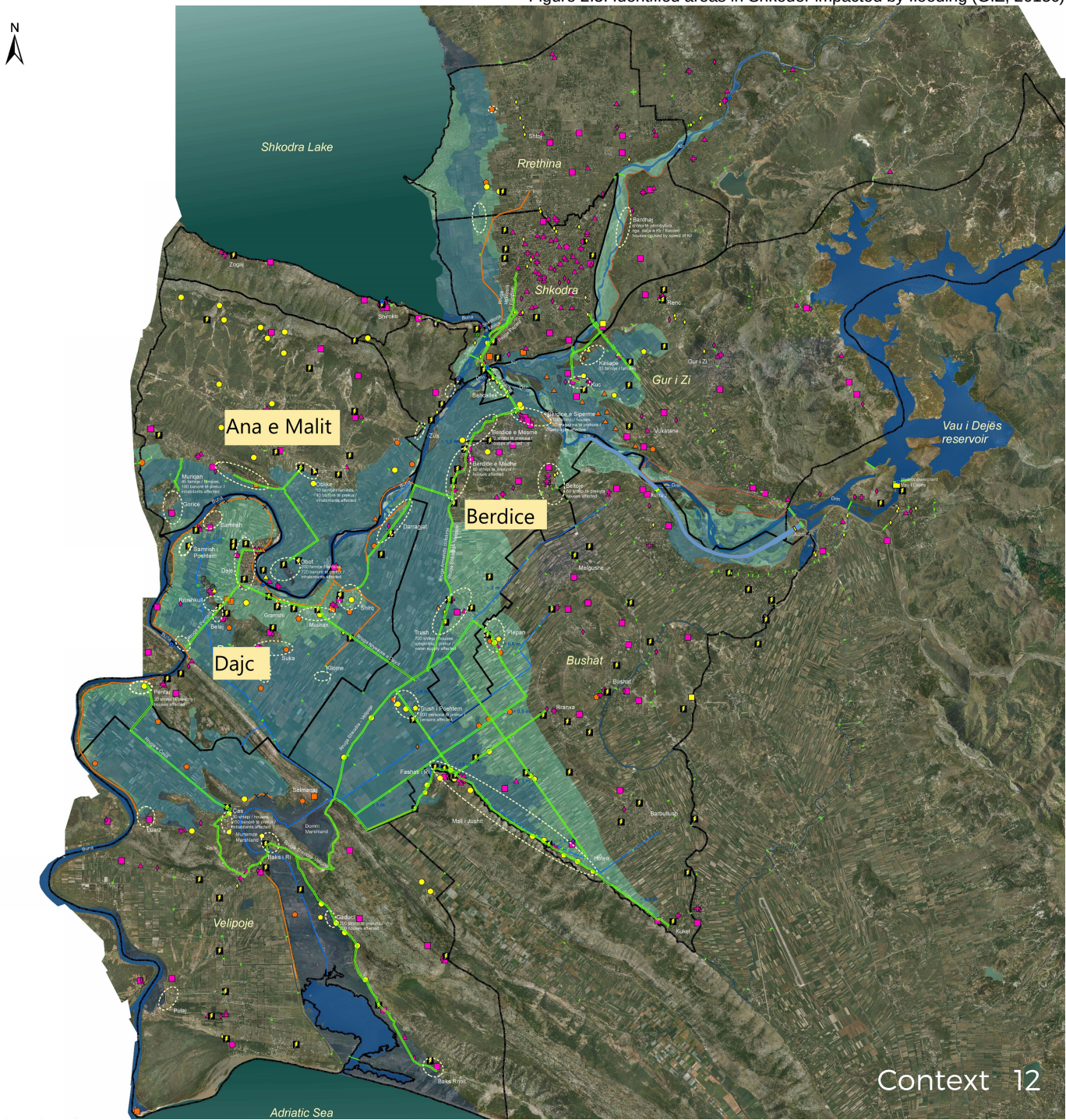

Figure 2.4: Cows transported by boat down the Drin River

Protection Agency [EPA], 2019; Ministry of Health, n.d). Figures 2.2 and 2.3 show the regions Shkodër and Tirana, and the relevance of the municipalities and neighborhoods are discussed later in the chapter.

Increases in air temperature doubly impacts Albanian neighborhoods because when rainfall does occur in drought-stricken areas, it falls torrentially and the drier soils are less able to absorb the water, increasing the likelihood of floods (The Climate Reality Project, n.d.). Sea level rise, soil erosion, deforestation, and unregulated construction also contribute to flooding events and compound their effect ("River floods in Albania", n.d., USAID, 2016). The flood of 2010 in Shkodër is among the most memorable and devastating floods in Albania's recent history. Continuous rainfall, fast-melting snow from the mountains, and the unexpected release of water from the Drin Hydropower System caused the banks of Lake Shkodër, Buna River, and Drin River to overflow, flooding the Shkodër region ("River Floods in Albania", n.d., Dickinson et al., 2017). The Shkodër region, depicted in the Figure 2.3, endured 900 mm (3 feet) of rainfall over the course of a single month, which is approximately half of the region's average annual precipitation (Dickinson et al., 2017). The Head of the Administrative Unit of Bërdicë, Mr. Pashuku, explained that the Drin River Hydropower System is home to the Fierza, Komani, and Vau i Dejës Dams (Pashuku, personal communication, November 8, 2019). These dams can release up to the quota of 1,500 cubic meters of water without flooding, but during the 2010 flood the dam operators released over triple that amount with little to no warning to the residents in the impacted areas (Pertruche, personal communication, November 6, 2019). The subsequent flood displaced 14,200 people, directly affected the lives of 59,604 people, forced six health centers and multiple national roadways to shut down, and drowned 3,710 domestic animals (Dickinson et al., 2017). In all, the 2010 flood caused approximately $715 million in damages, which amounted to about 6% of Albania's GDP for that year. Figures 2.5 to 2.9 show the aftermath of the 2010 floods and other recent flooding events to capture the magnitude and severity of flood impacts in Albania.


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(left to right)
Figure 2.5: Residents evacuated by helicopter during the 2010 floods (Gjuraj, 2010)
Figures 2.6 & 2.7: Flooded streets in Shkodër (GIZ, 2018)
Figure 2.8: Residents use sandbags to create a barrier for flood waters (Gjuraj, 2010)
Figure 2.9: Bread is delivered by boat to flooding victims (Gjuraj, 2010)

From infrastructural damage to habitat destruction and health risks, it is clear that extreme weather events such as floods, droughts, and heat waves pose a significant threat to Albania's economy, ecosystems, and people (BIRN, 2018; Dickinson et al., 2017; Mejdini, 2018; Porja, 2013). Climate projections for Albania from the World Bank indicate a 2˚C increase in mean annual temperature for winter and summer by 2049 and an 8% decline in precipitation patterns over the same period (World Bank, 2011). In addition to making Albania more vulnerable to destructive weather events, a changing climate threatens Albania's energy sector, agricultural industry, and ecosystems. Albania is almost entirely dependent on hydropower for electricity generation, and the Drin Hydropower System supplies more than 90% of the country's domestically produced power (International Hydropower Association [IHA], n.d., USAID, 2016). While capitalizing on hydropower production helps reduce greenhouse emissions and improves air quality, it increases Albania's vulnerability to climate change ("Energy in Albania", n.d.). Decreases in precipitation in the future will lead to a diminished capacity to meet the country's energy demands and may force Albania to import electricity from other countries (IHA, n.d.). Increased summer and winter temperatures and decreased precipitation does not bode well for the agricultural industry. While this sector accounts for less than a quarter of Albania's GDP, it employs nearly half of the country's workforce ("Albania - Employment in agriculture", n.d.). Changes in weather patterns affect farmers in several ways; it could change the growing cycle for farmers, alter crop yields, increase livestock mortality, reduce productivity, and introduce new pests and diseases (USAID, 2016).

Figure 2.10: Residents cool off in the shade during a heat wave (TOP Channel, 2018)

2.2 Stakeholders Involvement in Climate Change Planning

There is widespread acknowledgment of the threat that climate change poses to Albania by government officials, organizational leaders such as GIZ, and the scientific community (Ministry of Environment, Forestry and Water Administration, 2009; GIZ, 2015a). Albania is a signatory to the Paris Climate Accords and its government has taken steps to reduce the impacts of climate change. Some of these steps include the *National Strategy on Climate Change* (NCCS), the *Mitigation Action Plan* (MAP), the *National Adaptation Plan* (NAP), and the *Second and Third National Energy Efficiency Action Plan* (NEEAP). In 2015, the government launched the *National Action Plan* to "identify and assess institutional arrangements, policies and capacities to improve overall coordination" of climate adaptation efforts (NAP Global Network, 2018). While the project is ongoing, its implementation has enabled the Albanian government to assess current climate change information and identify gaps in their development. The NCSS and MAP summarize and systematize existing plans and strategies, providing a comprehensive assessment of the action plans in Albania (United Nations Development Programme [UNDP], 2018). The plans aim to reduce Albania's vulnerability to floods, increase the adaptive capacity of the agricultural sector, ensure that drinking water remains uncontaminated regardless of the impacts of climate change, and to integrate climate change adaptation in all processes of planning and development in Albania (UNDP, 2018). To these ends, the Albanian government continues to partner with foreign and

domestic groups to increase the country's climate preparedness.

GIZ began working in Albania in 1988 to help the country develop economically and to establish its new democratic government (GIZ, 2019b). With regard to climate change in Albania, past projects led by GIZ include the establishment of a fund to preserve Southeast Europe's biodiversity, the integration and implementation of waste management strategies, and the creation of flood risk management techniques (GIZ, 2015a). GIZ believes Albania must use strategies involving both adaptations and reduction of greenhouse gases in order for climate preparedness measures to be effective (GIZ, 2012). The organization also recognizes that adaptation is a learning process and that people involved at all levels of the fight against climate change—from residents to city officials, to the Prime Minister—must strive to continually improve their adaptation strategies (GIZ, 2012).

GIZ's emphasis on involving local actors and communities in the decision-making process and the implementation of adaptation plans is evident in several of its projects in Albania. To implement waste management strategies, for instance, GIZ supports municipalities in "mobilising their residents to get them more involved in the new concepts of integrated solid waste management. This entails information campaigns to encourage waste separation and composting, and the acceptance of fee payments" (GIZ, 2019c). While the project is fairly recent, the creation of tailored training courses in addition to awareness campaigns underscores "the importance of a participatory approach with broad-based civic involvement, especially including the marginalized groups engaged in the informal collection of recyclable waste" (GIZ, 2019c).

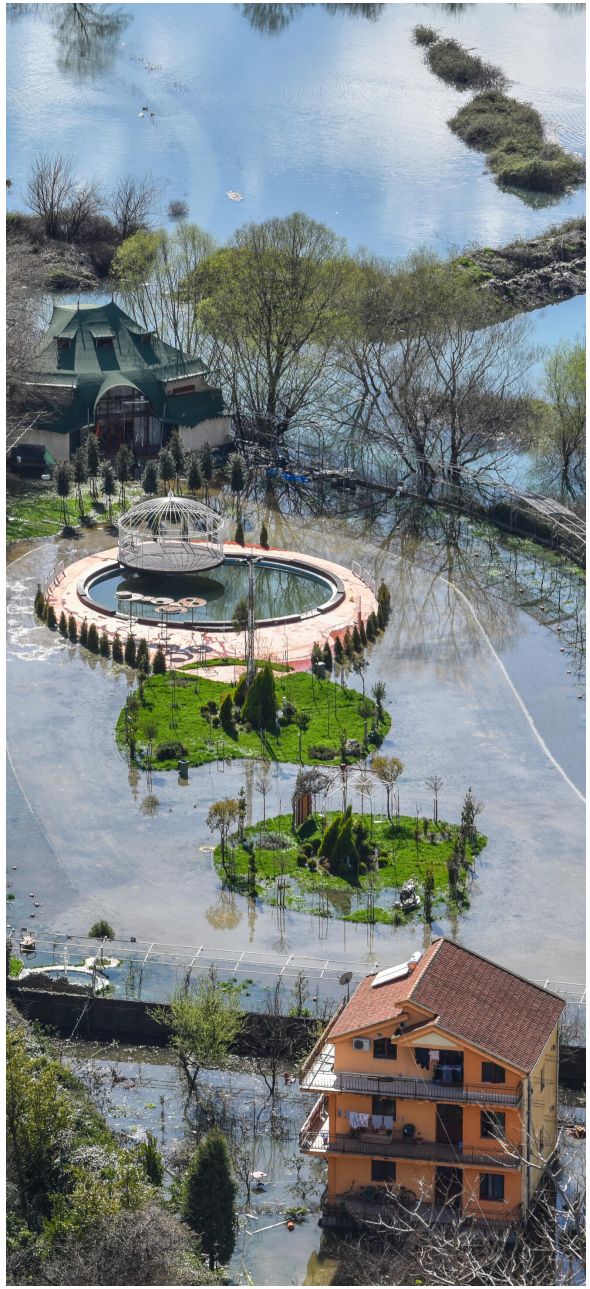


Figure 2.11: Aerial photograph during the aftermath of the 2018 flood (GIZ, 2018)

Another project that integrates the perspectives of the residents in discussions about climate crisis solutions was the flood risk reduction project in Shkodër. Following the 2010 flood, GIZ embarked on an awareness campaign to teach local people about the best techniques to prepare for a flood and actions to take during the flood (Dembowski, n.d.). GIZ developed one regional and eight local flood-risk management plans that assist in bringing together residents, national administrative bodies, universities, rescue services, utility companies, and non-governmental organizations (NGOs) (Dembowski, n.d.). The plans enabled about 30,000 people in the Shkodër region to receive warnings ahead of impending flooding events and give emergency services ample time to prepare for potentially dangerous situations (Dembowski, n.d.). Reflecting on the outcome of the plans, GIZ found that there were discrepancies between residents receiving the flood warnings and their utilization of the recommendations (Dickinson et al., 2017). Striving to involve residents in discussions on an effective solution, GIZ worked with a group of students from Worcester Polytechnic Institute in Massachusetts, USA. They sought not only to raise awareness of the "measures individuals and community members can take...[but] to support stakeholder agency regarding best practices and effective decision-making in the event of a flood" (Dickinson et al., 2017, p. 105). The group developed several outreach materials that set out specific preparation steps such as establishing family emergency plans and having stocked emergency kits (Dickinson et al., 2017). GIZ was able to interact with local families and individuals to set out specific preparation steps and early evaluation of these strategies indicate that these efforts have been successful in engaging community members to prepare for

Figure 2.12: Waves crash over the road during the 2018 flood (GIZ, 2018)

flooding events (Mansaku, personal communication, September 12, 2019; GIZ, 2019d; Dickinson et al., 2017).

Often, when scientists and policymakers discuss solutions to climate change issues, they fail to consider and incorporate the stories and experiences of local people and communities (England, 2019). Branden Johnson, a scholar and researcher from the University of New Hampshire, notes that scholars often view knowledge and ignorance as two ends of a spectrum. Johnson notes that researchers sometimes impose a necessity to educate laypersons, suggesting that they are ignorant of a certain topic (Johnson, 1993). However, when talking about climate change, even though laypersons may not have all the relevant facts and figures, they are a valuable source of information. Local communities living through and adapting to the impacts of a changing climate offer an important and equally valid perspective on the issue being discussed (England, 2019). As such, it is critically important that local communities remain involved in climate impact adaptation discussions and that these communities develop processes to integrate both local and scientific knowledge (Kettle et al., 2014).

2.3 Sharing Residents' Perspectives through Climate Stories

GIZ's work in Albania has demonstrated that communication and framing of climate change are integral parts of decision making and the implementation of positive change. As seen in the flood risk management project conducted in Shkodër by WPI students, engaging the public in conversations about an issue contributes to the community's urgency for action. Two years after the project concluded, GIZ still uses the teams' educational game in conversations with communities to prepare them for the risks with flooding. Keeping open communication between stakeholders at every level facilitates a discussion that considers all the actors involved. Increased involvement from both experts and locals maintains pressure on stakeholders to find an equitable solution, thus helping to ensure commitment on the part of each stakeholder to actions that bring the solution to reality. Education and awareness campaigns are helpful techniques to increase general knowledge of a topic, but "engagement goes beyond simple awareness of the problem: it includes caring, motivation, willingness to act, and action itself" (Scannell & Gifford, 2017). Involving residents in climate impact adaptation strategies gives them a "seat at the table" and engages them in discussions on solutions to issues that impact their lives.

Anthony Leiserowitz, a human geographer at Yale University, has written extensively about strategies to improve communication about climate change. As an expert on public opinion and public engagement with climate issues, Leiserowitz recommends five strategies to elicit social engagement and include local

communities in climate adaptation and policy making. The strategies are as follows:
1. Emphasizing climate change as a present, local, and personal risk
2. Facilitating more effective and experiential engagement
3. Leveraging relevant social group norms
4. Framing policy solutions in terms of what can be gained from immediate action
5. Appealing to intrinsically valued long-term environmental goals and outcomes (Leiserowitz et al., 2015).

Utilizing the strategies outlined previously, Albanian policymakers and organizations working on climate impact solutions can "bring an immediacy to the sometimes abstract nature of climate change communication" and inspire action on the part of individuals and communities (Climate Stories Project, n.d.). One method of engaging laypeople in climate adaptation is listening to stories of their experiences. An important first step is to build trust in governmental policies, increasing public participation in individual and community actions that reduce the impacts of extreme weather events (Harrington, 2014; Jahromi et al., 2016; Weger et al., 2014).

Figure 2.13: Group interview with Head of Administrative Unit and locals in Bërdicë

THE IMPORTANCE OF STORYTELLING

Storytelling has always been an important part of human tradition; stories have and continue to serve as a communal pool of knowledge, a tool for learning and teaching, and a repertoire of local lores and legends (Words Alive, 2018). A good story engages our curiosity and emotions, and when told well, stories have the power to inform, change minds, and inspire action (The Health Foundation, 2016). Marshall Ganz, a Harvard University professor wrote of the power of stories in social movements saying: "Storytelling is how we develop individual and collective identities that define the ends we seek… Storytelling is how we access the emotional, or moral, resources for the motivation to act on those ends" (Ganz, 2016, p.4). There exist several organizations dedicated to using climate stories as a means of informing and motivating action to combat the impacts of climate change. These include the *Climate Stories Project*, *Our Climate Voices*, and past IQP projects conducted by WPI students. A few examples of the stories these groups have shared are depicted in Figures 2.14 to 2.17.

VIC BARRETT | NEW YORK

"I was 14 or 15 the first time I thought about climate change in Honduras. We were at our house, which is close to the beach, and it's also where my mom grew up and lived her whole life. She was talking about how when she was younger, they used to have to walk a little bit to get to the beach, and now it's just right there. I remember being on the beachfront and seeing that the community had put together these sand, rock, walls, and seeing telephone poles that were in the ocean that didn't used to be there. I remember thinking, these people, my people, don't necessarily have the resources or access to knowledge to fully understand what this is and how it's impacting them, but it's clearly a huge presence in their lives every day. And it's because of emissions from where I'm from and actions of people around me and my peers. The society that I live in is drowning the society that I'm from."

"Storytelling is how we develop individual and collective identities that define the ends we seek… Storytelling is how we access the emotional, or moral, resources for the motivation to act on those ends."

JAIME BUTLER | NAVAJO NATION

"Because of our drought, the sand around Cameron became super dry. Then, because of the winds, nothing was keeping it in one place. So we had a reservoir, and it dried up. Then one day it rained very hard. And I remember back when I was smaller, the rains used to be really nice—smooth and consistent. But this rain was very harsh, and a lot of water came down all of a sudden. And it caused the reservoir to fill up, which is sort of good. But then the next few days after that, it was super dry, so it weirdly resulted in dry sand on the top layer. And the lake was super muddy, almost like tar. And after the rain, wild horses came to this one little puddle. They tried to get to the puddle, and it was all like quicksand, and they didn't see it because the topsoil blew over it, and they couldn't get out. It resulted I think in one-hundred-twenty horses found dead in that area."

Figures 2.9 & 2.10: Vic Barrett New York, Jaime Butler Navajo Nation (Our Climate Voices, 2019)

Figure 2.16: Messages from Mandi - India (Reymann, 2019)

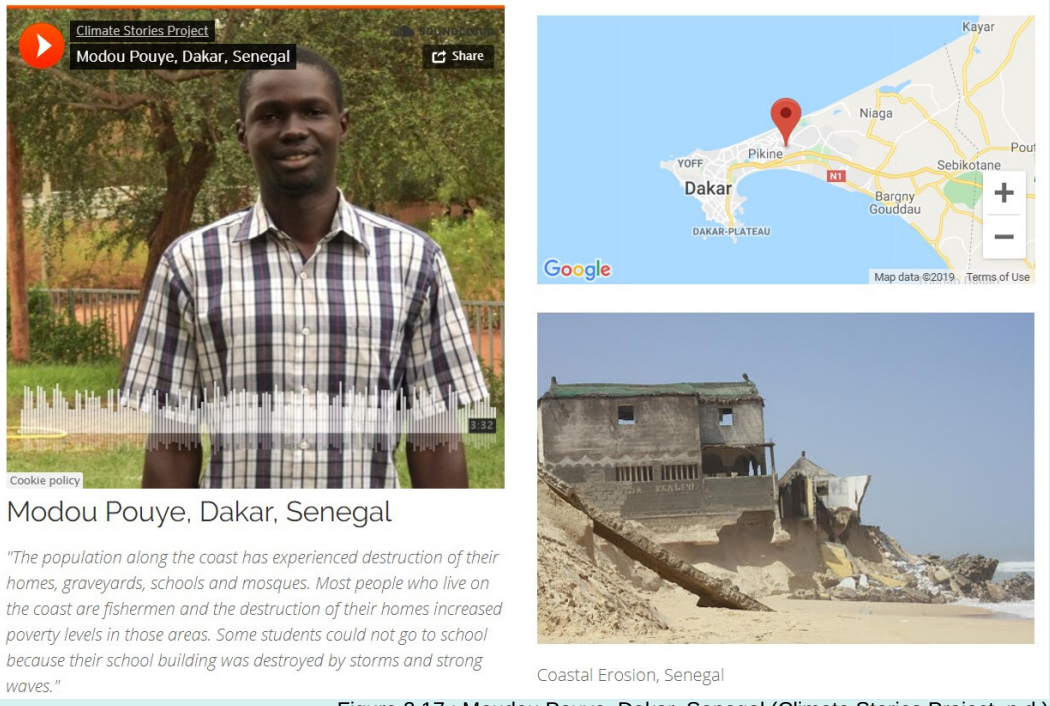


Figure 2.17 : Moudou Pouye, Dakar, Senegal (Climate Stories Project, n.d.)

The climate stories presented are digital collections of people's climate experiences in various parts of the world; they are examples of local community members sharing information about how changes in the environment have negatively impacted their lives. These stories are gripping because they share the real experiences of residents. Moezzi, Janda, and Rotmann agree that storytelling remains crucial for human-to-human communication, making a compelling case for the use of stories as data points for climate research and sources of inquiry for policy decisions (Moezzi, Janda, & Rotmann, 2017). The authors point out that current macro-level metrics, definitions, and storylines used by scientists and bureaucratic institutions are incomplete and can be misleading (Moezzi, Janda, & Rotmann, 2017). They offer stories as a complement to the quantitative assessments currently used as they offer local, micro-level insights; additionally, stories can more effectively engage the public "in climate change discussions [by situating conversations] within narratives that validate [residents'] values and identity" (Moezzi, Janda, & Rotmann, 2017). Most importantly, stories are a means of "[promoting] empathy and engagement, [fostering] multi-stakeholder collaborations, and [helping to] develop better interventions to change citizen… behaviour" (Moezzi, Janda, & Rotmann, 2017). They concede that it remains unclear what the best practices are for evaluating the sole impact of stories on individual behavior and in fostering adaptation (Rotmann, 2017; Moezzi, Janda, & Rotmann, 2017). However, they point out that stories—regardless of what form they take—are more intriguing to laypeople than depersonalised or instructional information and are useful in ways that scientific facts are not (Moezzi, Janda, & Rotmann, 2017).

The use of climate stories as a tool for representing local perspectives and increasing public participation in climate adaptation efforts is relatively new; however, it's potential cannot be denied. The climate stories shared on websites such as the *Climate Stories Project* and *Our Climate Voices* increase public participation by providing context to explain why that climate event is impacting residents' lives and creating an avenue for public discourse on the stories' content and actions that people can take in response. In addition to raising awareness about climate change impacts, the websites provide specific, actionable steps that individuals or groups of people can take to reduce the impacts of those climate events. The *Our Climate Voices* website, for instance, has a tab labeled "Take Action" to provide their viewers with an outlet to support efforts dealing with the climate crisis and encourage more discussion by sharing the stories across different social media platforms (Our Climate Voices, 2019).

After reading a story, the website offers viewers with grassroots solutions so that they can make a difference. Solutions are specific to each story and range from asking viewers to join nearby marches or strikes, contact their elected representatives to ask for support, or sign up for a newsletter through which they can receive updates and discover ways to offer their time, skills, or resources in support. This is the advantage of climate stories; climate stories humanize climate impacts through storytelling, focus on the voices of those most affected, and deliver to the viewer actionable steps to take or resources to use to decrease their vulnerability.

Our sponsor, GIZ, may use the stories we collected from individuals in Shkodër and Tirana as a way to increase public awareness and motivate action among residents regarding flood adaptations and heat wave adaptations. Our team collected the climate stories of Albanian residents and provided recommendations on ways in which our sponsor, GIZ, can use our deliverable to achieve stronger public participation in climate awareness and preparedness. To accomplish our goal, our team traveled to Shkodër and Tirana to learn about residents' experiences.

This is the advantage of climate stories; climate stories humanize climate impacts through storytelling, focus on the voices of those most affected, and deliver to the viewer actionable steps to take or resources to use to decrease their vulnerability.

PROCESS

3.0 PROCESS

Our goal was to collect the climate stories of Albanian individuals to help residents connect extreme weather events to climate change, provide GIZ with a tool to translate public understanding about climate change into participation in adaptation efforts and sustainability programs, and to enable GIZ to represent and account for residents' experiences of climate events. To accomplish our goal, we developed the following objectives:

OBJECTIVE 1

Determine expert and local perspectives of flooding in Shkodër and heat waves in Tirana

OBJECTIVE 2

Document strategies that local Albanian municipalities in Shkodër and individuals in Tirana have used to reduce their vulnerability to climate impacts

OBJECTIVE 3

Develop Climate Card sets that will help residents connect extreme weather events to climate change and contribute personal experiences to encourage discussions on flood risk management and heat wave adaptation planning in Albania.

Figure 3.1 provides a flowchart that summarizes our team's goals, objectives, and methods for the project, which are discussed in greater detail in the following sections.

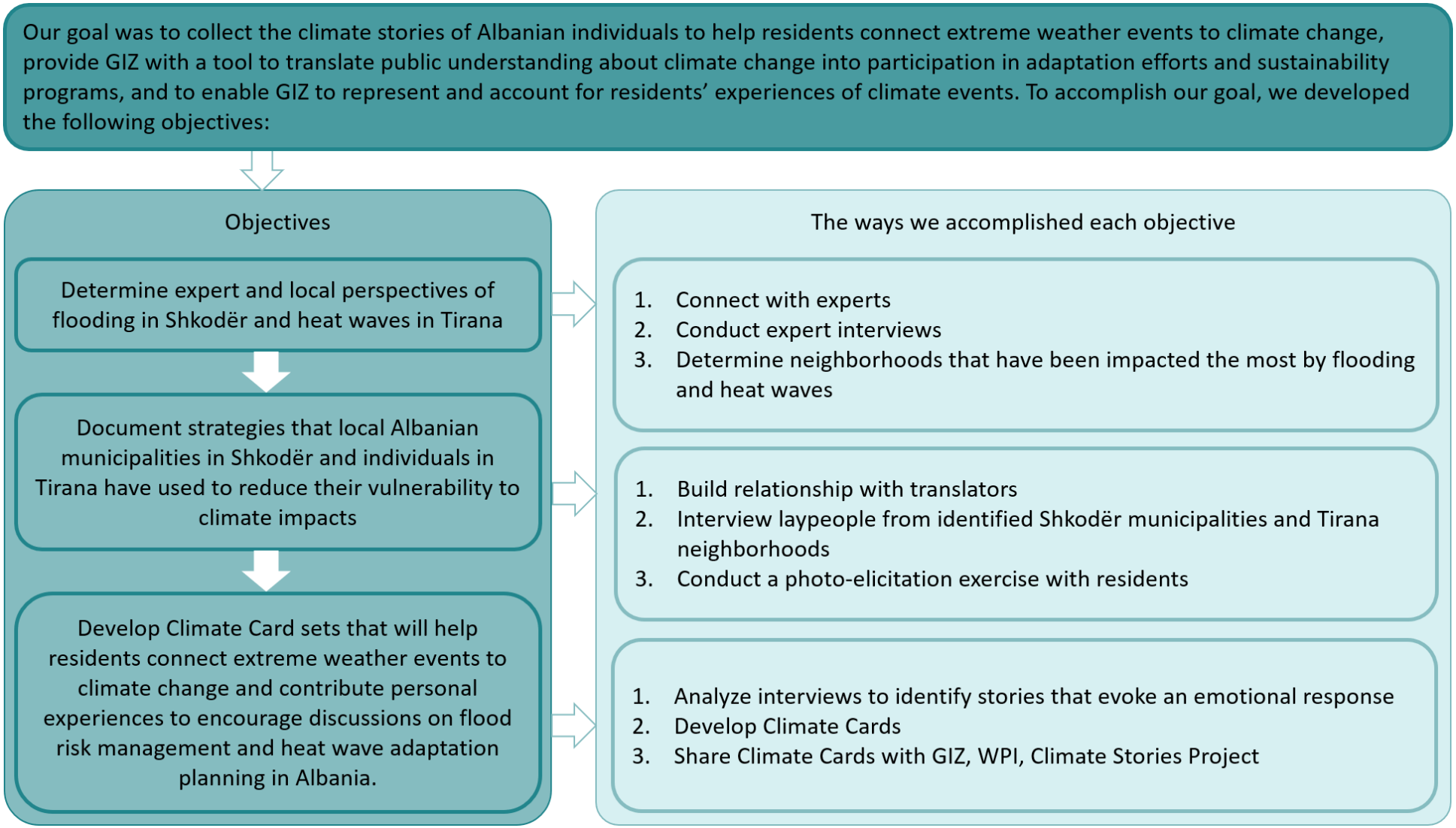


Figure 3.1: Overview of our goals and objectives

3.1 Determine Expert and Local Perspectives of Flooding in the Shkodër Region and Heat Waves in Tirana

After meeting with GIZ and attending a few climate action events, our team contacted seventeen experts and set up interviews by phone and email (Table 3.1). In both Shkodër and Tirana, our group conducted the expert and local interviews similarly and there were many overlaps between the questions that were asked of the different stakeholders. Most of the experts we spoke to also happened to be residents of the area; they were able to share their own personal stories and experiences in addition to providing our team with information from their professional roles. However, the information we gained from the experts differed from the responses of residents because our experts interviewees were more likely to connect flooding and heat wave events to climate change. Our team prepared for these expert interviews by developing questions that would help determine which municipalities and neighborhoods in Shkodër and Tirana are most at risk during flooding and heat wave events, respectively. Our team used maps provided by GIZ to choose regions in Shkodër that are flood prone (Figure 2.3). In Tirana, we chose local interviewees based on the recommendations of our expert interviewees, our translator, and our colleagues at GIZ (Figure 2.2). We aimed to select residents representing a range of ages, genders, and occupations, however, our eventual sample in Tirana was not representative of the general population.

Our team identified the municipalities in Shkodër at risk by reviewing GIZ's *Flood Risk Management Plan* (GIZ, 2015c), and analyzed recommendations from our expert interviews. Regarding floods in Shkodër, the different stakeholder groups include NGOs and professional organizations, local and regional administrators, and residents from Ana e Malit, Bërdicë, and Dajç (Figure 2.3). Regarding heat waves in Tirana, the different

stakeholder groups include NGOs and professional organizations, local and regional administrators, and residents from Allias, Pazari i Ri, and Stacioni i Trenit (Figure 2.2). In order to have a diverse set of experiences from local interviewees who live in Shkodër, our team utilized convenience sampling where one of our translators drove us around and helped us find residents to interview. In Tirana, we chose participants from a range of ages, genders, and occupations. Utilizing recommendations from experts such as an environmentalist in Tirana, a climate strike organizer, and our translator, our team identified hot spot neighborhoods in Tirana to interview residents. Within the neighborhoods of Allias, Pazari i Ri, and Stacioni i Trenit, our team spoke with residents who were at least twenty years of age as these individuals had ample time to notice climate differences over the years and were likely to have more stories to share.

The questions developed beforehand for the expert interviews were specific to the roles and responsibilities of each expert and their experience with climate events as it related to our project (Appendix A). In our conversations with experts, we explored topics such as urban planning, innovations such as flood barriers, and emergency preparedness. Interviews our team had with experts did not always follow the exact questions listed in Appendix A, but rather, the interviews were more of a conversation where our team began by inquiring about the details of the interviewee's expertise as it related to our project and gauging the extent of their knowledge on climate impact risk management in extreme weather events. After learning more information about their expertise, we moved into questions about climate change where we uncovered valuable information about their experiences firsthand. For example, the questions for our team's interview with Arben Gjuraj, the Deputy Mayor of Shkodër, focused on the emergency response system in place to alert neighborhoods of flood events. Section 3.2 explains in more detail our protocol for conducting the expert and local interviews.

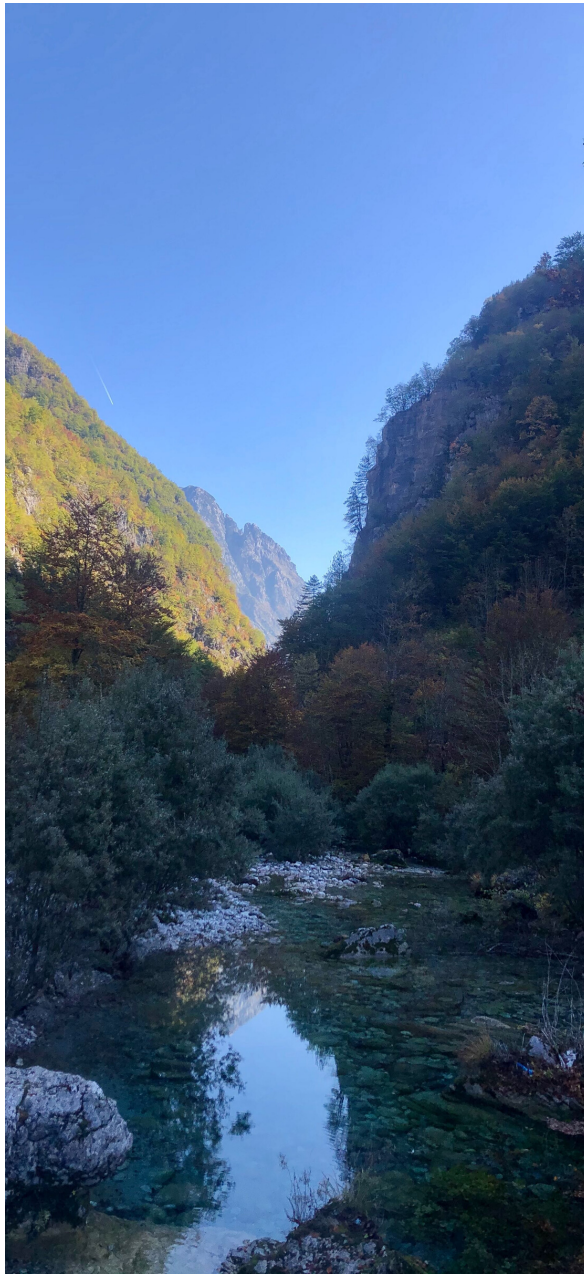
Due to cultural differences between the United States and Albania and project time constraints, arranging resident interviews via phone or email was not possible. To travel to our identified municipalities in Shkodër, our translator connected us with a driver, who also served as a translator, and he drove our team to our interviews in Ana e Malit, Bërdicë, and Dajç. While traveling through the identified municipalities in Shkodër we interviewed two residents in Ana e Malit, three in Bërdicë, and three in Dajç. In Shkodër, our driver stopped the car when he saw a resident outside on their property or working in a business, and our translator got out of the car and asked the

Name	Job Title	Relevant Expertise
Edlira Martiri	QoAir Project Contact	Research on Urban Heat Island Effect
Raymond Hofer	BoxBarrier Project Contact	Flood Risk Management
Sebastiano Carrer	Toolkit Method Project Contact	Flood Risk Management
Elena Gunn	Coordinator for Adaptation Services Project	Disaster Risk Management
Nensi Lalaj	Project Manager BRIGAID, Albanian Partner	Disaster Risk Management
Xhemal Mato	Environmentalist in Albania	Research on Climate Crisis Awareness & Adaptation Planning
Joni Margjeka	Urban Planner in Tirana	Urban Heat Island Mitigation
Alminda Mema	CEO of Aarhus Center	Disaster Risk Management
Aleksander Pashuku	Administrator of Berdice Administrative Unit	Disaster Risk Management
Arben Ceni	Administrator of Ana e Malit Administrative Unit	Disaster Risk Management
Gjovalin Darragjati	Administrator of Dajç Administrative Unit	Disaster Risk Management
Bujane Topalli	Professor at the University of Shkodër	Psychology & Sociology Professor
Arben Gjuraj	Deputy Mayor of Shkodër	Disaster Risk Management
Pëllumb Dani	Head of Emergency Services	Disaster Risk Management
Endri Haxhiraj	Executive Operative Director at the Institute for Environmental Policy	Climate Crisis Awareness & Adaptation
Klea Troka	Medical Student	Heat Wave Risk Management

Table 3.1: Expert contact sheet

residents if they would speak to our team. Our team interviewed seven men and one woman. We were able to interview all residents we asked except for one business owner who did not want to speak about the flooding events as the memory was too painful, and another resident that did not feel he had sufficient knowledge on the subject because he recently moved into the area.

In Tirana, we met with residents that our expert interviewees, our translator, and our colleagues at GIZ connected us with. We walked around the city of Tirana in the target neighborhoods, interviewing residents either at their small local businesses or at bar-cafes and interviewed four men and one woman. Due to time constraints and cultural considerations, our team used a combination of convenience and snowball sampling. Convenience sampling is a type of nonprobabilistic sample completed by selecting participants based on their proximity to our locations, Shkodër and Tirana (Wikipedia, 2019a). Snowball sampling is a nonprobabilistic sampling technique where existing participants recruit future participants from among their network (Wikipedia, 2019b). Our team started with convenience sampling and used those contacts to implement the snowball sampling strategy. Furthermore, having translators from Shkodër and Tirana helped us to quickly find interviewees. These sampling strategies were appropriate for the purpose and context of our project because it enabled our team to find individuals with a range of experiences adapting to floods in Shkodër and heat waves in Tirana.



3.2 Document Strategies Used in Local Albanian Municipalities in Shkodër and Individuals in Tirana to Reduce Their Vulnerability to Climate Impacts

This objective focused on recording personal stories from laypersons and experts willing to share their experiences and adaptations before, during, and after climate change events. Our role as a team was to inquire and collect information that highlighted the importance of climate change preparedness. This objective involved recording stories from people with a variety of experiences in municipalities in Shkodër and for individuals in Tirana. Through our interviews with experts, we aimed to obtain stories that covered both in-depth knowledge of climate impact management in Shkodër and Tirana. Since some of our experts were also residents, we sought to acquire the personal stories of those individuals directly affected by flooding and heat waves. Additionally, our team also obtained these same stories from residents that were not experts, but also had experiences with floods and heat waves. Our team conducted two sets of interviews in both Shkodër and Tirana that started in a semi-structured format where we had a list of guiding questions that ensured the conversation stayed on track (Barriball, 1994). However, as the interview continued, the format evolved into conversations between our team, the interviewees, and our translator.

The use of a translator was necessary for layperson interviews since they did not have proficient English-speaking skills and no team members were fluent in the Albanian language. Our sponsor put us in contact with two adults fluent in both Albanian and English who accompanied us to conduct our interviews. Our team spoke about project expectations, goals, and interview techniques with our translators before traveling to different parts of Shkodër and Tirana in order to make sure our translators understood the kind of information we were looking to gain through our interviews.

Before the interview began, one of our translators read our Informed Consent Script (Appendix B) to our participants. This provided the participants with knowledge about our project, why we were conducting the interview, and it gave them time to ask any questions they had before the interview began. During this time, we asked if we could do an audio recording of the interview for our future reference in developing outreach materials. Before each interview we had the interviewees fill out the Release Form (Appendix C) in either English or Albanian to give their consent and enable us to use the interview for our outreach materials. The participants checked off boxes on the Release form based on the information they permitted our team to use in our final product and report. If the interviewee did not give consent to audio record the interview, the designated team members took notes on the interviews using a computer or a notebook. When interviewees signed this form, it provided our team with consent for the interviews we conducted. Furthermore, it enabled us to use the information from the interview to develop and share our final deliverable, the Climate Cards, and quote the interviewee in our WPI final report.

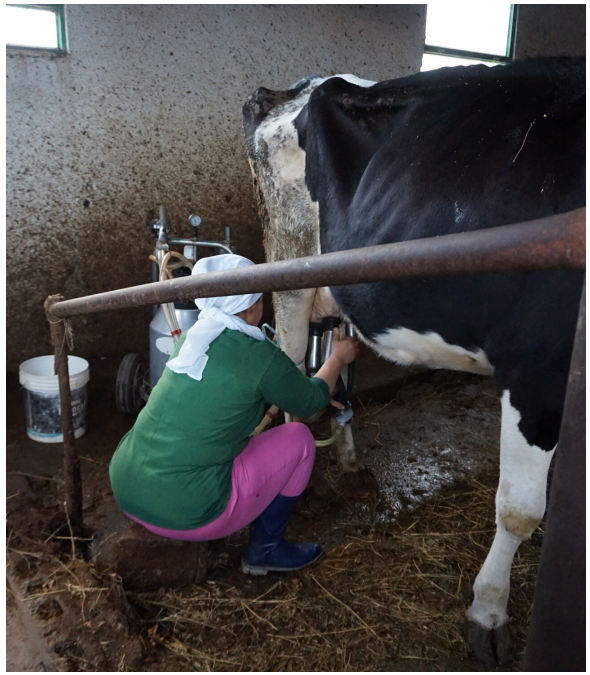


Figure 3.2: Dairy farm worker in Bërdicë

The main difference between conducting the expert and local interviews was that when speaking to the locals, we eliminated project specific words such as *adaptations* and *climate change*, replacing them with more general phrasing such as *changes* and *weather patterns*. Additionally, we only used our translator for six out of sixteen of our expert interviews because many of the experts spoke English fluently. The role of the translators involved translating each question asked by a team member, then translating each response directly back into English after the interviewee spoke (Alamoudi et al., 2015). During interviews shorter responses were translated word-for-word and longer responses were a mix of verbatim and a summarization. The team took notes via laptop, phone, or notebook depending on the devices we felt the interviewee would be most comfortable with us using.

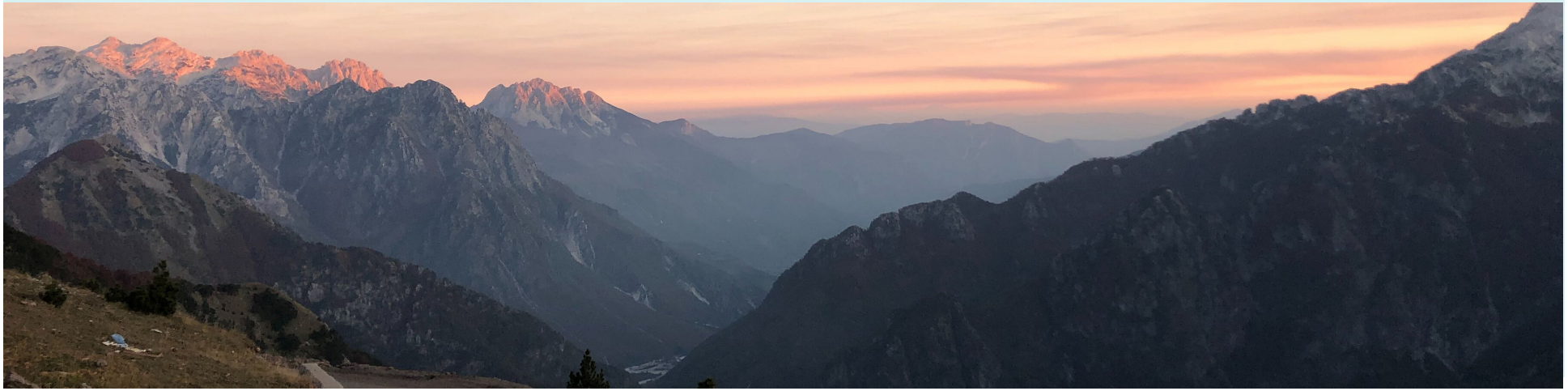
Figure 3.3: Team members taking notes and listening to a dairy farmer during an interview in Bërdicë

Our team determined what form we would take notes while on-site of each interview so that our presence would not overwhelm our interviewee. This meant mainly using audio equipment and laptops for expert interviews and solely using smart phones for both audio recording and note-taking during local interviews.

The roles of our team members changed depending on the number of team members present at an interview. This number varied especially when we were interviewing multiple people simultaneously. If all four members were present, there was a main interviewer, an audio equipment manager, and two note-takers. One of the note-takers was more engaged in the conversation and asked any follow-up questions that came to mind. However, having all team members

and translators at an interview was overwhelming to some interviewees. Hence, sometimes our team chose to split into groups of two when interviewing residents, especially if we had multiple interviews at the same time. Another reason our team broke into groups of two was to hear both the husband's and wife's stories of climate change when visiting rural areas because if they were interviewed together, the husband would likely dominate the conversation. In this case, one team member was the main interviewer, and the other person took notes, asked any follow-up questions, and controlled the recording equipment. During interviews, note-takers from the group identified and recorded the time-stamp for a particularly impactful part of the interviewee's story that evoked an emotional response among team members and interviewees.

In total, our team wanted to conduct at least ten local interviews, with four to six interviews in Shkodër and four to six interviews in Tirana during our first visits to each place. We felt that conducting ten interviews would enable our team to have a variety of ages, genders, and occupations while still accounting for our project's time constraint. During our team's second visits to our identified areas of Shkodër and Tirana, we spoke to the same residents for more information discussed later in the chapter. In Shkodër, we interviewed residents in Ana e Malit, Bërdicë, and Dajç, and aimed to have two interviews in each area (Figure 2.3). Our team interviewed Tirana residents in Allias, Pazari i Ri, Stacioni i Trenit with a goal of conducting two interviews in each neighborhood (Figure 2.2).



Below are a few questions that we utilized during our semi-structured interviews. For a complete list of the questions our team used to guide our interviews, see Appendix A & Appendix D.

- *How is growing up in Albania today different than when you were a child?*
- *What parts of your life are most affected by weather? How so?*
- *Have you observed any specific changes individuals have made to combat flooding/heat waves?*
- *Shkodër specific: Based on your past experiences with flooding is there any actions you now do differently?*
- *Tirana specific: How has your experience with long periods of time that it is hot outside changed over the years?*

Since our team conducted interviews in two different regions, we spent alternating weeks in each region. Starting in week two, our team interviewed experts in Tirana. In week three, our team traveled to Shkodër for a week to conduct the last of our expert interviews and begin interviews with Albanian residents in Ana e Malit, Bërdicë, and Dajç. The following week was spent interviewing residents in Allias, Pazari i Ri, and Stacioni i Trenit. Within 24 hours of each conversation, we analyzed the interview by listening to the audio clips of our translator's translation of the stories, identifying stories that most represent the negative impacts of climate change and revealing the adaptations individuals and communities made.

During each expert and local interview, our note-takers took detailed notes on the interviewees' responses. After the interviews, our next step was to partially transcribe the interviews and begin the coding process. Before coding the interviews, we identified key words and phrases we noticed interviewees mentioned often during interviews. We added a few more codes to the key as we analyzed the interviews for flooding and heat waves, respectively. While coding the twenty-six interviews, we used the following keys (Tables 3.2 & 3.3). When interviewees mentioned or discussed any of the following topics, we highlighted their response to the question in the corresponding color; this approach is called deductive qualitative coding (Mod·U, 2019). We conducted a frequency analysis using the interview transcriptions which enabled us to turn our data into quantitative summaries.

Separate from the coding of the interviews, the selection process for the stories used in our deliverable focused on our discussed intended impact of each story as a whole, which is to promote public participation. We looked for stories that through using direct quotations, evoke an emotional response, display evidence of hope for future change, and attempt to capture the intensity and genuineness of the interviewees' experiences. Our team chose the parts of the recordings that were impactful as they illustrated people's experiences and adaptations to flooding in Shkodër and heat waves in Tirana. Upon completing the first round of interviews, our team traveled back to Shkodër for another two days to conduct follow-up interviews with the same residents we spoke with during the first round of interviews. Due to residents being unavailable during the weeks we had our second set of interviews, we did not have the ability to have second interviews with all experts and residents. In these second interviews, we sought approval from residents for the stories we planned to use in our outreach materials in order to validate them. This second round of interviews also permitted

Flooding Key
Football/Sports
Adaptation
Elevated surfaces
Psychologically impacted
Lack of education of subject
No compensation post 2010 & 2011 floods
Community solidarity
Dams/hydropower systems
Government
Farm precautions
Ideas locals have
Lack of warning
Flood monitoring

Heat Waves Key
Change in season/Longer summer
Lack of education of subject
Adaptation
Air-conditioner
Walking in shade
Avoiding Skanderbeg square
Elderly health concern
Children
Traveling outside of City (for cooling off)
Government
Hospitals/Health concerns
Having no choice but to live life in the heat
Ideas locals have

Tables 3.2 & 3.3: Flood events and heat wave events coding key

Xhemal Mato, First Environmentalist in Tirana

Interviewee: Xhemal Mato- First Environmentalist in Tirana

Interview Date: 29 October 2019

Interviewers: Mark Bray, Kayla Legatt, Madison Perry, and Bella Speer

Translator: None

Location: Xhemal Mato's office

Purpose: To collect more information about heat waves from an expert's perspective.

Do we have permission to audio record this interview?

Yes

What is your area of expertise?

- I have done projects climate change like how we can rise information and climate awareness for leaders, politicians, schools. It is a real impact in Albania.
- Projects on climate change to increase the environmental awareness of climate change leaders, politician campaigns, film of why, what's happening, real impacts.
- Ecocinema - show film in different areas, discussion, not implemented yet but has been written and created and submitted to EU.
- Have to convince people of the real impact there is
- There are different things happening in Albania in different environment and areas causing consequen

What was people's reactions to the film?

- They are shocked that it is real and the level of extreme and people in hospital
- Rivers that have no more water because of climate change
- I believe telling it in film allows you to hear it more because politicians, people in office cannot see what happening in rural areas and people understand, feel, have fear through films
- Most important thing of climate change: people are not convinced are not warned, same with politician and they need to be able to feel it and see the reality

Have you observed adaptations people have made? Response to climate change?

- What does the donkey do when it rains... he lets it rains
- Simple people, no they are not prepared
- They see it in agriculture because they see we need to change and plant and they are learning after they suffer, instead of preparing for it to come
- There are efficient roofs, developing slow
- It is an economical and ecological investment and Albania is not supported to do this work
- I have not seen any implementation linked with climate change
- Agriculture is suffering the most- storms come and crops are ruined and needs more support from politicians

What do people usually do during really hot days in Tirana?

- Let it be hot and during a big storm people cannot really do anything, and they do not know what to do
- Ex: If people are warned about water irrigation 2 days before a storm, first must prepare hole for water then save water.
- Not prepared they see production go down, and they do not really understand why, some just decide to leave the country because of lack of production

Where you grew, and how it is different than today? What changes that you have seen in weather over time?

- Most identified is changes in rain
- Rain was more established was the whole mode of spring, rain is not in the same month, sometimes strong in July
- Seasons are not the same as before
- Extreme rain and temperature have not happened before.
- Changes in rain patterns... April then spring with flowers; now it's variable, comes in different months, might get a year's worth in 5 days, extreme rain and temperature have not been common in the past... older generations feel/witness this
- Underwater has changed drastically too
  - Corals and less fish all linked to climate change
  - Animals underwater are disappearing

Are there any native animals to Albania that used to be in Albania that are not here anymore?

- Ecosystem can be destroyed from people or climate change, so it's hard to tell if climate change has done anything in regards to ecosystem and specifically animals
  - Animals need the ecosystem to survive, if the ecosystem goes, animals go
  - People used to use dynamite to kill fish

Why climate change is not seen as an urgent issue?

- They are not warned or educated of it
- They see it as a problem for the future
- They do not like to spend money for the future, they need to use it now
- Climate change campaigns are used to win elections or positions
  - To spend money or time for the future is not suitable for the government
  - Phenomena is not for the "Albania government", but they are the ones that must resolve it
  - Ex: USA has polluted more than us, so they must pay- what politicians think

Any advice when speaking with interviewing wise & story-wise/that are emotional and make people want to do something?

- Farmer that is prepared would be better than a simple worker
- People that are a little intellectual will explain better how they suffer

Figure 3.4: Example of a coded interview

us to ask any follow-up questions and conduct a photo-elicitation exercise. Our team completed the same interviewing process in Tirana a week after our local interviews in Shkodër. Reconnecting with resident interviewees in Shkodër was easier because they often work at home and our two translators knew how and where to find them. However, in Tirana, we only had one translator and he was less available for our second round of interviews.

During our interviews in each region, our investigation included taking pictures that captured the landscape, documenting evidence of extreme weather phenomena, and recording locals' adaptations to reduce risks related to flooding events and heat waves. During our second visit, when we spoke to the same residents from our first interviews, we asked them to use photo-elicitation to take pictures from their perspectives based on the story that they told us. An example of a question we asked our interviewees is: *Can you take pictures of what you think about after hearing your story?* In the context of our climate stories project, photo-elicitation is a method where participants take pictures of the objects or scenes they believe convey their experiences with flooding or excessive heat (Harper, 2002). The team offered this method to each interviewee during our second interviews, and if they chose to take part, they had two options: one, to have residents share and discuss pictures from past flooding and heat wave events and, two, to use a group member's camera during the second interview to take photographs as a basis for discussion.

We looked for stories that through using direct quotations, evoke an emotional response, display evidence of hope for future change, and attempt to capture the intensity and genuineness of the interviewees' experiences.

3.3 Developing Multi-purpose Climate Card Sets for Flood Risk Management and Heat Wave Adaptation Planning in Albania

Our primary deliverable is Climate Cards, which mimic postcards in their appearance. The layout includes photographs taken by Albanian residents, our team members, or our GIZ colleagues on the front of the card, and on the back, climate stories with experts and residents' experiences and adaptations presented in their own words. Additionally, on the back of the card, there is a fact that educates viewers on scientific evidence behind the climate crisis. We developed twenty Climate Cards for both Shkodër and Tirana. These cards are designed to be an easily distributable outreach material and shared with a diverse group of intended subjects. To supplement the Climate Card sets, we developed one additional card with information including an introduction to the Climate Cards and a list of actions for residents to take to reduce their impact on the environment.

With assistance from our translators, we produced Climate Cards both in English and in Albanian. Photoshop software and Google Slides are the tools our team used to produce the Climate Cards. Using GIZ resources, we printed the Climate Cards in color to share with the organization, the WPI Global Lab, and the people we interviewed. We first presented our Climate Cards with GIZ representatives to receive feedback on our deliverable's effectiveness.

A set of Climate Cards includes stories that share a resident's experience of floods in Shkodër or heat waves in Tirana. Additionally, the Climate Cards include experts' views on the past and future of the environment and convey potential future actions to adapt to changes in the climate. The cards by themselves do not necessarily show important dimensions of climate adaptation discussions such as the difference in perspectives between residents and government officials or how the discussions are often about power, social justice, or

uncertainty. However, Climate Cards can help promote conversations on these topics and motivate action.

To determine the expert and local stories used on the Climate Cards, our team first highlighted instances of relevant stories that the interviewees shared in our summary notes (Figure 3.4). We then went back to the highlighted sections and used time-stamps to listen to the recordings and transcribe direct quotations of each story for use in the Climate Cards. The next step included discussing the stories as a group and with our sponsor to confirm that inserting broken English quotations was appropriate for the Climate Cards, and that GIZ could exercise the cards as a tool to increase public participation in climate change adaptation. After checking the stories, we went through pictures taken by both team members and the Albanian residents and chose pictures of scenes or objects that are appealing to the viewer and accompany the stories on the other side of the Climate Card. All stories selected discussed flooding and heat wave events and were from current Albanian residents.

Telling climate stories through video or audio clips enables the viewer to see or hear the emotion conveyed in the story. Since our Climate Cards included written accounts of the stories, the intent was to capture the intensity of the emotional state of the storyteller by using their exact words and phrasing on the Climate Cards. Albanian residents and team members took photographs for the Climate Cards. To supplement the photographs our team took during interviews, our sponsor, GIZ, and some of our expert contacts provided us with additional photographs. Our team could not take photographs similar to the ones GIZ provided us because although it was flooding season during our time in Albania, no flooding events occurred during our visits to the Shkodër municipalities. Additionally, we lived in Albania from October to December and heat waves are more likely to occur during July and August, so we could not take pictures of individuals experiencing heat waves.

After developing our Climate Cards, we presented them to our colleagues at GIZ for initial feedback on how to best share them with the public. The information we discovered from our interviews and the development of our Climate Cards led us to conclusions about how individuals understand their responsibilities, the roles of communities and the government, and how individuals, communities, and the government deal with the uncertainty of floods in Shkodër and heat waves in Tirana.

FINDINGS

4.0 FINDINGS

In this chapter, our team presents our findings from our interviews with experts and locals in Shkodër and Tirana. Figure 4.1 summarizes the expert and local stakeholders we interviewed for this project. We first discuss the extent of residents' understanding of floods and heat waves and the physical, emotional, and psychological impacts they experienced from past climate events and the threat of future ones. Next, we present the adaptations residents made to reduce their vulnerability, and the challenges that prevent effective planning and adaptation efforts. Finally, we show similarities between our interviews about flooding in Shkodër and heat waves in Tirana and we explain the results of our initial testing of the Climate Cards.

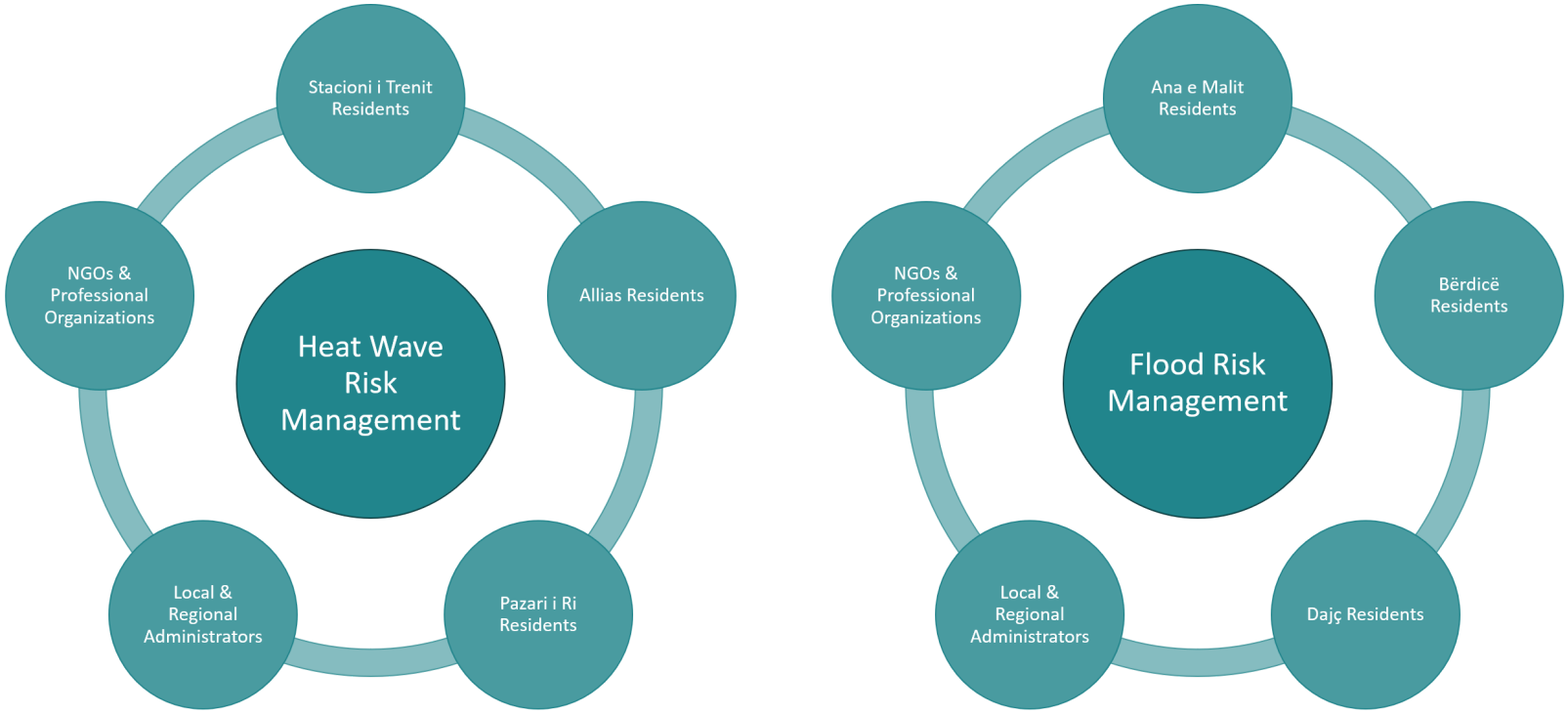


Figure 4.1: Flood and heat wave risk management

Figure 4.2: Water rushes through the Drin River (GIZ, 2018)

4.1 Analysis of Flood Findings

Through our interview process in Shkodër, our team observed many instances where residents made adaptations to reduce the impact of flooding, but they are still at risk. Many of them had strong opinions about where the government should step in to help, and after speaking to experts, we were able to better understand both the governmental and resident perspectives on the issue. By speaking with regional officials, our team understood that there are some things that are out of the local government's control, and at a national level, there are limitations that prevent more effective flood risk planning. Residents in Ana e Malit, Bërdicë, and Dajç have made several adaptations to reduce the impact of flood events; however, understanding local, regional, and national flood adaptation policies will help improve collaboration between residents and government officials and increase public participation in adaptation efforts.

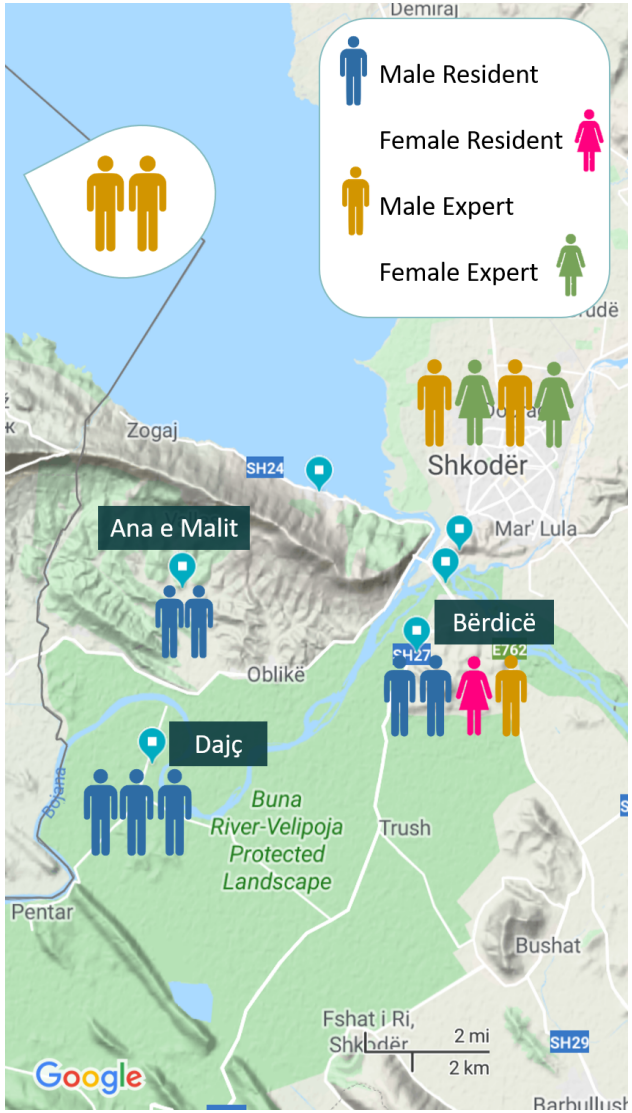


Figure 4.3: Location of interviewees from the Shkodër region

Summary of Interviews

Our team conducted interviews with eight residents in Shkodër: two residents from Ana e Malit, three residents from Bërdicë, and three residents from Dajç. We also interviewed seven experts. Figure 4.3 depicts the locations of the fifteen interviewees in the Shkodër region.

Awareness of Flooding Events

From coding interviews, we identified the extent of awareness among residents and found a general lack of understanding regarding the roles and responsibilities of different levels of government before, during, and after flooding events in Shkodër. Overall, we found that the Shkodër residents we interviewed have a high level of awareness of the impacts of flooding events due to the frequency and the directness of the impact. The physical characteristics of flooding

that residents experience include excessive amounts of water filling their home and land for weeks or months at a time along with drowned livestock (Figure 4.4).

A web of communication exists among the residents of municipalities in the Shkodër region, the local government, and organizations that have offered to help Shkodër residents deal with the impacts of flooding. This widespread awareness helped foster a conversation about the impacts of flooding and has grown to include many governmental departments, NGOs, and organizations such as GIZ and the Aarhus center. Local officials, including the Head of Emergency Services of Shkodër and the Head of the Administrative Unit of Bërdicë, told our team that on average, the Buna and Drin Rivers in Shkodër can handle 1,500 cubic meters of water released from the Vau i Dejës Dam without overflowing their banks (Pertruche, personal communication, November 6, 2019). However, in the 2010 and 2011 floods, the dam

Figure 4.4: A house is fully submerged by flooding in 2010 (Gjuraj, 2010)

operators released three times this quota. The operators were concerned about the integrity of the dams because during a month-long torrential downpour, the Shkodër region received about half of its annual rainfall. The combination of these factors left residents with little warning as the banks of the rivers overflowed (Pashuku, personal communication, November 8, 2019). Our team learned that the difficulty with dam management lies partly in accurate weather forecasts which help operators determine a schedule for the release of water from the dams.

We found that two key pieces of knowledge were important in understanding the perspectives of experts and locals. First, is the connection between the influence of changing precipitation patterns and climate change. Second is the extent to which the management of the dams plays a role in seasonal flooding events. We learned that while the experts we interviewed understood this, the residents we spoke to in Ana e Malit, Bërdicë, and Dajç did not make the connection between flooding events and climate change.

Through expert and resident interviews in Shkodër and Tirana, our team gathered qualitative data. Our team then coded and transformed the data into the quantitative data seen in the graphs referenced in our report. Our team conducted interviews with individuals that are experts and locals. Some experts happened to also have local perspectives based on where they grew up and currently live, so we listed these individuals on multiple

graphs. We categorized the graphs so the number on the left hand side indicates how many times an interviewee mentioned one of the codes in the legend throughout our team's interviews with the participants. The frequency distribution relates to the importance of evaluating the topic for our findings and deliverables.

Figure 4.5 includes both expert and local perspectives; residents provided information about their own experiences while experts gave information and stories about residents they knew. Locals are residents from Shkodër, experts are individuals who have expertise in flood management, and local experts are people who are both residents of Shkodër and who have expertise in flood management. Our team was able to infer details from the graph through the frequency of codes mentioned. For example, Local 1 only mentioned the psychological impact of flooding in one story of the interview while Local 2 provided two separate stories on this topic. From this quantitative data and our observations during the interviews, our team made an association between the number of times a resident referenced the psychological impact of floods and the effect of seasonal floods on the resident.

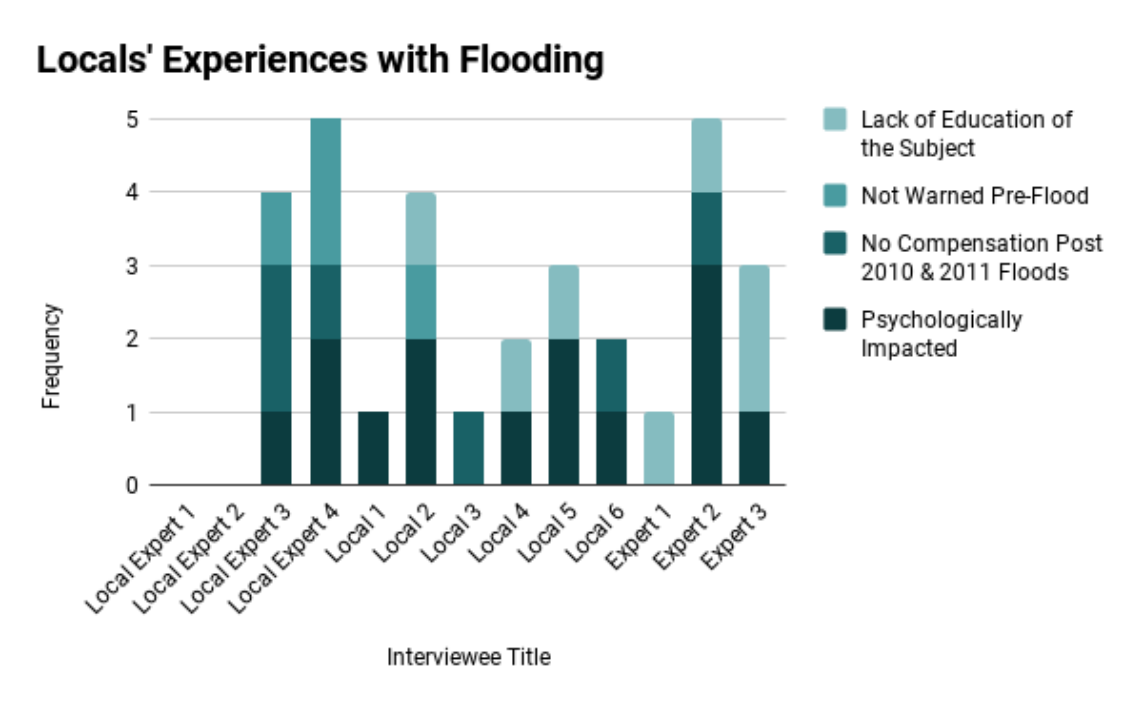


Figure 4.5: Chart on locals' experiences with flooding

The trends in Figure 4.5 show that nine out of the eleven interviewees spoke about the psychological impact of flooding. Of these, all that were not warned pre-flood were psychologically impacted, and all but one who were not compensated post-floods were psychologically impacted. Although warnings have slightly improved from the 2010 and 2011 floods in Shkodër, one resident discussed the lack of warning even in recent flooding events by revealing "if

we are lucky we should get the warning one day before the flood happens" (Ana e Malit 2, personal communication, November 7, 2019). Limited communication of flood warnings and inadequate compensation are flooding impacts that residents repeatedly opined are out of their control.

Communication about the opening of the dam gates by dam operators, as seen in Figure 4.6, is a current problem brought up often by our resident interviewees. We asked a Bërdicë resident present at our interview with the Head of the Administrative Unit of Bërdicë about the warning process before flooding events. He replied: "the warnings should happen before the floods come but they don't. When it happened in 2010 no one knew [it] happened because it happened at night" (Pashuku, personal communication, November 8, 2019). This was a grievance brought up by several other resident interviewees as well, however, expert interviewees such as the Head of the Administrative Unit in Ana e Malit and the Head of Emergencies of Shkodër were knowledgeable about how flood warnings are distributed to municipalities and individual families.

We found through our interviews that the flood risk management experts had more knowledge of the hydrology of the region and had a better understanding of the complexity of factors that lead to floods in the region. Both expert and resident interviewees placed the responsibility for further adaptation actions on the government. According to a GIZ project about flood risk management in the Balkan region and the Shkodër flood risk management plan, "flood[s] exceed any institutional and administrative limits. It requires cooperation between the bodies that are responsible for flood risk

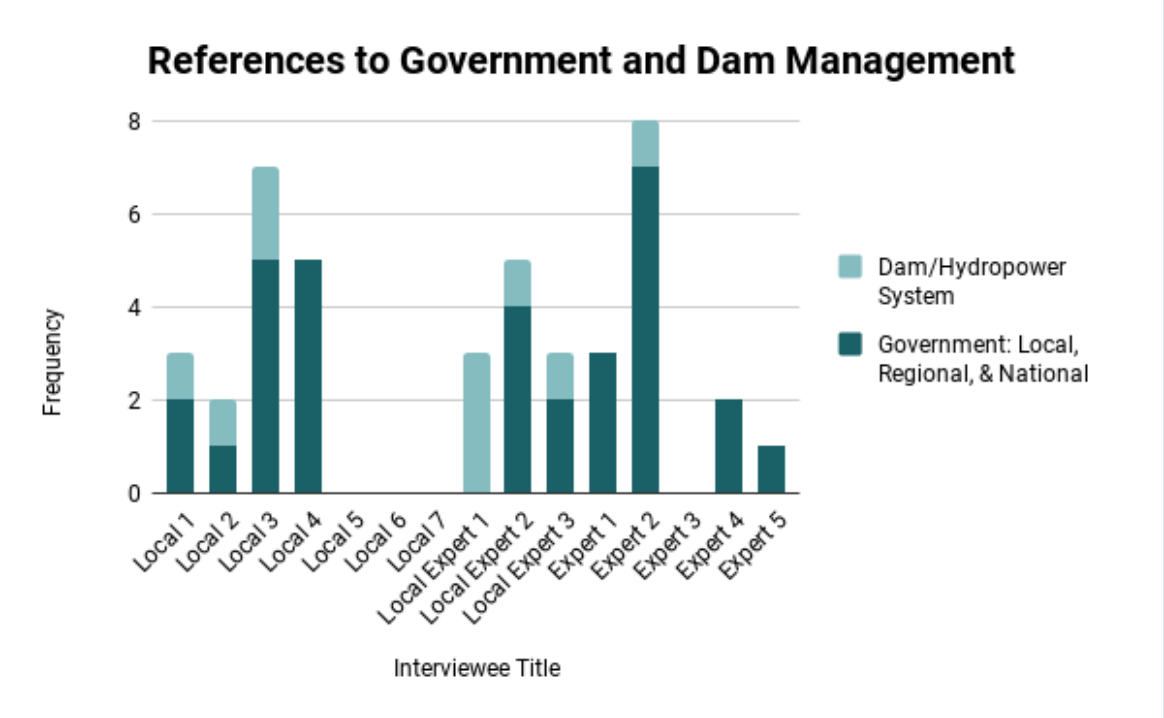


Figure 4.6: Chart on the references to government and dam management

management. It requires our coordinated and harmonized actions" (GIZ, 2015c). This quote confirms that from the residents' point of view, they have already done everything in their power to adapt to flooding events.

We found many of the responses from our interviews to be evidence of psychological impacts of flood events and gaps in understanding between flood risk management professionals and residents dealing with the impacts of floods. For example, flood risk management for one resident in the Dajç municipality included going "to the old remains of a church to check the Buna River water level. [He] checks the week before predicted heavy rains to prepare… [he] also checks every day during autumn and winter" (Dajç 1, personal communication, November 12, 2019). This quotation exemplifies a sense of resourcefulness and self-sufficiency that we found in many of the residents we interviewed who experience repeated flood events. On the other hand, the Head of Emergency Services in Shkodër presented our team with a more official summary of the process of flood risk management. He stated:

> "we have the institute of meteorology that deals with forecasting. We get notification from this institute and we give instructions to agency of civil protection under the Ministry of Defense which coordinates further steps. We get weather forecast every 24 hours like with they expect rainfall. Our head office notifies municipalities and we coordinate with the hydropower stations so that they don't have discharges at the wrong time" (Dani, personal communication, November 7, 2019).

These quotes from the Dajç resident and the Head of Emergency Services in Shkodër are evidence of the gap in understanding between residents and experts we interviewed regarding flood risk management.

Overall, these charts display residents' feelings on how the local, regional, and national levels of government manage flooding in Shkodër. One farmer in Bërdicë explained that he built a multi-floor house to protect his family from floods. Additionally, he asked the government for loans to build another cowshed, but they denied his request (Bërdicë 2, personal communication, November 8, 2019). This account shows that Albanian residents take adaptation steps to reduce the impact of flooding in their own ways, but they need more support. There are a large number of victims in Ana e Malit, Bërdicë, and Dajç searching for more assistance with flood preparedness and recovery from governmental figures as shown in the example above. Although one could argue that the residents of these municipalities should not build on flood-prone land, these families and communities have owned land in these areas for generations. Furthermore, when climate crisis events such as floods occur, residents aim to protect their land rather than moving to areas that are less vulnerable to flooding events.

Adaptation Efforts

From interviewing both experts and locals, our team identified the variety of reactions and adaptations to flooding events of residents at the physical, emotional, and psychological level. Figure 4.7 shows that residents in the municipalities in Shkodër that we interviewed are very creative in adapting to floods. The following graph shows the most prominent adaptations mentioned in our interviews.

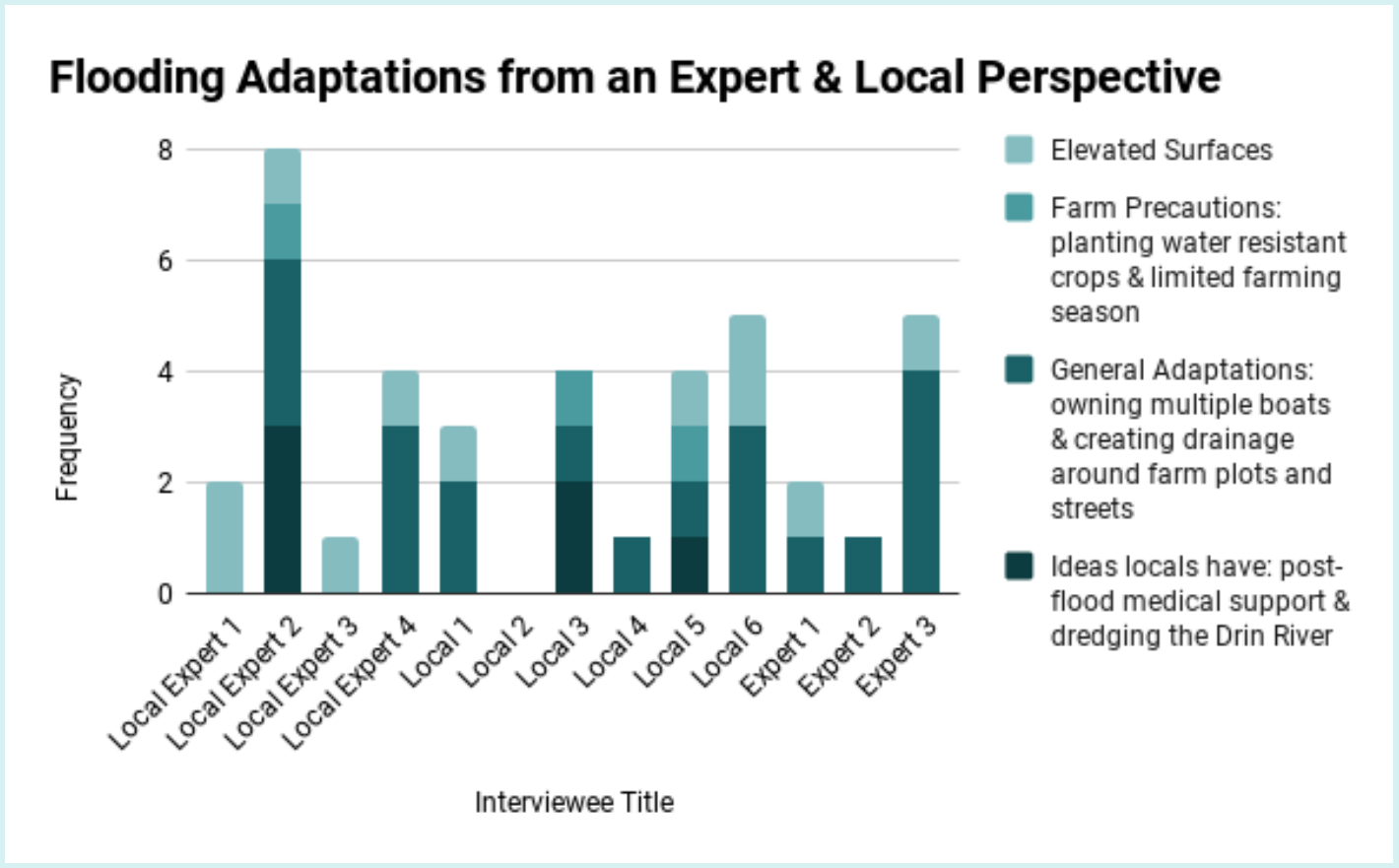


Figure 4.7: Chart on flooding adaptations from an expert & local perspective

Nine out of ten residents we interviewed mentioned making flood adaptations, and one interviewee who discussed the psychological impacts of flooding instead of adaptations. General pre-flood adaptations experts and locals mentioned include ideas such as owning multiple boats, turning off gas, electric, and water lines before evacuating, placing sandbags around their homes and barns, constructing bars on doors and windows, regularly inspecting water levels, and creating drainage around farm plots and streets. The one adaptation mentioned the most throughout all interviews was creating elevated structures such as houses and barns. Elevated surfaces include building an entire first floor that is solely concrete, meant to boost the house up to avoid furniture and appliance damage, so that during flooding events, residents can move all their furniture to the second and third floors and evacuate their homes.

After the 2010 and 2011 flooding events, the farmers we interviewed learned to take into account flood risk in relation to planting their fields and safeguarding their livestock. Farmers planted water resistant crops and built boats to carry their livestock to higher ground in case a flooding emergency requires evacuation. Furthermore, these farmers now limit their planting and harvesting season from March through the end of September as this is when flood vulnerability is the lowest. Due to flooding events taking place during “late fall and winter time and [at the] beginning of spring” it is not practical to plant crops from November to February (Gjuarj, personal communication, November 5, 2019). Additionally, “people plant vegetation that resists floods or grow agricultural products [at] higher levels. Farmers do a rotation of plants that can endure much water" (Gjuarj, personal communication, November 5, 2019). One flood-resistant plant is corn; it is sturdy and tall and can endure more water than a crop like wheat. Wheat has to be planted in months when flood vulnerability is not as high. Additionally, farmers plant far away from the rivers and elevate crops by planting on higher ground to maximize growing time (Figure 4.8). This is not an adaptation that governmental officials or other flood risk mitigation organizations have suggested for the farmers to take; rather, they learned from the past flooding events and altered their livelihood.

Although these individuals cannot accomplish all of the ideas they develop, their hope is that by sharing their ideas, individuals like government officials will be able to help them. Three of the Albanian residents in Ana e Malit, Bërdicë, and Dajç provided us with many ideas of

Figure 4.8: Elevated crops in Bërdicë

how to better manage flooding events. The ideas include having stronger medical support for the residents of these specific municipalities such as a doctor nearby when flooding events occur and compensation assistance from the government.

Reactions to Flood Events

Residents in the Shkodër region who have experienced floods endure both physically and mentally difficult situations. Flooding events are mentally scarring to the individuals we interviewed as a mass amount of water alters their lives with little to no warning. During the 2010 and 2011 flood events, residents received no warning, but during more recent flood events, residents are provided up to a day of warning to prepare their homes for flooding and begin evacuating their land. One resident we interviewed from the municipality of Dajç exclaimed "families themselves have also taken measures to be safe, they have boats. Almost every family has boats in order to evacuate some of the animals, the most important of them, because most of the time the animals are drowned in the water" (Dajç 1, personal communication, November 12, 2019). The floods ruin businesses, livestock, vegetation, and family treasures, having a lasting impact on residents' mental health. Both expert and resident interviewees explained that mental illnesses common to those impacted by flood events include memory loss and Post Traumatic Stress Disorder (PTSD). Psychological and emotional changes cannot be measured in the same manner that adaptations and physical impacts can. From listening to the residents' stories and the tones used, our team understood the terrifying experiences these individuals endured.

One man specifically spoke about the physical and mental impact the floods continue to have on his life, as he states "the floods have affected my psychologic condition as well as my economic condition... it damaged the plaster on my house, and damaged the furniture and my car and the electric oven... The animals passed away... We couldn't do anything before or during" (Dajç 2, personal communication, November 12, 2019). This unfortunate story exemplifies the sense of helplessness felt by the people we interviewed in these flooding areas and the effect the climate crisis has on their psychological and emotional health.

Adaptive Solutions Suggested by Experts and Residents

While interviewing both experts and locals, their experiences with flooding events did not vary significantly. However, ideas for future adaptation planning differed as experts were more knowledgeable than locals about adaptations government officials attempted in the past. For example, many residents believe the government should dredge the Drin and Buna Rivers, but experts explained to us that this solution had been tried

previously and that officials no longer view it as a feasible solution because dredging is expensive and is not a permanent solution. Instead, experts recommended implementing curriculums that teach the locals about the terrain in Shkodër and flood susceptibility. Figure 4.9 shows an example of a building whose situation makes it particularly prone to floods as it is located at the intersection of the Drin and Buna Rivers. As a result, when the rivers overflow their banks, the mosque and its surroundings are submerged and damaged.

Figure 4.9: Xhamia e Plumbit, Lead Mosque (GIZ, 2018)

All the experts we spoke to mentioned adaptation strategies that are currently used by Albanian residents in the Ana e Malit, Bërdicë, and Dajç municipalities. Figure 4.10 shows an example of a house isolated by a flood in 2018; note that the porch is above the water level and that the two-story house was built on an elevated surface. In the foreground of the image, there is an aluminum-sheet-covered building and two items covered by a plastic sheet. Based on our interviews, the building likely houses farm animals and the two covered items may be haystacks or other animal feed that the owner covered for preservation.

Expert interviewees expanded on ideas of what should be done at the individual and community level to adapt to the flood events occurring. Five out of six experts specifically discussed residents elevating their homes and barns along with mentioning other adaptations the Albanian residents in these municipalities already execute. Experts agreed that residents are already taking precautions to flooding events

Figure 4.10: 2018 flood isolates elevated house

occurring in their municipalities, and assisting those in municipalities around them through community solidarity, which we discuss in the next subsection.

Challenges Albanian Residents in Shkodër Face From Flooding Events

Despite residents adapting to flooding events through their own means, they still struggle with the aftermath. We found that there were contrasting views on community solidarity in response to flooding events. During floods, it is common for community members living on higher ground to provide shelter to family members or neighbors and if able, to provide food to persons who remain in flooded areas. However, during and after flooding events, we found mixed responses regarding individual's willingness to help one another manage the impacts. From our interview with a University of Shkodër professor, she exemplified strong community solidarity by sharing that after floods "[residents] are very open to support each other" (Topalli, personal communication, November 16, 2019). When we spoke to those directly affected in Bërdicë and Dajç, their responses included: "the situation is the same for everyone. Everyone tries to save themselves. There is no place to turn to complain" (Bërdicë 2, personal communication, November 8, 2019) and "everyone is doing his own thing and you don't know the others so much" (Dajç 2, personal communication, November 12, 2019). The residents we interviewed explained that there is a high level of panic during flooding events to save their livestock and vegetation along with saving themselves from the financial loss in the aftermath of flood events.

Our interviews revealed that there is a contrast in residents' views on community solidarity. Our research in Shkodër did not involve an in-depth analysis of the short and long term effects of prolonged flooding on individuals and communities. However, a study published in the Journal of Environmental Research suggests that "floodwater in the home… [is] the biggest determinant of differential mental health outcomes… Flooded households… tend to yield higher levels of psychological impact than studies of the population in general" (Lamond et al., 2015, p. 332). The authors add that "households experiencing one symptom frequently are more likely to experience other and multiple psychological impacts" (Lamond et al., 2015, p. 330). The short and long term impacts of floods have been documented in places such as New Orleans, which was devastated by Hurricane Katrina in 2005, and in Hull, a port city in the United Kingdom. In New Orleans, there was an increase in the prevalence of PTSD, suicide ideation, and a reduction in treatment by individuals with chronic medical conditions because of problems accessing physicians and financial and transportation difficulties (Gray, 2008). In Hull, short and long term challenges included impacts on psychosocial health such as emotional health problems among displaced children and in adults concerned about their debt (Gray, 2008). In the aftermath of floods, the article stated that residents "experience ongoing anxiety, a lack of security, anxiety and loss of a sense of home" (Gray, 2008).

It is possible that residents in Ana e Malit, Bërdicë, and Dajç deal with some of these psychological impacts, however, our research in Shkodër did not focus on these impacts. These impacts may explain the need. individuals feel to first protect themselves and their immediate family members before trying to help their community members; it may explain the contrast on community solidarity among the residents we interviewed. Lamond et al. (2015) point out, however, that in some communities "support networks [are] hypothesized to be helpful in preventing the development of symptoms." Many of the stories we heard from residents in Ana e Malit, Bërdicë, and Dajç support the existence of family and other social networks to provide a buffer to the impacts of seasonal floods; however, this topic requires more in depth exploration.

Another ongoing challenge residents face is their unwillingness and inability to relocate. Residents lack the ability to pick up and move somewhere else as they do not have sufficient financial resources and there is no governmental program to move residents from the flood-prone plains. Another reason for residents' hesitance to relocate is that during the communist era, the government owned all the land; it has only been a few decades since they regained ownership of their lands. As a result, many of the residents and even some of the experts we spoke who also live in the municipalities expressed a great deal of pride in their ownership of the land. In our interview with the

Deputy Mayor of Shkodër, he opined that the "Shkodër territory is a paradox because within a 25 km distance, you can enjoy all the natural beauties of the world. The lakes, the mountains within a one and a half hour drive… [but also in] this beautiful area, we also suffer all these problems" (Dani, personal communication, November 7, 2019). Their land encompasses both their businesses and livelihood along with their homes which many of them built with their own hands. When speaking with these same Albanian residents about payment for relocation, the first response was that no amount of money would be sufficient (Bërdicë 2, personal communication, November 8, 2019). This indicates Albanian residents' resistance to what experts think is the right thing to do: moving out of the flooding-prone areas. After further discussion, the residents claimed they would require tens of thousands of euros to move. Even if they agree to relocate, no relocation programs currently exist in these areas of Albania and inadequate governmental compensation in prior years leaves them back in their farms and small businesses. The residents we interviewed in Shkodër municipalities have seen this cycle in the past, so they do not view relocation as a feasible option.

In other flood-prone areas in the world such as North Carolina, United States, relocation of residents is seen as a positive flood risk management tool. Starting in the 1990s, the state's government financed a voluntary buyout program that led to the relocation of residents and the removal of hundreds of vulnerable homes, businesses, and other structures to convert the land to absorbent grasslands (Sellers, 2019). The program was lauded as a proactive measure because it anticipated "the impact of projected development and the growing effects of extreme weather" (Sellers, 2019). An equivalent program does not currently exist in Albania. Based on our interviews with experts and residents, some reasons for this include a lack of government funding, questions about land ownership, and other more pressing national issues.

Albanian residents further complicate the flooding situation by continuing to build on flood-prone land. Economically, this situation is called moral hazard. This is when individuals are willing to put themselves at risk because they believe that some entity, typically the government, will bear the costs of their actions and compensate them in case of any losses. As flood events became more frequent, the residents we interviewed explained that the compensation is no longer adequate. Four out of ten discussed a lack of compensation from the government after the 2010 and 2011 floods. Furthermore, they exclaimed that in order to receive compensation, the government must declare a state of emergency which is rarely done in the event of a flood.

4.2 Analysis of Heat Wave Findings

Our study found that levels of awareness of the relationship between heat waves and climate change varied among Tirana residents, though many acknowledged a noticeable change in weather patterns. Possible adaptation actions taken by residents are dependent on a variety of factors such as one's occupation, age, and health status. Challenges Albanian residents currently experience in dealing with heat waves include a lack of urban planning, education, and public amenities such as cooling stations and green spaces. Many residents we talked to were largely unaware of the relationship between heat waves and climate change, so educating the public is an important first step to keep them safe.

Summary of Interviews

Our team conducted interviews with five residents in Tirana: two residents from Allias, one resident from Pazari i Ri, and two residents from Stacioni i Trenit. We also interviewed six experts. Figure 4.11 depicts the locations of the eleven interviewees in Tirana.

Figure 4.11: Location of interviewees from Tirana

Awareness and Education of Heat Wave Events

The level of awareness surrounding heat waves in Tirana is harder to quantify than discussing flooding in Shkodër. In the scope of our project, we found it easier to reach a diverse group of interviewees in Shkodër. In Tirana, the pool of interviewees our team reached mainly included young men in their twenties, with three out of five falling into this category. We were only able to speak to one woman, and we made contact with her by picking out her shop as a possible area of interest when walking around. Our sample in Tirana was very narrow and was not representative of the larger population. This issue is due to the fact that there is less of a community

of conversation surrounding heat waves in Tirana. In Shkodër, the problem with flooding is impactful equally across all individuals residing in rural areas and the conversation about reducing impacts is an ongoing one. In comparison to Shkodër, we found that the network of conversations in Tirana about heat waves was not as extensive.

From the people we interviewed, seven out of the eleven people who live in Tirana mentioned that there was a lack of information and education on the subject of heat waves (Figure 4.12). One example our expert and resident interviewees mentioned is that there are minimal climate change curricula in school systems, so as residents grow up, many adults do not have significant knowledge on climate change, and specifically, the impacts of heat waves in their city, Tirana. These same seven out of eleven interviewees identified this as a problem of the government and recommended more education in schools and on media platforms like television stations and

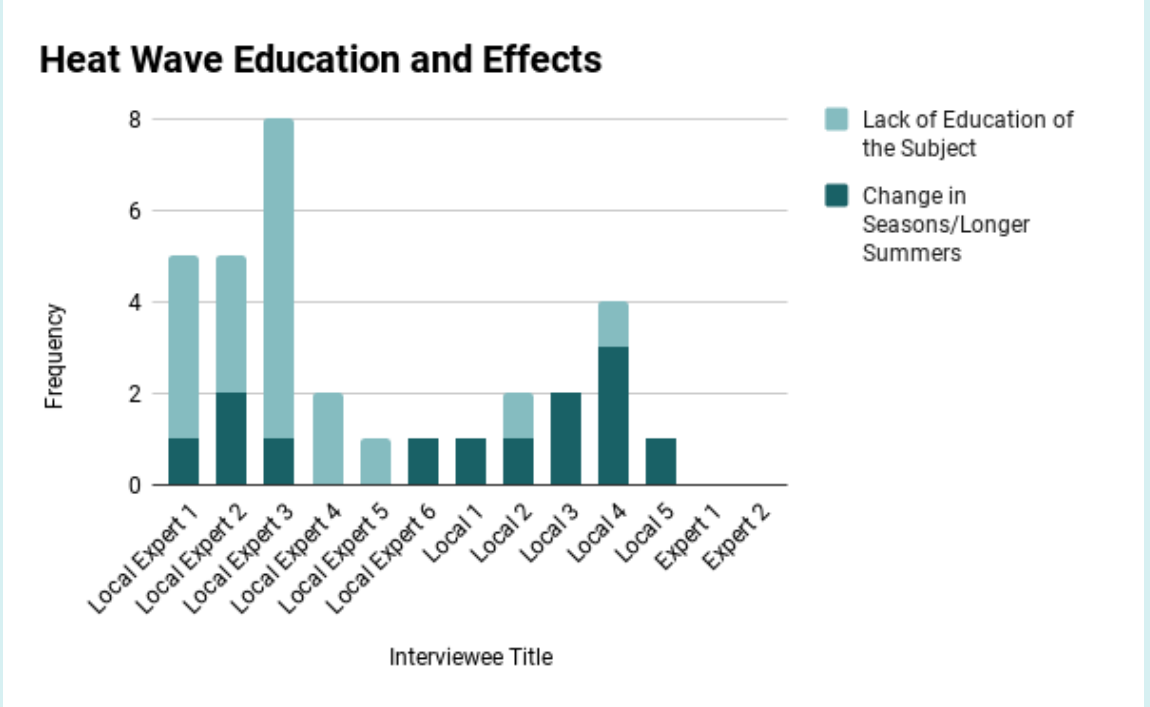


Figure 4.12: Chart on heat wave education and effects

social media. Many of the experts and locals had ideas of what the government could do to reduce the impacts of heat waves based on their experience with the prolonged heat episodes which we discuss in the next section.

Adaptation Efforts and Adjustment to Heat Island Effect

From interviewing both experts and locals in Allias, Pazari i Ri, and Stacioni i Trenit, our team identified the variety of adaptations individuals developed to reduce their vulnerability to heat waves. Additionally, our team examined the physical, emotional, and psychological reactions residents had to prolonged periods of high air temperatures. Albanian residents in the city of Tirana found a variety of ways to adapt to the prolonged hot air temperatures, also known as heat waves (Figure 4.13).

Our team spoke to residents of different ages, genders, and occupations with the goal of acquiring a range of perspectives on the adaptations they have the ability to make. For example, during the summer, one resident visits his summer home in rural southern Albania to escape the heat in Tirana, but another resident who works at a small local shop in Tirana only has an umbrella covering her from the prolonged heat (Figure 4.14). As shown in Figure 4.13, five out of eleven interviewees leave the city and even go on vacation for the two hottest months of the summer and "Tirana is like a Zombie Country, no people walking on the streets. Tirana is quite empty everybody goes to the beaches everybody goes to the forests

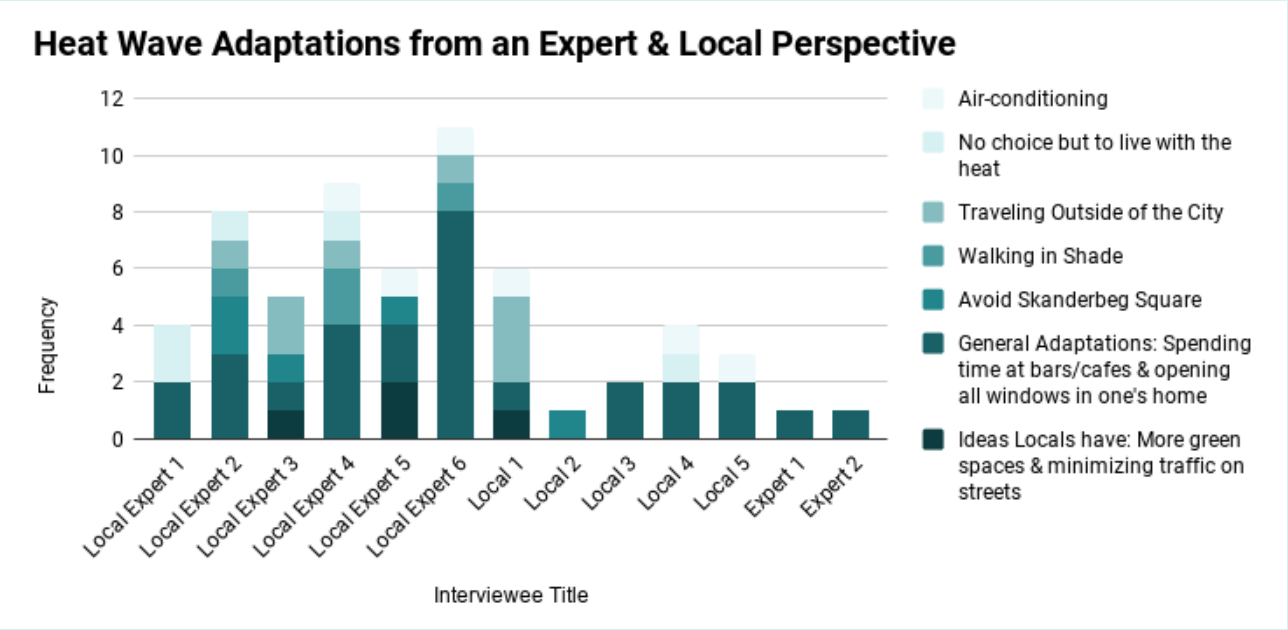


Figure 4.13: Chart on heat wave adaptations from an expert & local perspective

in the summer" (Haxhiraj, personal communication, November,15, 2019). Residents of Tirana visit southern Albanian beaches along with lakes and rivers outside of the city to cool off. Unfortunately, rivers and lakes are about an hour away and only residents with cars have the ability to reach these locations as there is no public transportation to them (Margjeka, personal communication, October 31, 2019).

Six out of eleven interviewees mentioned having air-conditioners in their homes, but others have to adapt in other ways such as opening all their windows and visiting bar-cafes that have air-conditioners. Working residents sometimes have no choice. A local shopkeeper noted that "when it is the highest temperature I close the shop for 3 or 4 hours during the middle of the day… because it is hot here and you cannot stay inside and there are very few people out walking so it is not worth it for me" (Tirana 4, personal communication, November 15, 2019). Prolonged periods of high air temperatures negatively affect her

Figure 4.14 : A Tirana resident's second-hand clothing shop

livelihood as people are not outside to shop, so she has less business. In Tirana, the expert and local interviewees we spoke with recognized the risk that open places such as Skanderbeg square pose during heat waves events and generally avoid those areas. According to our interviewees, residents with resources such as a car and money to pay for gasoline leave the city or relax in air-conditioned spaces such as their homes or bar-cafes; thus, they have an easier time dealing with heat waves. Residents make these adaptations out of necessity for surviving the prolonged heat episodes in Tirana.

Although residents throughout the city of Tirana develop individual coping mechanisms, city-wide initiatives are essential to address heat waves. Officials in Tirana are taking steps to increase the amount of green spaces. Public areas such as local parks diminished as construction projects increased throughout Tirana after the communist regime ended in the

Residents make these adaptations out of necessity for surviving the prolonged heat episodes in Tirana.

1990s. The rapid urbanization of the city, combined with the increase in the number of residents who own cars has compounded the urban heat island effect over the past two decades. According to the city's records, the average car in Tirana is 13 years old. This statistic is significant because cars that are more than 10 years old emit approximately 36% more CO_2 than newer models, thus they have a greater impact on the city's air quality and increase Tirana's carbon footprint ("Green city action plan of Tirana", 2018).

Currently, a major project spearheaded by the mayor of Tirana, the *Green City Action Plan of Tirana*, aims to "enable people to enjoy a healthy and high quality of life in a green, resilient and inclusive Tirana that makes smart use of resources" ("Green city action plan of Tirana", 2018). This is in hopes of Tirana becoming a more sustainable city. City officials' goal of the Metropolitan Forest plan according to the *Green City Action Plan of Tirana* is to plant "two million trees" and "100,000 trees during this season" so trees are currently being planted in Tirana, thus expanding the amount of green spaces that exist. Planting trees is one aspect of incorporating green spaces along with adding parks and cooling stations. Unfortunately this planting of trees is one of very few movements taking place in Tirana ("Green city action plan of Tirana", 2018).

In our interview with an urban planner from Tirana, he described Tirana as a "big city that developed very fast, but there was a lack of planning during this time because the need to build was so big that people just kept building. Now, there are not a lot of public spaces or green spaces" (Margjeka, personal communication, October 31, 2019). Merely 15 years ago, there were many green spaces throughout Tirana, but the continuous building of stores and apartment complexes over the green spaces has forced people to go into the surrounding cities to experience nature. With the decreasing amount of green space, cooling stations, and trees as preventative measures from the extreme heat, people are deterred from staying in Tirana during the summer. The residents we spoke with were not aware of city initiatives such as the Green City Action Plan of Tirana, whereas experts such as the urban planner we spoke to knew about these efforts and that they would only minimally help the city's heat wave preparedness.

There are a few green initiatives in place, but they are not enough to combat the impending increase of heat waves. During interviews, individuals we spoke to identified that initiatives of the *Green City Action Plan of Tirana* that failed, such as a no driving day once a month. Talking to a Tirana resident about bike lanes, she believes that they "do not improve traffic because the streets are narrow, so car traffic is getting worse by adding bike lanes" (Martiri, personal communication, October 30, 2019). In this case, both the bike lanes taking up space and the high amount of automobile congestion contribute to more traffic. Additionally, many residents also noted the amount of pollution which hinders the progress of the *Green City Action Plan of Tirana*. This leads back to the necessity for residents to participate in events to reduce their climate impacts.

Figure 4.15: Tirana residents buy water to stay hydrated during a heat wave (TOP Channel, 2018)

Challenges During Heat Wave Events Over time

Heat waves have many long-lasting detrimental effects on neighborhoods in Tirana. The physical and psychological impacts of heat wave episodes are typically less apparent than floods. For example, the health

impacts associated with heat waves such as respiratory diseases can be caused by other factors like smoking. Another example of this is in energy production, as heat waves reduce the efficiency of electrical transmission lines. Thus, heat waves increase cooling costs for buildings and operation costs for appliances; however, this economic impact was not obvious to the residents of Tirana that we spoke to. Based on Tirana expert interviews, our team discovered there are also fewer community conversations about the environmental impacts and causes of heat waves and environmental causes. However, nine out of the eleven Tirana residents we interviewed spoke about the change in seasons and longer summers "with much hotter summers and more frequent heat waves throughout the city" and the difficulty the heat has on their lives (Figure 4.14) (GIZ, 2015b). Even though the *Vulnerability Assessment and Adaptation Action Plan for Tirana* does not list residents as important individuals in the discussion of making climate change plans, residents are aware of the increasing prolonged episodes of heat (GIZ, 2015b). As residents do not connect prolonged episodes of heat to the changing climate, they are not as knowledgeable as experts in participating in discussions regarding the "need for good municipal planning, green structures, water in city/public open space" from government figures (GIZ, 2015b).

Another common impact that was brought up in the context of heat waves was potential and probable health concerns for all individuals, specifically elderly people and children (Figure 4.16). All but one resident provided examples of health concerns such as heat stroke, respiratory diseases, and dehydration. Health concerns brought on by increasing temperatures are most common in elderly individuals and children as they are not only most at risk for these conditions, but also have a predisposition based on their age.

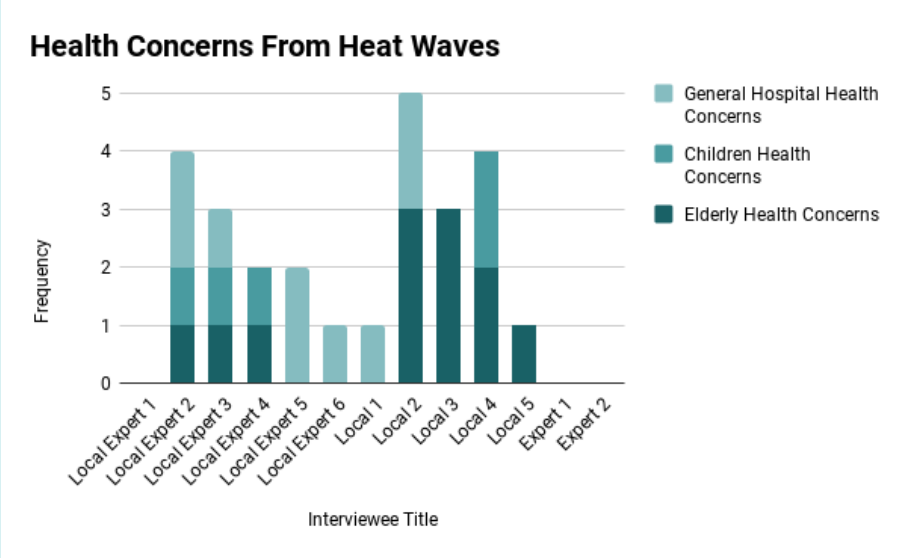


Figure 4.16: Chart on health concerns from heat waves

4.3 Integrated Analysis of Findings

The climate crisis is a global issue that everyone in Albania contributes to. Climate crisis events affect some residents more than others and there are many factors that affect the extent of individuals' vulnerability. However, the residents we spoke to did not always recognize that events such as floods and heat waves are linked to climate change. In sharing the stories of people who are negatively impacted by climate change and developing an easy-to-understand outreach material, our team tried to bring awareness about these impacts to residents in Albania to encourage the public to get more involved in the climate crisis adaptation.

Connecting Flooding and Heat Waves Back to Climate Change

Researchers have written extensively about public participation in environmental decision making (Berry et al., 2019; Co-Seed, n.d.; Dietz & Stern, 2008; Kiss, 2014); they agree that public participation in making environmental decisions is important and beneficial. According to the National Research Council, "'public participation' connotes a highly diverse set of activities" (Dietz & Stern, 2008, p.31). The term involves many aspects, most "notably breadth (who is involved), timing (how early and at how many points in the overall decision-making process they are involved), intensity (e.g., the amount of time and effort participants spend and the degree of effort made by conveners to keep them involved), and influence" (Dietz & Stern, 2008, p.76). The degrees of public participation are summarized in Arnstein's Ladder of Citizenship Participation (Figure 4.17).

Arnstein's ladder features eight public participation rungs ranging from high to low, from nonparticipation to tokenism to citizen control (Arnstein, 1969, p.217). The lowest two rungs are nonparticipatory; they seek to educate the participant to gain public support (Arnstein, 1969, p.217). Tokenism refers to the third through

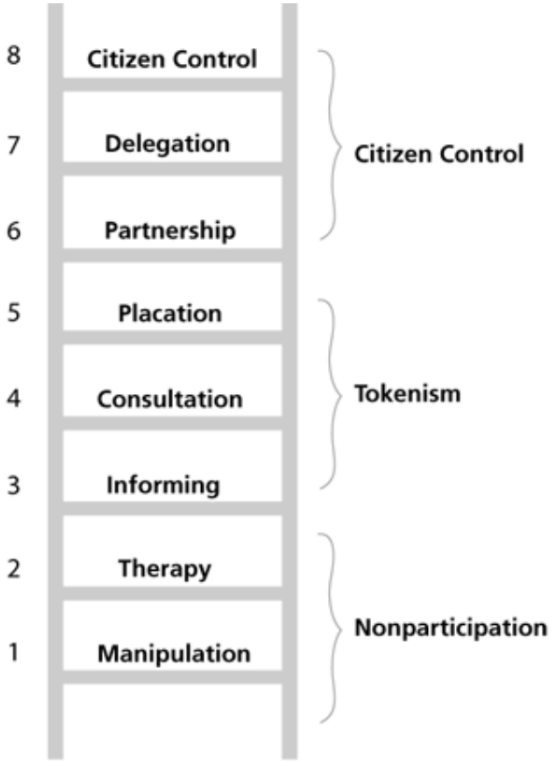


Figure 4.17: Arnstein's ladder of citizen participation

fifth rungs, which constitute steps toward legitimate participation; citizens are able to advise and plan ad infinitum, but ultimately, the power holders have decision making power (Arnstein, 1969, p.217). Finally, citizen control includes the sixth through eighth rungs which involve participants having equal or greater decision making power (Arnstein, 1969, p.217).

Based on our team's observations and interviews in Shkodër, we learned that there are few avenues for public participation in flood risk mitigation planning in Shkodër. Residents' sense of their involvement ranged from feelings of isolation (Dajç 1, personal communication, November 12, 2019) to feelings of resignation to advisory roles (Pertruche, personal communication, November 6, 2019). In Tirana, resident interviewees' did not express that they felt involved in heat wave adaptation planning.

Both experts and locals we interviewed shared several ideas about handling flooding and heat waves that they felt could reduce the vulnerability of residents to those climate impacts. One idea that both experts and locals voiced during our interviews is to have climate change as part of the school curricula, so that students understand the importance of public participation in adaptation efforts in their life. Especially in Shkodër and Tirana, where major climate crisis events are prominent, an in-depth education on the subjects should help increase public participation. For example, in Shkodër, participation includes starting climate change education in school curricula at a young age. An example in Tirana is using eco-friendly means of transportation including electric cars and buses. Even if the city of Tirana were to adopt electric transportation systems, residents in the city must make use of them in order to achieve the intended effect ("Arnstein's ladder of citizen participation", n.d.).

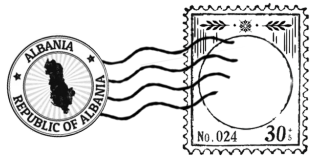
Climate Cards as an Effective Tool for Public Outreach

The Climate Cards we developed are meant as a tool to educate Albanian residents about climate change events such as flooding and heat waves, and to promote public participation in climate marches, adaptation efforts, and schools. Additionally, Climate Cards are meant to help residents in reducing their vulnerability and increasing broader preparedness measures throughout

regions in Albania. As an easily recognizable format, the same style and size as a postcard, our Climate Cards are enticing to look at with photographs depicting the difficulties and adaptations of individuals and communities during flooding and heat wave events (Figure 4.18 & 4.19). Quotes from residents and expert ideas further bring the Climate Cards to life, and the facts written on each card are meant to inform readers about climate trends occurring relating to the stories. This deliverable is visual and informational, and potentially a strong tool to promote public participation in climate change adaptation throughout Albania and surrounding countries. Additionally, the cards are meant to remind individuals and communities of the issue of climate change. Although the set of Climate Cards we created focuses on two cities in Albania, GIZ and other organizations can create them in different locations for other climate change impacts occurring in a specified country.

I am the lead of the village for 16 years... I was distributing the bread for the families on the boat, the [flood] flow was very rapid and quick, and [it] overthrew my boat, and I was saved [by] a miracle... If the army would not be here supporting and helping us, the whole village would have drowned.

- Village Leader of Ana e Malit



Climate change projections display a decrease in annual rainfall but an increase of intensive rain episodes.

Figures 4.18 & 4.19: Example of the front and back of a Climate Card

Although time did not enable our group to receive feedback from the public on our Climate Cards, we were able to present our project and final deliverable to a group of GIZ employees who provided us with helpful feedback. They first noted their appreciation for the inclusion of local perspectives as they acknowledged that there is a lack of representation of local views in climate discussions. Our sponsor also highlighted how the cards would be used in two specific events: an educational seminar about climate change in a local college and a community outreach event where GIZ has a table to present their project findings. In both cases, our Climate Cards would be an interactive supplement to the work GIZ is currently doing with climate change adaptation.

CONCLUSIONS, RECOMMENDATIONS, & LIMITATIONS

5.0 CONCLUSIONS, RECOMMENDATIONS, AND LIMITATIONS

Conclusions

Increasing conversation and education surrounding climate change in Albania will help people link climate change and extreme weather impacts such as floods and heat waves. Making these connections is necessary to increase residents' understanding of the problem in order for individuals to adapt to climate change events and to help reduce their contributions to climate change. Even with the limitation of a time constraint, our project aimed to close this knowledge gap and create a tool that GIZ can use to help residents link flooding and heat wave events to climate change and to point out steps that individuals and communities can take in adaptation efforts. This project could be expanded to other climate impacts or the experiences of people in other parts of Albania regarding floods and heat waves. It is our hope that our Climate Cards can be used to increase public participation in adaptation efforts and help build climate resilience in Albania.

Recommendations

Expanding the Reach of Climate Cards

Place Climate Cards where flyers are posted in gyms, grocery stores, and bar-cafes to educate adults with a quick, eye-catching piece of information about the climate. The material is a fast read, making it appealing for residents when completing daily errands and activities. Additionally, the cards are easily printable, and in both the Albanian and English language to reach a range of audiences.

Use Climate Cards to share the perspectives of residents and experts on the climate crisis at climate events and in school curriculums (Figure 4.18 & 4.19). Since the cards are a simple format, they are easy to replicate in many settings.

Changes to Climate Cards

Encourage teachers to have students create additional Climate Cards in schools where the children collect stories from their friends and family members. These students can write down the stories as a homework assignment and come back to school with a story about their family member and a picture of the event or their family member or friend. Each student can then present their story in front of the class and teach each other about climate events their friends and family members experienced.

Create a curriculum in the schools directed at children at a young age to teach them about the climate crisis. Using our Climate Cards a teacher can lead a classroom discussion on what climate change is and the different impacts of climate change in various parts of Albania. Climate Cards can be an effective strategy to facilitate effective and experiential engagement to help the younger generation understand and participate in adaptation efforts. These recommendations are meant to enable residents of Shkodër and Tirana to have a better understanding of the impacts of floods in Shkodër and heat waves in Tirana so they can adapt and in turn reduce their vulnerability to these events.

Initial Testing of Climate Cards

During our initial testing of the Climate Cards, individuals had ideas of how GIZ and other organizations can use the sets we created as well as expand on the idea of Climate Cards.

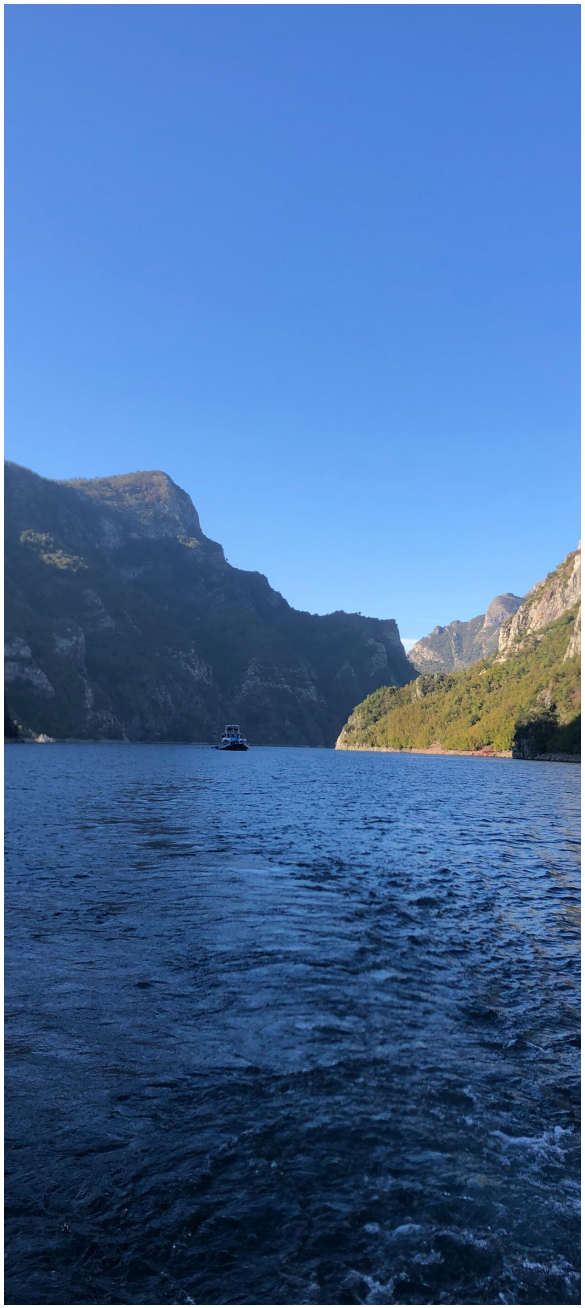
One idea for how to use the Climate Cards is to include a discussion card in the set, which would consist of a list of questions that could be used to initiate a conversation. These might be questions along the lines of *What do you do in your daily life to reduce the impact of climate change?*

or *What would you like to see for climate change initiatives in your community?* Having discussion questions require the individuals reading the Climate Cards to also converse about them, thus turning awareness of the climate events into the action of discussing the climate crisis.

Another idea is to add a blank card with room for the viewer to write their own story and send it to their local elected officials to increase awareness of the impacts people are feeling on a personal level. Having individuals write their own Climate Cards encourages them to discuss their family stories with one another and these types of conversations can lead to individual and community action. This is a recommendation that should be implemented into high school and college curriculums.

Another recommendation is to include an expert information card that would explain the higher-level relationships that occur to reduce the impacts of climate change. An example of this in Tirana would be to create a card that describes the link between prolonged periods of high air temperatures and climate change. This can encompass examples of actions in Tirana that are harming the climate such as excessive car emissions and the lack of green spaces.

GIZ anticipates using the sets of Climate Cards to engage their audience and continue the conversation. At our presentation for GIZ, an attendee specializing in hydrology and predicting flooding events suggested creating an additional card that might assist locals in understanding the complicated process of warning people before flooding events. She mentioned that it is a tough science to predict weather with enough time to warn people, especially since they do not want to release false warnings that decrease their credibility. She thought it would be helpful to have a card that has a graphic of the steps listing the process followed to warn communities of flooding and how many ways the predictions change before the flooding events occur. As a final recommendation, the idea of turning this process into a social media deliverable was brought up as a future continuation of our project.



Limitations

Our team experienced a few limitations while completing this project, many of which are due to the time constraint of having seven weeks to research, gather, and present our project. Our first limitation was the inability to interview people representing a wide range of socioeconomic groups in Tirana. We managed to speak to individuals from a range of ages, genders, and occupations, but our project would benefit from a wider perspective, especially the neighborhoods most at risk of heat waves.

Another restriction was the ability to test our Climate Cards. Our team wanted to test Climate Cards at a variety of events such as climate marches and schools, but only had time to have an initial test of our Climate Cards at our presentation for GIZ. Overall, we do not find these limitations detrimental to our project, but with more time, we believe having the information from these additional sources would strengthen our deliverable. Instead of interviewing a small sample of individuals, with more time, our team would make the Climate Cards a representation of the different types of individuals and socio-economic groups throughout Albania.

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APPENDICES

APPENDICES

Appendix A. Interview Questions for Experts

- What is your area of expertise?
  - How long have you been working in this area?
  - What changes have you observed over your time working in this area?
  - Do you have any concerns for the future in this area?
- What major weather events have occurred recently in Albania?
  - How have these weather events displayed change?
  - Have you observed any specific adaptations people have made to combat these changes?
- Where did you grow up?
  - How is growing up in Albania today different than when you were a child?
- Part of our project is collecting personal stories about climate change. Can you describe an instance where you noticed climate change directly affecting your everyday life?
- Do you know of any people local communities who would be interested in speaking to us?
  - In Shkodër: Ana e Malit, Bërdicë, and Dajç
  - In Tirana: city people and outskirts

Appendix B. Informed Consent Script

English version:
We are a group of students from Worcester Polytechnic Institute in the United States. We are conducting interviews on behalf of our sponsor Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) throughout the areas of Shkodër and Tirana Albania. The goal of our project is to collect the climate stories of your communities in Albania in order to assist GIZ in facilitating discussions among your Albanian communities as you adapt to heat waves and flooding as a result of climate change. Your participation in this task is completely voluntary and you may opt-out at any time. Please remember that your answers will remain confidential unless your consent has been given. With your consent, we would like to audio record this interview. If you consent, we may quote your interview transcript in our final report, in the Climate Cards we develop, and on the ClimateStoriesProject.org website. Your participation is greatly appreciated. Please inform us if you have any current concerns about how your responses will be used. We will not identify you in any published information unless you consent. Please let us know when you are ready to begin the interview. If you have any concerns after the interview about how your responses will be used you can contact us at gr-giz-b19@wpi.edu with any concerns.

Albanian Version:
Ne jemi nje grup studentesh nga “Worcester Polytechnic Institute” ne SHBA. Ne po kryejme intervista ne emer te sponsorit tone Deutsche Gesellschaft fur Internationale Zusammenarbeit(GIZ), ne zonat e Shkodres dhe Tiranes. Qellimi i projektit tone eshte te mbledhim informacione mbi ngjarjet klimatike ne Shqiperi per te ndihmuar GIZ ne diskutimet qe behen ne Shqiperi teksa ju pershtateni me valen e te nxehtit dhe permbytjet si pasoje e ndryshimeve klimatike. Pjesmarrja juaj ne kete projekt eshte krejtesisht vullnetare dhe ju mund te hiqni dore ne cdo kohe. Ju lutem mbani mend qe pergjigjet tuaja do mbeten konfidenciale nese nuk jepet pelqimi juaj. Me lejen tuaj,ne do te donim te regjistronim kete bisede. Nese ju na lejoni,ne mund ta citojme transkriptin e intervistes tuaj ne raportin tone perfundimtar ‘’Kartat Klimatike”, dhe ne faqen e internetit ClimateStoriesProject.org Pjesemarrja juaj vleresohet shume.Ju lutemi na tregoni nese keni ndonje shqetesim rreth perdorimit te pergjigjeve tuaja. Ne nuk do ju identifikojme ju ne asnje publikim nese ju nuk do jepni pelqimin per kete gje. Ju lutem na thoni kur te jeni gati per te filluar intervisten. Nese do keni ndonje shqetesim pas intervistes lidhur me perdorimin e pergjigjeve te tua mund te na kontaktoni tek gr-giz-b19@wpi.edu.

Appendix C. Release Form

English version:

WPI

Worcester Polytechnic Institute's Albanian Project Center:
Climate Stories as a Means of Representing Local Perspectives on Climate Change Adaptation in Albania

Full Name of Person Interviewed:
(Print) _____

Address _____

Phone: ( )_____

Place of Interview _____

Date _____

Name of Interviewer and Institution

Mark Bray, Kayla Legatt, Madison Perry, and Bella Speer WPI

I understand that this interview and any photographs and audio recordings are part of scholarly research by the individual and institution named above. I give permission for the following: (check all that apply):

_____May be used for educational research purposes at the above institution.

_____ May include my name.

_____ May be included in a WPI publication or exhibit.

_____May be included in another educational, non-profit publication, or exhibit.

_____May be used as part of postcard documentation.

_____May be used but DO NOT include my name.

_____May be photographed.

_____ Other (explain)

_____ _____

Signature of Interviewee Date

Albanian Version:

WPI

Qendra per Projektet Shqipetare 'Worcester Polytechnic Institute'
Analizimi I Qendrimeve dhe Pervojave Lokale me Ndikimet Klimatike

Emri i plote i personit te intervistuar:
(Print)_____
Adresa _____
Tel. _____
Vend i intervistimit _____
Data _____
Emri i intervistuesve dhe Institucioni: Mark Bray, Kayla Legatt, Madison Perry, dhe Bella Speer WPI

E kuptoj qe kjo interviste dhe cdo fotografi apo regjistrim zeri jane pjese e nje kerkimi shkollor te kryer nga personat dhe institucioni i permendur me siper. Jap leje per cka vijon:
___ Mund te perdoret per qellime kerkimore ne institucionin e permendur me larte.
___ Mund te perfshije emrin tim.
___ Mund te perfshihet ne publikime ose ekspozita te WPI.
___ Mund te perdoret nga institucione te tjera edukimi, publikime jo-fitimprurese ose ekspozita.
___ Mund te perdoret si pjese e dokumentimeve ne kartolina.
___ Mund te perdoret por MOS perfshihet emri im.
___ Mund te fotografohet
___ Tjeter (shpjego)

_____ _____

Firma e te intervistuarit Data

Appendix D. Interview Questions for Albanian Residents

General

- What is your name?
- Where have you lived most of your life?
- What do/did you do for a living?
- What types of outdoor activities/sports did you do as a child?
  - Could you tell us a story about a specific activity?
  - How is growing up in Albania today different than when you were a child?
- What is your favorite activity to do outside? Or what activity do you spend the most time doing while outside?
  - Have you noticed any changes surrounding this activity over time?
- What parts of your life are most affected by weather?
  - How so?
  - What changes have you observed throughout your life?

Shkodër specific

- Have you or anyone you know ever had a flood in your residence or work place?
- Based on your past experiences with flooding is there any actions you now do differently?
- Describe something meaningful to you in your environment or community, or in the place where you grew up, that has changed due to floods.

Tirana specific

- On hot days, what do you do to cool off?
- How has your experience with long periods of time that it is hot outside changed over the years?
- How do long periods of time that it is hot outside make it harder to care for children or the elderly?
- Do you ever experience droughts or water shortages?
- Describe something meaningful to you in your environment or community, or in the place where you grew up, that has changed due to heat.