Reducing Flood Risk in Shkodra through Community Engagement

Donald Parry Robert Dione
Worcester Polytechnic Institute

Kylie Ann Dickinson
Worcester Polytechnic Institute

Sarah St. Pierre
Worcester Polytechnic Institute

Tyler Michael Weiss
Worcester Polytechnic Institute

Follow this and additional works at: https://digitalcommons.wpi.edu/iqp-all

Repository Citation
Reducing Flood Risk in Shkodra Through Community Engagement

Authors:
Kylie Dickinson, Donald Dione, Sarah St. Pierre, Tyler Weiss

Advisors:
Professor Robert Hersh, Professor Leslie Dodson

Sponsor:
Deputy Project Manager Merita Mansaku-Meksi
Climate Change Adaptation in Flood Risk Management, Western Balkans (CCAWB II)
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

December 14, 2017
I. Abstract

Our project aids the work of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to manage flood risks in the Shkodër Region of Albania. We conducted interviews with Aarhus Information Center, the Civil Emergencies Brigade, the GIZ, and the Institute for Geosciences, Energy, Water and Environment (IGJEUM) and residents of eight different communities to understand people’s experiences, perceptions, and decision making for flooding. Interview discussions revealed that residents are unaware of some actions to take to prepare for a flood. We developed outreach tools to increase personal agency in an effort to reduce their risks for future floods. Our outreach tools will help the ongoing efforts of GIZ and its partners by increasing accessibility and discussion.
II. Acknowledgements

We would like to thank all of the people who contributed to the success of this project. This project would not have at all been possible without our partnership with the Social Work and Psychology Departments at Shkodër University. Special thanks to Professors Visar Dizdari and Lediana Xhakollari for providing insight and connecting us with our student partners. Thank you Manuela Probibaj, Amel Pervizi, Edra Vitoja, and Ledina Preza for acting as our translators, guides, research partners, and companions during our time in Shkodër.

Thank you to IGJEUM, the Civil Emergencies Brigade of Shkodër, and Aarhus Information Center for speaking with us and providing your insight into the issue of flooding in Shkodër. Thank you to the communities of Obot, Zus, Muriqan, Samrish, Zuktha, Xhabije, Zotekniqe and the Illyrian Village for being so welcoming and cooperative.

We’d like to acknowledge our advisors Professors Bob Hersh and Leslie Dodson for their guidance, understanding, and ongoing effort to challenge us to look and think deeper over the course of this project.

Finally, we would like to thank everyone in the Tirana office of the GIZ Climate Change Adaptation in the Western Balkan’s Project for being so welcoming and helpful. We’d like to especially acknowledge Merita Mansaku-Meksi, who acted as our primary sponsor and liaison to the project. We are extremely grateful for the opportunity to work on such a forthcoming issue.
### III. Authorship

<table>
<thead>
<tr>
<th>Chapter/Section</th>
<th>Primary Drafter(s)</th>
<th>Secondary Drafter(s)</th>
<th>Editor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>St. Pierre</td>
<td>N/A</td>
<td>Dione, Weiss</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>St. Pierre</td>
<td>Weiss</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>Dickinson</td>
<td>Dione</td>
<td>St. Pierre, Weiss</td>
</tr>
<tr>
<td>Background</td>
<td>ALL</td>
<td>N/A</td>
<td>ALL</td>
</tr>
<tr>
<td>Methods</td>
<td>ALL</td>
<td>N/A</td>
<td>ALL</td>
</tr>
<tr>
<td>Findings</td>
<td>ALL</td>
<td>N/A</td>
<td>ALL</td>
</tr>
<tr>
<td>Conclusions</td>
<td>St. Pierre</td>
<td>Dione</td>
<td>Dickinson, Weiss</td>
</tr>
</tbody>
</table>

The contents of each chapter labelled with “All” as both Drafters and Editors were 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.

### Notice:

This report represents work of WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, see [http://www.wpi.edu/Academics/Projects](http://www.wpi.edu/Academics/Projects)
### IV. Table Of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Abstract</td>
<td>i</td>
</tr>
<tr>
<td>II. Acknowledgments</td>
<td>ii</td>
</tr>
<tr>
<td>III. Authorship</td>
<td>iii</td>
</tr>
<tr>
<td>IV. Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>V. Table of Figures</td>
<td>viii</td>
</tr>
<tr>
<td>VI. Executive Summary</td>
<td>x</td>
</tr>
<tr>
<td>1.0 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2.0 Background</td>
<td>7</td>
</tr>
<tr>
<td>2.1 Flooding in the Shkodër Region</td>
<td>10</td>
</tr>
<tr>
<td>2.1.1 Hydrology</td>
<td>13</td>
</tr>
<tr>
<td>2.1.2 Flooding Prevention Measures</td>
<td>14</td>
</tr>
<tr>
<td>2.1.3 Most Recent Floods</td>
<td>15</td>
</tr>
<tr>
<td>2.2 The 2015 Flood Risk Management Plan for Shkodër</td>
<td>16</td>
</tr>
<tr>
<td>2.3 Risk Perception and Decision Making</td>
<td>20</td>
</tr>
<tr>
<td>2.3.1 Heuristics</td>
<td>21</td>
</tr>
<tr>
<td>2.3.1.1 The Availability Heuristic</td>
<td>21</td>
</tr>
<tr>
<td>2.3.1.2 The Gamblers Fallacy</td>
<td>21</td>
</tr>
<tr>
<td>2.3.1.3 Optimism</td>
<td>21</td>
</tr>
<tr>
<td>2.3.1.4 Framing, Certainty, and Fear Effects</td>
<td>22</td>
</tr>
<tr>
<td>2.3.1.5 Affect Heuristic</td>
<td>22</td>
</tr>
<tr>
<td>2.3.2 Social Effects</td>
<td>22</td>
</tr>
<tr>
<td>2.3.3 Case Studies</td>
<td>23</td>
</tr>
<tr>
<td>2.3.3.1 Netherlands</td>
<td>23</td>
</tr>
<tr>
<td>2.3.3.2 Belgium</td>
<td>24</td>
</tr>
<tr>
<td>2.3.3.3 England and Wales</td>
<td>25</td>
</tr>
<tr>
<td>2.3.4 Evaluation of Flood Risk Reduction Plans</td>
<td>25</td>
</tr>
<tr>
<td>2.3.5 Psychology and Flooding</td>
<td>26</td>
</tr>
<tr>
<td>2.3.5.1 Place Attachment</td>
<td>27</td>
</tr>
<tr>
<td>2.4 Effective Flood Risk Communication</td>
<td>28</td>
</tr>
<tr>
<td>2.4.1 Complexities of Risk Communication</td>
<td>29</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>2.4.1.1 Risk Communication and Non-structural Adaptation measures</td>
<td>29</td>
</tr>
<tr>
<td>2.4.1.2 Risk Communication and Climate Change</td>
<td>30</td>
</tr>
<tr>
<td>2.4.2 Cooperation and Trust in Risk Communication</td>
<td>31</td>
</tr>
<tr>
<td>2.4.3 Potential Outreach Strategies</td>
<td>33</td>
</tr>
<tr>
<td>2.4.3.1 Risk Mapping</td>
<td>33</td>
</tr>
<tr>
<td>2.4.3.2 Educational Games and Educational Activities</td>
<td>33</td>
</tr>
<tr>
<td>2.4.3.3 Additional Options for Outreach</td>
<td>34</td>
</tr>
<tr>
<td>2.4.4 Risk Communication in Shkodër</td>
<td>35</td>
</tr>
<tr>
<td>3.0 Methods</td>
<td>37</td>
</tr>
<tr>
<td>3.1 Understanding the GIZ Project and the Flood Risk Management Plan</td>
<td>41</td>
</tr>
<tr>
<td>3.1.1 Key Informant Interviews</td>
<td>41</td>
</tr>
<tr>
<td>3.1.1.1 Key Informant – GIZ</td>
<td>41</td>
</tr>
<tr>
<td>3.1.1.2 Key Informant – Director and Head of the Firefighters and Civil Emergency Brigade</td>
<td>42</td>
</tr>
<tr>
<td>3.1.1.3 Key Informant – IGJEUM</td>
<td>43</td>
</tr>
<tr>
<td>3.1.1.4 Key Informant – Aarhus</td>
<td>43</td>
</tr>
<tr>
<td>3.1.2 Key Informant Analysis</td>
<td>43</td>
</tr>
<tr>
<td>3.2 Understand the Experiences of Those Impacted by Previous Flooding</td>
<td>44</td>
</tr>
<tr>
<td>3.2.1 Collaboration with Shkodër University and Students</td>
<td>44</td>
</tr>
<tr>
<td>3.2.2 Convenience Sampling</td>
<td>46</td>
</tr>
<tr>
<td>3.2.3 Semi-structured Interviews</td>
<td>46</td>
</tr>
<tr>
<td>3.2.4 Photography and Walking Tours</td>
<td>47</td>
</tr>
<tr>
<td>3.2.5 Data Organization</td>
<td>48</td>
</tr>
<tr>
<td>3.2.6 Interview Analysis</td>
<td>48</td>
</tr>
<tr>
<td>3.3 Develop Flood Risk Communication Materials to Inform the Community About Strategies to Reduce Vulnerability To Flooding</td>
<td>50</td>
</tr>
<tr>
<td>3.3.1 Testing the Outreach Tools: User Tests</td>
<td>51</td>
</tr>
<tr>
<td>3.3.2 Focus Groups</td>
<td>54</td>
</tr>
<tr>
<td>3.3.2.1 Procedure</td>
<td>54</td>
</tr>
<tr>
<td>3.3.2.2 Data</td>
<td>56</td>
</tr>
<tr>
<td>3.3.2.3 The Final Development Phase</td>
<td>56</td>
</tr>
<tr>
<td>3.4 Schedule</td>
<td>56</td>
</tr>
<tr>
<td>3.5 Presentations</td>
<td>57</td>
</tr>
<tr>
<td>4.0 Findings</td>
<td>59</td>
</tr>
<tr>
<td>4.1 Experiences</td>
<td>61</td>
</tr>
</tbody>
</table>
### 4.1 Understanding Flood Characteristics

#### 4.1.1 Hydrology

#### 4.1.2 Dams

#### 4.1.3 Unexpected Inundation

#### 4.1.4 Carcasses, Odor and Filth

#### 4.1.5 Flood Duration and Variations in Recovery Time

#### 4.1.6 Dangers

#### 4.1.2 Warnings

##### 4.1.2.1 Early Warning System

##### 4.1.2.2 Current Ground System

##### 4.1.2.3 Perception of Warning Lead Times

#### 4.1.3 Media and Communication

#### 4.1.4 Access to Food Water and Supplies

#### 4.1.5 Losses and Compensation

##### 4.1.5.1 Government Compensation

#### 4.1.6 Recovery

##### 4.1.6.1 Church Aid

##### 4.1.6.2 Community Support

##### 4.1.6.3 Socioeconomic Status

#### 4.1.7 Preparation for Past and Future Floods

#### 4.1.8 Perceptions of Flooding

##### 4.1.8.1 Responsibility for Preparedness

#### 4.1.9 Evacuation and Place Attachment

#### 4.1.10 Emotions and Trauma

##### 4.1.10.1 Heuristics, Fallacies and Floods

#### 4.1.11 Experiences Summary

### 4.2 Perceptions and Limitations of Current Informational outreach Strategies

#### 4.2.1 Aarhus Workshops

##### 4.2.1.1 Aarhus Children Workshops

#### 4.2.2 How Outreach Tools Can Complement Aarhus Workshops

#### 4.2.3 Outreach Tools to Improve Flood Risk Preparation

#### 4.2.4 The Video

#### 4.2.5 Before the Flood: A Flood Preparedness Game
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Group Introductions</td>
<td>91</td>
</tr>
<tr>
<td>4.2.5.1 Gameplay Observations</td>
<td>94</td>
</tr>
<tr>
<td>4.2.5.2 The “Before the Flood” Game as a Teaching Tool</td>
<td>96</td>
</tr>
<tr>
<td>4.2.6 The Fill-In Emergency Guide</td>
<td>99</td>
</tr>
<tr>
<td>5.0 Conclusions</td>
<td>101</td>
</tr>
<tr>
<td>5.1 Summary Of Findings</td>
<td>104</td>
</tr>
<tr>
<td>5.2 Limitations</td>
<td>107</td>
</tr>
<tr>
<td>5.3 Ethics</td>
<td>108</td>
</tr>
<tr>
<td>5.4 Reflection: Curiosity, Connection, and Creating Value</td>
<td>110</td>
</tr>
<tr>
<td>5.5 Concluding Remarks</td>
<td>112</td>
</tr>
<tr>
<td>Works Cited</td>
<td>113</td>
</tr>
<tr>
<td>Pictures Cited</td>
<td>120</td>
</tr>
<tr>
<td>Appendix A – Key Informant Interview Protocol</td>
<td>121</td>
</tr>
<tr>
<td>Appendix B – Semi-Structured Interview Protocol</td>
<td>126</td>
</tr>
<tr>
<td>Appendix C – Focus Group Protocol</td>
<td>132</td>
</tr>
<tr>
<td>Appendix D – Game: Before the Flood</td>
<td>134</td>
</tr>
<tr>
<td>Appendix E – The Fill-In Emergency Guide</td>
<td>135</td>
</tr>
<tr>
<td>Appendix F – Link to Video: Voices of the 2010 Flood</td>
<td>136</td>
</tr>
</tbody>
</table>
# Table of Figures

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Criteria for Outreach Strategies</td>
<td>viii</td>
</tr>
<tr>
<td>2</td>
<td>Dushi points out what she would do in the game</td>
<td>iv</td>
</tr>
<tr>
<td>3</td>
<td>Edra fills out the Fill-In Emergency Guide</td>
<td>iv</td>
</tr>
<tr>
<td>4</td>
<td>Flood Risk Plans and Maps created by GIZ</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>The Shkodër Region</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Average monthly rainfall for Albania 1991-2015</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>Graph of Average Yearly Precipitation from 1991-2015</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>The three main artificial reservoirs along the Drin Cascade: Fierza, Komani, and Vau i Dejës (KESH)</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>Schematic Outlay of the Drin Cascade (KESH)</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>Overview of the four step development process (GIZ)</td>
<td>16</td>
</tr>
<tr>
<td>11</td>
<td>The differences between structural and non-structural adaptation measures</td>
<td>17</td>
</tr>
<tr>
<td>12</td>
<td>Proposed Risk reduction</td>
<td>18</td>
</tr>
<tr>
<td>13</td>
<td>Flood Risk Management Measures</td>
<td>19</td>
</tr>
<tr>
<td>14</td>
<td>Example of regional vs. communal measures</td>
<td>19</td>
</tr>
<tr>
<td>15</td>
<td>Flow chart detailing the processes from our research objectives to our goals</td>
<td>40</td>
</tr>
<tr>
<td>16</td>
<td>The location of interviews</td>
<td>45</td>
</tr>
<tr>
<td>17</td>
<td>Coded themes from interviews</td>
<td>48</td>
</tr>
<tr>
<td>18</td>
<td>Shows the topics within the ten themes</td>
<td>49</td>
</tr>
<tr>
<td>19</td>
<td>Outreach strategy sorting overview</td>
<td>50</td>
</tr>
<tr>
<td>20</td>
<td>English to Albanian prototype example</td>
<td>51</td>
</tr>
<tr>
<td>21</td>
<td>The English and Albanian prototype of the Fill-In Emergency Guide</td>
<td>53</td>
</tr>
<tr>
<td>22</td>
<td>The coded themes from interviews</td>
<td>62</td>
</tr>
<tr>
<td>23</td>
<td>Bulletin page 1</td>
<td>69</td>
</tr>
<tr>
<td>24</td>
<td>Bulletin page 2</td>
<td>69</td>
</tr>
<tr>
<td>25</td>
<td>Bulletin page 3</td>
<td>69</td>
</tr>
</tbody>
</table>
26  Bulletin as a Facebook post  
27  Emergency text from government  
28  The inside of a GIZ informational leaflet  
29  Outreach tools sorted by feasibility for our work  
30  Pile sorting result at Aarhus’ children meeting  
31  Pile sorting results focus groups 3 and 7  
32  Focus groups 6 and 8  
33  Back of Fill-In Emergency Guide
VI. Executive Summary

Severe flooding affects the Shkodër region of Albania and devastates people’s lives. The causes for flooding are both natural and man-made. The Drin-Buna river basin is made up of lakes, rivers, and hydropower dams which regulate the flow and volume of water released into the rivers. Additionally, people live in areas that are natural floodplains. These areas experience moderate flooding every year. The 2010 flood, the most severe flood in memory, spread over 15,000 acres across Shkodër and 14,500 families and 16,500 animals were evacuated (DREF, 2011). People lost workable land, livestock, and furnishings inside their homes.

The Deutsche Gesellschaft für Internationale Zusammenarbeit
Our sponsor, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), which is the international development agency of the German government, worked with technical experts and local stakeholders to develop a comprehensive Flood Risk Management (FRM) plan for the Shkodër region. This plan includes flood risk maps, in-depth educational leaflets, and support for the Aarhus Information Center to teach people at risk for flooding what actions to take before, during, and after floods by using these leaflets and the Aarhus Family Emergency Guide. This IQP project is designed to complement and build upon the Flood Risk Management plan and outreach currently being done.

Goal and Objectives
The goal of this project was to understand the lived experiences of rural and urban communities in the Shkodër region to develop preliminary outreach strategies that will help inform communities about actions they can take to reduce their vulnerability to flooding.

We came up with three objectives to meet this goal.

1. Research the complexities of risk communication and decision risk management
2. Understand community experiences and decision-making processes
3. Develop and test outreach tools and ways to inform communities at risk for floods about preparedness and planning
Semi-Structured and Key Informant Interviews

We conducted numerous semi-structured interviews in urban and rural areas of the Shkodër region with families from Zuktha, Obot, Zoteknike, the Illyrian village, Xhabije, Zus, Muriqan, and Dajc to understand people’s experiences and perceptions of flooding. All of these interviewees were affected by the devastating 2010 flood. Additionally, we conducted key informant interviews with the Deputy Project Manager of the Climate Change Adaptation in Flood Risk Management for the Western Balkans (GIZ), Director and Head of the Firefighters and Civil Emergency Brigade, the Team Leader of the High Capacity Pumping Team, Members of the Institute for Geosciences, Energy, Water and Environment (IGJEUM), and the Executive Director and Project Manager of the Aarhus Information Center in Shkodër. From our interviews, we identified ten themes related to experiences, decisions, and perceptions that appeared throughout. These themes are: flood characteristics, warnings, access to food, water, and supplies, media and communication, losses, recovery, preparation of past and future floods, perception of flooding, evacuation and place attachment, and emotions and trauma.

Experiences of the 2010 Flood

The 2010 flood traumatized people because of the magnitude of their losses and the fear they had witnessing the water flow into their homes and damage everything inside. Many people are scared that a flood like that will happen again, but they feel helpless to do anything differently from the last time. We found that people do not know all the actions they could take to prepare for a flood. Additionally, people assign the responsibility to prepare for a flood to government officials and emergency responders. If professionals, locals, and the community as a whole know best practices and act on them, flood risks may be reduced.

Characteristics of the Shkodër Region

From our interviews and focus groups, we learned about many of the needs of the Shkodër region. The Civil Emergencies Brigade is understaffed and has no equipment to transport boats and pumps except for personal cars and outdated firetrucks, which are not usable in floodwaters. Many homes are built on floodplains. For some families, they know the land will flood every year, but others do not know about their risks. People are attached to their land and their homes even if they know it floods because the land is fertile or passed down through generations.
Warnings

The IGJEUM warning system is limited in its ability to accurately forecast floods because there is not enough hydrological data to complete a model which will predict floods five to seven days in advance. People believe they need more time than they could possibly have with the current warning system. Therefore, it is necessary for people to have a plan ready so that the small amount of time that is available between a warning and a flood is maximized.

Developing Effective Risk Communication

Providing applicable knowledge to people at risk for a flood was at the forefront of our work. Though the aforementioned interviews and focus groups, we were able to identify areas of flood risk management information that may be useful to multiple stakeholder groups. The most prominent of these is planning. People who are at risk of being flooded would benefit from having a personal/family plan and knowledge about which preparatory actions to take. The people we spoke to who had taken preparatory action, though they did not necessarily meet all of GIZ’s recommendations. One complicating factor was that many residents had a tendency to place responsibility entirely on the government for prevention for and recovery from a flood. However, this expectation of governmental support is unsupported by past experiences as well as the current state of emergency warning and response systems in place. Community and family units were sources of support for people both experiencing and recovering from a flood. An effective flood risk communication strategy would utilize these connections to encourage preparatory actions and community responsibility to reduce flood risks. GIZ’s leaflet and risk maps are in-depth, comprehensive tools to help people understand that they are at risk for a flood and what actions they can take before, during, and after a flood.

Identifying Outreach Tools

We used the information from our interviews and the GIZ FRM plan to select and develop outreach tools to increase people’s agency, awareness, and responsibility to prepare for future floods. The criteria for our tools was as follows:

- Simple and easy to understand
- Interactive
- Vehicle for discussion
- Teaches Risk Management
- Useful for target demographics and ages
- Develops agency and responsibility
- Encourages community action

Based on this criteria we held a feasibility discussion as a team to compare potential outreach strategies used across Europe to the needs of the Shkodër region and the abilities of our team. There are many tools we did not have the time, money, or manpower to complete but would potentially be useful to aid the ability of communities at risk to prepare and plan. Examples of these tools include: flood art, a graphic novel centered around flooding, various social media pages across platforms such as facebook and instagram, flood risk preparation themed bracelets and or stickers, and flood political cartoons. In addition, a website serving as collection point for these tools is also something that could be beneficial. Based on our research and fieldwork, any of these tools would be worth prototyping and testing for future implementation. The three
tools our team chose to prototype and test during our time in Albania were the “Before the Flood Game,” The Fill-In Emergency Guide, and a short video, “Stories of the 2010 Flood” documenting memories of previous flood experiences.

**The Tools: Game - Before the Flood, The Fill-In Emergency Guide, Video - Stories of the 2010 Flood**

The outreach tools that we designed, developed, and tested in focus groups were made to be compatible with flood risk management workshops. Our tools aim to take the rich information found in the GIZ FRM plan and present it in a way that is interactive, memorable, and inspires preparatory action. The game, Before the Flood, starts conversations about the best practices for flood preparedness, forms community ties, and encourage group discussions. The Fill-In Emergency Guide condenses flood preparedness and planning down to what is most important for individuals or family units, and involves the participant in making decisions about the plan, developing ownership. It is also a physical reminder of one’s individualized plan for a future flood. The video, Stories of the 2010 Flood, is a vessel for the preservation of memories about the flood while providing an attractive way to draw people into a conversation about the importance of flood preparedness.

*Figure 2 (above): Dushi, Roma community leader points out what she would do in the “Before the Flood” game.*

*Figure 3 (Below): Edra fills out the Fill-In Emergency Guide with her personal plan for preparedness.*
Chapter 1: Introduction

Left:

Overlooking the Drin River from Rozafa Castle on a rainy evening in Shkodër.  
Photo by Donald Dione
1.0 Introduction

Around the world, floods result in severe devastation to residents, their homes, and their communities. They cause economic, physical, and social harm. People affected by floods may lose their livelihoods, and suffer psychological trauma. This has frequently been the case in the Shkodër region of northern Albania where there are numerous waterways connected to the Drin-Buna river basin, including lakes and river deltas that swell and overflow during long periods of heavy precipitation from November through March. The variations in water flow through the various dams along the Buna River along with natural hydrology affect the likelihood of a flood. In 2010, the water flowing through the dams was over four times greater than normal rates. These characteristics make the area susceptible to extreme flooding which was most recently demonstrated by the 2010 and 2013 flood events (GIZ, 2015). The floodwaters in the 2010 event spread over 15,000 acres across Shkodër. Around 14,500 families and 16,500 animals were evacuated. There were 4,100 families within the Shkodër region that received aid from the Albanian Red Cross (DREF, 2011). The vast destruction seen in both rural and urban communities of the region stimulated the development of a comprehensive flood risk management plan that our project is designed to complement and build upon.
A flood risk management plan evaluates the extent of flood risk in a particular area, identifies vulnerable assets and people, and provides concrete strategies to mitigate those flood risks. Our sponsor, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is the lead contributor to the Shkodër region Flood Risk Management (FRM) plan (GIZ, 2015). This plan analyzed the flooding events of 2010 and 2013, identified risks in communities affected by flooding, and presented these findings for distribution in the form of flood risk maps and leaflets. The flood risk maps have been given to emergency responders and displayed in government buildings. The leaflet is tailored to each municipal unit and is currently being distributed in community meetings facilitated by the Aarhus Information Centers. It contains the risk map for that unit as well as actions to take before, during, and after flooding events, what to put in an emergency kit, and what an emergency plan should entail.

Figure 4: Flood Risk Plans and maps created by GIZ.
To further our sponsor’s efforts towards reducing flood risks in the Shkodër region, our team pursued the following objectives:

I. Research the complexities of risk communication and decision risk management
II. Understand community experiences and decision-making processes
III. Develop and test outreach tools and ways to inform communities at risk for floods about preparedness and planning

Based on these research objectives, our goal was to understand the lived experiences of rural and urban communities in the Shkodër region to develop preliminary outreach strategies that will help inform communities about actions they can take to reduce their vulnerability to flooding. To devise this strategy, we investigated the previous flooding experiences of the residents from eight different communities. We also conducted interviews with experts, such as first responders, Aarhus Information Center, and the Institute of Geosciences, Energy, and Water Environment (IGJEUIM) to learn more about the state of early warning systems, flood event response, and informational outreach that is already taking place. We used the stories we heard and the information we learned to develop three outreach tools: a short video, a flood preparedness game, and a Fill-In emergency guide.
In order to develop potentially effective outreach tools, we first needed to understand the impact of flooding on various communities. Successful outreach campaigns take into account the past and present perceptions of people vulnerable to flooding in order to develop the best messages to spark action. The finalized outreach strategies we’ve developed are centered on the needs and characteristics of the communities which are affected by flooding as well as those serving the communities such as first responders and the local administrative units. These materials were developed to provide communities with greater access to and understanding of flooding information. Specifically, these tools aim to increase the decision-making capacity of people living in the Drin-Buna floodplain by providing a list of actions to do before a flood to reduce losses and other risks. Our prototype outreach materials are intended to provide GIZ, and other relevant parties, with communication tools that transfer the wealth of knowledge contained in the GIZ Flood Risk Management plan to people living in areas at risk for flooding.
Chapter 2: Background

*Left:*

_The point where the Drin and Buna Rivers meet._

*Photo by Sarah St. Pierre*
2.0 Background

The Shkodër region of northern Albania is home to the largest lake in the Balkan Peninsula, along with numerous major rivers, the largest of which are the Drin and Buna, and various reservoirs. Much of the region lies in floodplains, and has recently been wracked by severe flooding in the winter of 2010-2011, causing tremendous damage to the City of Shkodër and surrounding rural areas. Following the flooding events of 2010, the German agency Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) was contracted to work with local, regional and national stakeholders to establish adaptation measures to mitigate future flood risk. In 2015, GIZ completed its plan, called the Flood Risk Management Plan for the Shkodër Region.

Section II contains a brief overview of the geographic properties of the Shkodër region followed by a discussion of the recent flooding events. In section III, the GIZ plan and its relationship to the EU floods Directive is discussed. The complexities of risk perception are described in section IV, including a discussion of heuristics and perception on the community and individual level. Finally, section V considers the best ways to communicate information about flood risk. It addresses some of the challenges that arise in developing outreach tools, discusses the theme of cooperation and trust, and provides examples of successful outreach strategies which may be applicable to this project.
2.1 Flooding in the Shkodër Region

In the Shkodër region, urbanization, changing winter weather patterns, and the hydrologic systems have led to floods that have caused significant damage to the surrounding area. A study on natural disasters from 2012 reported that flooding accounted for 40% of the natural disasters in the Shkodër region (Hysenaj, M., 2012).

The Shkodër region lies in the northwest corner of Albania, near the border with Montenegro. Our project will focus on the flood prone region of the Drin River Basin. The Drin River Basin, a lowland surrounded by many mountainous peaks, is susceptible to flooding because of the expanse of waterways spanning across Albania, Macedonia, Greece, Kosovo and Montenegro (Drin Corda, 2017). Figure 1 shows the location of the Shkodër region, along with its municipal unit subdivisions. This project in the Shkodër region is situated in the following administrative units: Ana e Malit, Dajç, Rrethina, and Shkodër. These regions are located in the Drin lowland, surrounded by various rivers, lakes, and wetlands (GIZ 2015 June).

Figure 5 - Highlighted in red is the Shkoder region of Albania. The detail shows the municipal units in Shkoder.
Nearby rivers include the Buna river, which flows from Lake Skadar to the Adriatic Sea, and the Drin river, which flows close to Lake Shkodër and meets the Buna river, where it converges to drain to the sea (GIZ 2015 June). The delta of these rivers has become a prime location for land erosion; another factor in the increase of flooding as well as flood damage. Land erosion occurs naturally, but it is amplified in this region by construction and deforestation (DRIN CORDER, 2017). Flooding in the area is made more severe by a natural hydrological change that occurred in 1848, when a flood took place that caused the Drin River to shift from its previous course (GIZ 2015 June). The natural geography of this region is just one aspect that leaves the area at risk for floods.

Another natural occurrence that makes the region more prone to flooding is the winter weather. Winter weather patterns include heavy, continuous precipitation. Seasonal rain and snowfall, from November to March, accounts for 80-85% of the region’s annual precipitation (GIZ 2015, June). Figure 6 shows the average monthly rainfall over the years 1991-2015. A majority of the region’s floods have been caused by heavy rainfall and other forms of precipitation, such as snow, which adds to the region’s potential flood risk. The worst flooding events occur when heavy rain and melting snow occur in unison. This combination pushes the flow capacities of rivers and dams in the area to the brink.

Figure 6 - This chart shows how the winter months have elevated precipitation rates when compared to the summer months.
The Drin-Buna river basin has experienced many severe floods especially in the Shkodër region. A graph of yearly precipitation is seen in Figure 7. Some of the worst flooding events seen here were in the years 1905, 1952, 1960, 1962-1963, 1970-1971, 1979, 1994 with the greatest flood levels being recorded in 1962-1963 (Hysenaj, M. 2012, June) and (GIZ 2015, June). This historical frequency, coupled with the more severe recent event has led to increased motivation to develop and implement flood plans to reduce flood risk.
2.1.1 Hydrology

Heavy rain is a critical factor for the function of hydropower dams along the Drin cascade, and dam operators are forced to open the gates when water levels are too high to ensure the plant does not fail (Mema, 2010). The artificial reservoirs along the Drin cascade include the Fierzë, Koman, and Vau i Dejës, as seen in Figure 8. These dams generate electricity to corresponding power plants which run off the Drin cascade. The dams are all a part of KESH, or the Albanian Power Corporation, which is Albania’s largest electricity producer. They deliver 70-75% of customer’s electrical needs (Drin, 2017). The operation of these power plants has a significant bearing on the amount of water entering the river basin in Shkodër, and therefore a significant influence on flooding in the area (Drin, 2017).

The three dams, Komani, Fierza, and Vau i Dejës, were constructed and installed with a combined capacity of 1400 megawatts. The first functional plant built on the Drin River was the Vau i Dejës. This was the dam that officials were forced to open the gate of in 2010, which added to the intensity of flooding events in the region. The Fierzë plant was the next to be constructed. It became entirely operational in 1980, ten years after construction first began. This hydropower plant is located the farthest upstream of all three main dams (Drin, 2017). As seen in Figure 9, this dam has the largest catchment area of the main dams on the Drin river cascade. Located between the Vau i Dejës and Fierzę plants is the Koman hydropower plant. It is the largest power generator in the country and the most powerful hydropower plant of the three main dams on the Drin cascade.

Figure 8 - There are three main artificial reservoirs along the Drin cascade. Shown in this figure are Fierzë, Koman, and Vau i Dejës. (KESH)
During the 2010 flooding events, the river was flowing at 3,500 cubic meters per second through the Vau i Dejës dam, far in excess of the dam’s operational capacity of only 800 cubic meters per second (DREF, 2011). This dam is located the farthest downstream of all dams. It is the last dam before the city center, meaning that water levels can build up after passing through the first two main dams (Koman and Fierze). This then requires releases in excess of operational capacity to protect the integrity of the dam.

2.1.2 Flooding Prevention Measures

Dikes and drainage systems were first implemented in the 1960’s after major flooding of 1962-1963 (GIZ, 2015). This caused an increase in inhabitants in the floodplains but also an increase in potential flood damage because of the assets at stake (GIZ, 2015). This population increase in the region continued in 1970’s as flooding damage during this decade was dampened by man-made channels, drainage systems, and hydrological power plants (GIZ, 2015). These flood prevention measures in the region only withstand small scale floods and do not completely protect stakeholders in the event of a severe flood. The drainage systems are not well maintained as blocked channels, either by lack or cleaning or by illegal building, are part of the reason that recent floods of 2010 and 2013 caused such severe damage (GIZ, 2015). Additionally, a traffic bypass is being constructed around the outskirts of the city of Shkodra, which will help alleviate risk to the city itself, but is not likely to have an impact on flooding in areas south of the city and in rural areas of the region (GIZ, 2015).
The drainage system is divided into channels of three different categories: 1st, 2nd and 3rd level. First level channels are 12 meters wide, 2nd level channels are 5 meters wide and 3rd level channels are 3 meters wide (GIZ, 2015). The 1st level channels have the ability to discharge a significant amount of water into the Adriatic sea (GIZ, 2015). However, as previously stated, they are not well maintained. Moreover, 2nd and 3rd level channels have the ability to reduce flooding in fields; yet, farmers fail to properly clean these channels (GIZ, 2015). Therefore, while there is an in-depth drainage system in place for the Shkodër region, its poor maintenance limits its ability to reduce flooding during an extreme event.

### 2.1.3 Most Recent Floods

Heavy rain throughout winter 2010, and an unexpected release of water flowing from the Drin hydropower system in 2010, resulted in major flooding events. January floods, mainly caused by snowmelt in the Drin River Basin, caused damage to the region. However, this flood was not as extreme as the flooding which occurred 11 months later in November and December of 2010 (GIZ 2015, June). The Shkodër region suffered from 900mm (35 in) of rainfall in a one-month span, approximately half of the average annual rainfall of approximately 1800mm (71 inches). Historic high water records for Lake Shkodër were set and the Buna-Drin rivers also reached water level peaks (GIZ 2015, June). In the November-December floods, 14,100 hectares were flooded; 59,604 people were directly affected; 14,200 people were displaced from their homes; approximately 3,710 domestic animals, including poultry, drowned; six health centers were shut down; and national roadways in the area were closed (Flood in Shkodër, 2017).
Another significant flood occurred in March of 2013. This flood affected approximately 717 families by severing water resources and entrapping families in their residences. Six thousand hectares of workable land were also impacted by the severe flooding, causing not only physical disasters, but also economic devastation. Livestock and essential crops were destroyed. These floods were also a result of heavy rainfall and melting of snow (Hoxha, 2013). After these floods, flood protection and risk assessment plans were subject to new scrutiny. The next section details the comprehensive flood risk management plan that was developed as a result of the 2010 and 2013 floods.

2.2 The 2015 Flood Risk Management Plan for Shkodër

GIZ, the German government international development agency has been working in Albania since 1988. Its work in the Shkodër region began in 2012 as part of its “Climate Change Adaptation in the Western Balkans” project. Some of the objectives for this project include: establishing a regional flood early warning system for the Drin River Basin; support for national institutions in drafting climate change adaptation strategies; and creating advisory services during the formulation of local flood risk and drought management as well as in the implementation of measures to reduce risks. The Flood Risk Management Plan for the Shkodër Region that GIZ published in June of 2015 is a realization of these project objectives.
GIZ was not the only group involved in developing the Flood Risk Management Plan. The Prefecture and the Regional Council of Shkodër took part, as did the officials from the Shkodër regional Strategy Development Department, the Emergency sector, the Transport and Civil Emergency Sector, and staff from environmental organizations.

Stakeholders used a four step development process for the plan: Validation and Analysis of Flood Hazard Maps; Validation and Analysis of Flood Risk Maps by local actors (supported by experts); risk assessment based on flood hazard and flood risk maps; and identification of flood management measures (GIZ, 2015). These steps are based on the EU Floods Directive 2007/60/EC which considers administrative instruments, protection aspects, technical flood protection aspects and preparedness aspects. Figure 10 details this four-step development process.

<table>
<thead>
<tr>
<th>Structural Adaptation Measures</th>
<th>Non-Structural Adaptation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong> Technological and infrastructural upgrades to existing physical structures, or creation of new physical structures to reduce intensity and risk of future flooding events.</td>
<td><strong>Definition:</strong> Actions that focus on limiting damage done by floods through communication of flood event knowledge to the public.</td>
</tr>
<tr>
<td><strong>Examples:</strong></td>
<td><strong>Examples:</strong></td>
</tr>
<tr>
<td>• Construction of flood defenses (i.e. dams and dikes).</td>
<td>• Distribution and education of flood risk management materials.</td>
</tr>
<tr>
<td>• Raising foundations of houses in flood plains.</td>
<td>• Implementation of flood warning systems.</td>
</tr>
<tr>
<td>• Development of water permeable asphalt.</td>
<td>• Optimization of resource use (i.e. food, fuel, water, etc.)</td>
</tr>
<tr>
<td><strong>Pros:</strong></td>
<td><strong>Pros:</strong></td>
</tr>
<tr>
<td>• Reduces severity and risk of floods.</td>
<td>• Increases lines of communication.</td>
</tr>
<tr>
<td>• Does not require public participation or understanding to be effective.</td>
<td>• Increase awareness and preparedness.</td>
</tr>
<tr>
<td>• Minimal maintenance costs once constructed.</td>
<td>• Decreases psychological distress before, during, and after flood events.</td>
</tr>
<tr>
<td><strong>Cons:</strong></td>
<td><strong>Cons:</strong></td>
</tr>
<tr>
<td>• Initially expensive.</td>
<td>• Social and cultural resistance to change in behaviors.</td>
</tr>
<tr>
<td>• Time consuming to construct.</td>
<td>• Requires time to build and maintain trust and outreach in communities.</td>
</tr>
<tr>
<td>• Risk is never completely eliminated.</td>
<td>• Does not affect the physical severity of flood events.</td>
</tr>
<tr>
<td>• May provide false sense of security and increase severity of flood damage if these measures fail.</td>
<td>• Needs to be continually evaluated and updated for effectiveness.</td>
</tr>
</tbody>
</table>

*Figure 11 - The difference between structural and non-structural adaptation measures, along with examples of both as well as pros and cons of both.*
The overall goal of the EU Floods Directive 2007/60/EC is to reduce the negative consequences of flooding concerning human health, the environment, cultural heritage, and economic activity (GIZ, 2015). The flood directive lists three steps as requirements to follow in order to achieve the overarching goals: identification of potential significant flood risk areas, flood hazard and flood risk mapping, and flood risk management planning.

The GIZ plan breaks the Shkodër region into 8 communes, now called administrative units, and assesses each separately. GIZ prepared flood risk maps for each unit as well as the region as a whole. These maps show, along with local knowledge, which houses were affected by flooding. GIZ also supplied us with the leaflets specialized for each municipal unit. These illustrate the extent of flooding in 2010 and 2013, which communities were affected, what they lost, and what remains most at risk in each area (GIZ, 2015).

Figure 12- Proposed Risk Reduction/Preventive Measures (GIZ, 2015)

The primary objective of the Flood Risk Management Plan is to identify and recommend non-structural measures such as spatial planning, preparedness, warning systems, and informational outreach (GIZ, 2015).

With regards to spatial planning, the plan calls for identification and designation of floodplains and risk areas, with the goal of preventing future construction in these areas. In order to achieve this goal, the plan calls for gaining the support of LGUs (local government units) in each region. With the support of these regional LGUs, the hope is to legally restrict any further construction in these areas, while also providing support for inhabitants of existing buildings in floodplains or risk areas. In addition, the plan makes note of distributing information regarding floodplains and risk areas via workshops, seminars and university lectures.
The plan proposed risk reduction/prevention measures into the following three categories: Administrative instruments to create a policy basis for avoidance of risk, measures for adaptation of land use and risk prevention by flood adapted building (GIZ, 2015). These three categories target reducing adverse effects before, during and after a flood event of the following four areas: human health, environment, cultural heritage, and economic activity (GIZ, 2015).

Concerning the development of preparedness and warning systems, the plan breaks preparedness into four unique types: economic/financial preparedness; informational preparedness; behavior-related preparedness; and allowance, preparation and post-processing of hazard control (GIZ, 2015).

The plan lists measures for achieving each of the four types of preparedness. Each measure is given a priority rating of one to three with a rating of one designating a method having the highest priority. The priority rating is based on the following four factors: which low cost measures may be taken first, which additional evaluations may be necessary, which actors are mainly in charge and for which measures additional funds must be raised (GIZ, 2015).

**Figure 13 - Flood Risk Management measures with regard to preparedness (GIZ, 2015)**

**Figure 14 - Example of Regional vs Communal Measures, Specifically: Financial precautions by reserves and insurances (GIZ, 2015)**
Moreover, every measure listed in the Flood Risk Management report is broken down into one of two categories, regional measures and local measures. Regional measures are meant to be carried out by the regional or national actors, while local measures are meant to be carried out by each individual community.

Overall, the Flood Management Plan takes a comprehensive approach to reduce flood risk in the Shkodër region. But implementing the plan, particularly at the communal level, requires an understanding of the perceptions of local stakeholders to determine the best methods of community engagement, which is critical to an effective flood management plan.

### 2.3 Risk Perception and Decision Making

Risk is not simply a measure of how likely a flood is to happen; rather it is informed by each individual’s perception of that risk. The human brain will take shortcuts when fast decisions are necessary, and emotions, not just rational thought, inform responses (Slovic, 2004). Ingrained survival mechanisms often overrule data and statistical knowledge when informing decision-making (Slovic, 2004). The theory behind risk perception has its foundation in cognitive psychology.

According to Paul Slovic, an eminent risk analyst, the emotional response to risk is generated by the experiential system, while reason is generated by the analytical system. The experiential system is intuitive and not in the realm of conscious awareness, while the analytical system uses algorithms and formal reasoning such as probability calculus (Slovic, 2004). The former is fast because it is an unconscious reaction, while the latter is relatively slow because rules must be followed step by step in order to reach a decision (Slovic, 2004). Those presenting a flood management plan should be aware that both types of thinking exist when engaging with the target community and, as result, will inform the local’s responses to the plan depending on the context (Kousky, 2015).
2.3.1 Heuristics

The mental shortcuts that people take to simplify a complex problem are called heuristics. Essentially, when given a complicated problem, people will rely on impressions, instinct, and emotions to make an instant decision instead of weighing the pros and cons of every possible scenario (Slovic, 2004). In relation to flood risk perception in particular, a number of heuristics have been defined and studied such as the availability heuristic, gambler’s fallacy, optimism, truncation, certainty effect, framing effect, peer effects, and affect heuristic (Kousky, 2015).

The Availability Heuristic

The heuristics applying to flood risk perception are valuable tools that inform individual responses and reactions when presented with flood data and plans. The availability heuristic is related to how recently a flood has occurred and for which they have recent experience or some magnitude of media coverage. After a flood, an individual is more likely to be concerned about another one occurring or they may underestimate the risk of the next flood depending on their personal experience in that most recent one. However, this effect may diminish with time (Kousky, 2015).

The Gambler’s Fallacy

The gambler’s fallacy is involved when talking about the probability of a flood occurring in the future. Individuals tend to believe that if an area has not experienced flooding in several years, that this is a representative sample of the risk in that area for future flooding (Kousky, 2015).

Optimism

Optimism is a heuristic that leads people to minimize their individual perception of the risk of flooding, meaning that people are disinclined to believe that they will be victims of a flood even if they live in a flood prone area (Kousky, 2015).

Truncation occurs when an individual mentally eliminates a small risk. So, while people who are protected by structural flood protection measures like levees may ignore the small risk still possible of the levees failing (Kousky, 2015).
Framing, Certainty & Peer Effects

Three relevant heuristics to flood risk perception are based on effects. The certainty effect means that a person is more willing to invest in a plan that would completely eliminate flood risk, rather than a plan where the flood risk is merely lowered (Kousky, 2015). The framing effect deals with how questions are asked or choices are presented. In the case of flooding, people are more likely to reduce their risk exposure and vulnerability if they are told that land development may cause increased risk, rather than if they are told that the risk is unavoidable (Kousky, 2015). Peer effects argue that as more people in a tightly knit community are willing to implement risk reduction measures, so are those who were initially reluctant to do so. When people see those around them implementing visible risk reduction measures, they are more likely to become open to these measures themselves (Kousky, 2015).

Affect heuristic

Lastly, the affect heuristic is a form of “emotional tagging” (Kousky, 2015). People make decisions based on their emotions that a non-emotionally attached person might not agree with. Certain images in people’s minds are tagged “positive” or “negative,” so when making a decision such as whether to invest in flood risk management, they may be more likely to invest if shown or reminded of images that are linked in their minds to negative emotions like fear (Kousky, 2015; Slovic, 2004). Additionally, people do not want to regret their decisions (Kousky 2015). So, the probability of a flood is less important than the consequences of it. If people are given the option to do something about flood risks and presented with the negative consequences if they don’t, they will be more inclined to act to avoid regretting their lack of action later.

2.3.2 Social Effects

The work of Slovic and Kousky has been expanded on with regards to peer effects and the influence of a local community. There is a growing body of research that focuses on the effect of social norms to influence decision-making rather than individual perceptions of risk. This is referred to as the cultural theory of risk. In a study of flood insurance purchase using path analysis, perceived social norms predicted the behavior of the respondents, not risk perception (Lo, 2013). Lo demonstrated that there is an adaptive feedback process where risk perception influences an individual’s perception of social norms, and social norms influence risk perception (2013).
Vanderlinden’s research looks at multiple variables that go into flood risk perception, including heuristics and social effects, because he recognized that to analyze only one subset could never result in changed attitudes (2017). He defined three categories that these variables fit into. When interviewing stakeholders affected by coastal flooding, it was found that the claims they made were either based on relevance, evidence, or social norms (Vanderlinden, 2017). Relevance claims addressed what they thought were the most important factors to address for the benefit of society. Evidence claims followed causal patterns of thinking that often included scientifically based knowledge. Normative claims were described as what the stakeholder thought was “good, tolerable, and/or acceptable” (Vanderlinden, 2017). Vanderlinden found that local stakeholders primarily associated risk management with measures that allowed people to make decisions that were in line with the core values of their community (2017). He concluded that a plan to mitigate flood risks must be co-constructed with the affected communities so that its cultural norms and values are fully taken into account (Vanderlinden, 2017).

2.3.3 Case Studies

Following are case studies from the Netherlands, Belgium, and Wales/England. These three studies demonstrate how social science is put into practice when evaluating people at risk for flood events. These studies deal with vulnerability as well as risk. Vulnerability is one of three components to risk (the others being exposure and hazards), and is defined as the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of hazard (UNISDR, 2017). On the other hand, risk is defined as likelihood of an event occurring in addition to its adverse effect (UNISDR, 2017).

2.3.3.1 Netherlands

The Dutch place a great deal of faith in structural adaptations and, as a result, did not feel that they needed to prepare for the possibility of a breach. People protected by structural measures not only have faith in these structures but also usually lack experience of flooding. As a result, they are much more afraid of the...
possibility of a flood than those who have experienced prior floods (Baan, 2004). This is in contrast to people living in floodplains. Those people were more used to flooding and so were better prepared and felt less vulnerable (Baan, 2004). Those living in floodplains were familiar with the behavior of the river and had experience with high water levels so they were both more technically prepared and psychologically prepared than those living behind polders (Baan, 2004). They had the skills and mental preparations necessary to deal with high waters, so even if they couldn’t control the possibility of a flood they knew what they would need to do in the event of one. The more prepared people were and the more they knew about what their actions should be during and after a flood, the more manageable they felt their situation was and the less psychologically vulnerable they were (Baan, 2004).

In the Netherlands, levees are widely used, but flooding in 1993 and 1995 heightened flood risk awareness (Baan, 2004). This case study primarily focused on how people who lived in flood risk areas along the river felt about their safety, whether they were concerned, and what they would expect in case of a future flood (Baan, 2004). The psychological phenomenon known as “the levee effect” was demonstrated because the physical presence of levees lulled people into believing that they were completely safe. People placed what their actions should be during and after a flood, the more manageable they felt their situation was and the less psychologically vulnerable they were (Baan, 2004).

The study emphasized that “perceived control is a key factor for understanding the perception, attitude, and behaviour of people in risk situations” (Baan, 2004). Perceived control has to do with how an individual thinks that they can control the consequences of a flood, not if they can control the event of a flood. So, both perceived control and preparedness are considered critical factors to reducing vulnerability (Baan, 2004).

2.3.3.2 Belgium

In Belgium, coastal floods are a major cause for concern, but they are infrequent and so awareness may fade (Kellens, 2011). This study found several sociodemographic factors that shaped the risk perception of the people they surveyed, both residents and tourists. Belgian women tended to be more risk averse than men, and older residents and people with prior flood experience had a higher awareness of coastal flood risk as well (Kellens, 2011). The authors concluded that targeting specific groups and gaining insight into the psychological processes of these groups was vital when creating flood risk awareness programs (Kellens, 2011).
2.3.3.3 England and Wales

The study in England and Wales attempted to determine layperson flood risk awareness in the areas defined as being at flood risk. Only half of those surveyed realized they were at risk for floods when, in fact, all of them were (Burningham, 2007). The authors broke down the respondents based on class, and determined that there was a correlation between class and flood risk perception such that those in the lower class were less aware of flood risks and were more likely to live in areas at risk for flooding (Burningham, 2007). So, they may be doubly vulnerable as those in higher socioeconomic classes (Burningham, 2007).

Furthermore, increasing awareness of information did not necessarily have the desired effect of reducing flood risk. The authors focused on whether people knew that their property may experience flooding, and they concluded that how people assessed their individual risk did not necessarily relate to how aware they were of their risk (Burningham, 2007). So, people may be receiving information that they are at risk, yet based on their own assessment and perceptions reject this outside information (Burningham, 2007). As a result, Burningham concluded that it is necessary to engage with local perspectives on risk and make local people a part of the process of awareness raising (2007).

2.3.4 Evaluation of Flood Risk Reduction Plans

Hooijer et al. evaluated the IRMA-SPONGE transboundary flood risk reduction plans for the Rhine and Meuse River basins (2004). The authors performed a comprehensive evaluation of several integrated flood management plans that included both individual and organizational perceptions and technical knowledge. Their work provides insight into the limitations of these plans and how their design might be improved. They brought up several key points that they argue must be acknowledged when designing a flood management plan: there is always uncertainty regarding flood risk, quantifying risk in a way that satisfies everyone is impossible, and quantifying the value of non-economic assets is up to public debate (Hooijer, 2004).
When evaluating the plans used in IRMA-SPONGE, the authors concluded that designing effective plans is not a scientific optimization problem. Choices need to depend on individual and organizational perspectives (Hooijer, 2004). Additionally, they found that the top-down approach of most flood risk plans where regulatory and research institutions design a plan then pass it down to government ministries for implementation leads to problems including changes in objectives, prolonged debate, and delay of implementation (Hooijer, 2004). Each group had a different perspective on “the acceptability of a flood risk, and on the importance of economic, cultural and ecological aspects” (Hooijer, 2004). So, the authors concluded that including all relevant parties early on and formulating shared objectives together in the early stage of development of a plan would be the most efficient process to implementing a flood management plan (Hooijer, 2004). Additionally, the researchers emphasized that local solutions should be tailored to meet local needs and fit into the larger-scale flood management plan of an entire flood basin (Hooijer, 2004).

2.3.5 Psychology and Flooding

Flooding has nuanced psychological effects on those directly impacted. Research on floods in England and Wales showed that people blame their illnesses or bad health on their flood experiences, and they suffered from severe cognitive distress (Tunstall, 2006). They specifically talked about the stress, both physical and mental, of cleaning-up in cold, wet conditions. Psychological distress was more commonly reported than physical distress, with anxiety when it rains being the most frequently discussed (Tunstall, 2006). Women and those who were in poor health prior to the floods were more likely to be severely traumatized by flooding events (Tunstall, 2006). The study found that while physical damage may be repaired, psychological distress endured for years after a flooding event (Tunstall, 2006).
Before a flood, if people are aware that they live in a flood prone area, they have significantly less psychological deterioration (Foudi, 2017). Most people in this study deduced their flood risks by physical proximity to a river and through interactions with their peers and their community, not from information from the media or government (Foudi, 2017). Previous literature showed that people in natural disaster prone areas often do very little to manage their risks (Grothmann and Reusswig, 2006). This may be because people do not understand the severity of the threat, believe that it is ineffective to try and prepare themselves, or they rely on public prevention measures (Foudi, 2017). Awareness may be built through flood risk maps that depict evacuation routes and safe shelters (Foudi, 2017).

The way the aftermath of the flood is handled may also be a significant factor in people’s ability to psychologically recover. The community’s and professional agencies’ management of evacuations, flood warnings, and guidelines on how to handle water contamination may significantly affect people’s mental health (Tunstall, 2006). The clarity of information before, during, and after flooding events affects people’s stress levels and mental health.

Place Attachment

Place attachment is a key psychological process that affects how people respond to flooding events. It is the degree to which a person feels connected to meaningful environments in their lives (Scannell & Gifford, 2010). There are many ways to categorize the types of attachment and their sources, but in general they refer to the value a place adds to a person’s live, physical or otherwise. It has been shown that flood preparedness is heavily impacted by place attachment. It impacts both the protective measures that people do and do not take. For example, people with strong home attachment were more likely to have prepared supplies to stay in their home during a flood, but were less likely to evacuate (Mishra et. al. 2010). This influence was directly related to economic and genealogical attachment. This factor can not be disregarded when understanding the actions people take in response to flooding events.
The cognitive science and psychology behind flood risk perception is clear. Taking into account a person’s attitudes, feelings, and thoughts is vital to creating a flood risk management plan that will be successful in mitigating flood risk. In order to do this, the values and needs of a local community must be assessed, and then communicated to organizations like GIZ or the government of Albania.

2.4 Effective Flood Risk Communication

Providing the public with accurate information in a way that is both comprehensible and results in a proportional response is vital to implementing engagement-based risk mitigation projects. Adequate communication is in part determined by accurately informing the target audience. Fischhoff (2013) put forward the following criteria for successful communication designs:

(i) Contains the information that recipients need
(ii) In places that they can access
(iii) In a form that they can comprehend

There are numerous difficulties in achieving these criteria, which are explored in the following sections.
2.4.1 Complexities of Risk Communication

Successful risk communication plans must take into account the complexities of risk perception and the difficulties of explaining scientific information. However, they must also motivate those who receive the information to have the desired response to risks. In the case of flood risk, this typically takes the form of either compliance with preemptive safety standards, such as land use regulations, or developing emergency response, such as a flood warning system. According to a series of interviews conducted in three separate coastal European areas, people’s beliefs and responses to flood risk information frequently aligned more accurately with the opinions of their familial and social groups than any expert information that they were exposed to (Vanderlinden, 2017). This can be seen as an obstacle in risk communication, but it could also be a tool. If enough inhabitants of an area are convinced that flood risk is severe enough to warrant action, it is likely that their belief will not only spread, but have staying power. The question then becomes how to convince a substantial amount of people.

2.4.1.1 Risk Communication and Non-structural Adaptation Measures

Additionally, systematic risk communication is necessary when attempting to implement a risk management plan that marries structural and non-structural adaptations. A study of two Swiss Alpine valleys highlighted this fact. This study focused on the attitudes of Swiss locals towards the flood risk management concepts initiated by the EU Floods Directive and Swiss water laws. Specifically, it probed the issue of how to effectively transition to an Integrated Flood Risk Management (IFRM) policy from the previous, non participatory system. The results of the survey concluded that despite a general understanding of the benefits of non-structural adaptation measures, the majority still preferred the more classic direct hazard

*The Buna River, looking towards the Illyrian Village (2017)*
and flood control methods. The complete lack of a systematic risk communication program in the studied area was identified as a major inhibitor of the plan’s implementation (Buchecker, 2016). Having a well developed communication plan to supplement a project’s desired outcome is very important, but developing such a plan is not straightforward.

There are two main problems that develop when attempting to communicate flood risk effectively. The first is that technical language used by experts can lose its meaning when presented to the general public. Likewise, the fact that the way flood risk is measured by professionals is typically probabilistic in nature alters the way in which it is received. For example, when comparing four official flood risk terms in use in the United States, some were distinctly better at effectively communicating their meaning. One of the phrasings, “a 26 percent chance of occurring in 30 years,” resulted in denial and dismissiveness. The same study also emphasized that “message effectiveness will likely vary with language and translation,” meaning that adapting to local linguistic nuances may play an important part in effective communication efforts (Bell, 2007).

Risk Communication and Climate Change

One difficult topic to cover when communicating about flood risks is climate change. There is some indication that when addressing climate change, skepticism becomes a potentially limiting factor in communicating risk. However, research has shown that framing climate change as a part of a generally uncertain future instead of a primary cause of flood risk can reduce this effect (Boer 2013). Separating the discussion about risk mitigation and climate adaptation is only truly helpful if either term has developed a heavily negative connotation in the area of interest (Moser, 2014).
2.4.2 Cooperation and Trust in Risk Communication

Besides selecting the best outreach tools for a situation, making outreach a cooperative process can help build trust in both the overall plan and the organizations involved implementing the plan. Allowing for feedback increases personal investment in the risk mitigation projects, which is a resource frequently in demand when implementing voluntary measures. It has been identified that co-created initiatives which have considered the values of the community are more likely to be implemented and followed through on. Cooperation can also help to build trust in the organizations implementing the strategies, and therefore minimize the effects of the aforementioned heuristics where scientific evidence is potentially diminished or disregarded (Vanderlinden 2017).

In order for there to be effective disaster risk communication, there must be trusted lines of communication. People will be the more resilient to disasters if they are able to both receive trusted information from a central source like a news organization and contact other people or organizations to determine damages via telephone or email (Longstaff, 2008). Trusted communication needs to be established before a disaster so that cooperation may be built up between emergency response organizations and the people affected, allowing for more effective response.
Furthermore, increased preparedness before a crisis reduces blame in agencies and governments and leads to a better flow of information on the successes and weaknesses of crisis management (Longstaff, 2008). People in Central and Eastern European countries which were formerly communist, such as Albania, have a high level of trust in their fellow citizens, but very little in the elite, governing class (Besley, 2008). This means that even if the governing bodies try to control corruption, it does not increase people’s trust (Besley, 2008). Studies in Albania in particular have found that in public debate, people have low confidence in state institutions and do not feel represented (Pajo, 2016). More than 60% of Albanians trust international institutions like NATO and the EU, while only one-third of the citizens believes in their government (Pajo, 2016). Especially distrusted are the judicial system and political parties. This is important to consider when designing outreach as this distrust may undermine certain avenues of communication.

*A boat in the flood waters (2010)*
2.4.3 Potential Outreach Strategies

2.4.3.1 Risk Mapping
There are methods of communicating the complex idea of risk that result in not only deeper understanding, but also result in a proportional response. It’s important to motivate action proportional to the actual estimated risk. Specifically, high resolution maps with intuitive design (e.g. Flood water = blue) have proven to be especially effective since they allow people to more accurately visualize the risk that their home, or neighborhood is actually experiencing (Strathie, 2015). Steps should be taken to ensure the maps are as specific to local areas as possible, minimizing the use of statistical terms, and getting continuous feedback from recipients to ensure understanding (Hagemeier-Klose, 2009). GIZ has already produced flood maps through a GIS database provided by IncREO (Increasing Resilience through Earth Observation) specific to each municipal unit.

2.4.3.2 Educational Games and Interactive Activities
Educational games have an underlying message that can help to speed up the learning process and that encourage discussion or action on serious issues (Grist, 2012). There are strategically designed games, such as the Disaster Awareness Game (DAG), which are specifically created to help educate children. By fostering understanding at every age level, the community can become even more resilient to the challenges of a disaster by empowering people to take action based on the understanding they gained from the game (Clerveaux, 2009). These “games” also provide an opportunity to study the level of community understanding. By having people “act out” what they would do in emergency situations, it is possible to identify misunderstanding or misconceptions. This new information can then be directly fed back into the design of the game to adapt a flood mitigation plan to the specific community (Clerveaux, 2009).

A group of stakeholder playing an outreach game. (Photo from Red Cross Red Crescent)
In particular, the Red Cross Red Crescent Climate Centre has developed games specifically designed for communicating climate change based risks and specialize in framing this sometimes challenging topic. These games have an underlying serious purpose that can speed up learning and encourage action on climate risks while engaging with people and communities (Red Cross, 2012).

Risk mapping and interactive activities are just two examples of the many potential strategies to increase awareness and understanding of flood risk. These strategies are specifically valuable because of their focus on making flood risk information accessible to every member of afflicted communities.

### 2.4.3.3 Additional Options for Outreach

Prior research in Europe has shown that these methods may not be sufficient on their own due to, among others, issues in trust of the communicating agencies, limited public awareness of these tools, and different perceptions of the wording used to describe flood risks (Hoppner, 2012). Hoppner’s article includes documentation of 60 different outreach strategies that have been previously implemented in different countries across Europe. The strategies were evaluated based on the following criteria: does the outreach strategy raises awareness, increases the motivation to act, tells and shows people how to act, is tailored to specific groups, is long term, enables active participation by stakeholders in assessing risk and deciding on non-structural adaptations, and supports lasting communication networks (Hoppner, 2012). These standards can help inform the selection of outreach tools for flood risk management in Shkodër by providing examples of which strategies are more likely to succeed in influencing people’s actions.
2.4.4 Risk Communication in Shkodër

The GIZ has been working on an ongoing outreach campaign to increase the knowledge which the people who are vulnerable to flooding have on the topic. They are working with the Shkodër branch of Aarhus Information Center, to hold community meetings in health centers and schools to distribute the leaflets and information developed during the process of creating the regional FRM plan.

The current early warning system is based in IGJEUM, which monitors the potential for natural disasters through meteorological, hydrological, and seismological data gathering. Bulletins are published daily detailing the specific risks for the day. In the event the Institute predicts an extreme event may occur, they pass along a warning to the relevant Ministries in the Albanian national government, who are then responsible for informing people as well as coordinating the response. This system was established in response to the 2010 flood, and was therefore not in place at the time of the event.

The people of Shkodër have experienced the dangers and damage of flooding first-hand as a result of significant flooding events in 2010-2011. By incorporating the experiences of the recent past, there is the potential to influence community responses to future flooding through spreading information in a usable form to increase preparedness.
Chapter 3: Methods

Left:
Conducting a focus group in the Illyrian Village
Photo by Bob Hersh

Table of Contents
I. Understanding the GIZ Project and the Flood Risk Management Plan
II. Understand the Experiences of Those Impacted By Previous Flooding
III. Develop Flood Risk Communication Materials to Inform the Community about Strategies to Reduce Vulnerability to Flooding
3.0 Methods

**Our objectives were to:**

1. **Research** the complexities of risk communication and decision risk management.
2. **Understand** community experiences and decision-making processes.
3. **Develop and test** outreach tools as ways to inform communities at risk for floods about preparedness and planning.

*Photo taken by Professor Robert Hersh at an interview in Obot. (2017)*
We worked with GIZ and drew from its Flood Risk Management plan as the launching point for our project. We sought to understand the gap between the expert knowledge expressed in the GIZ plan and local perceptions of floods and flood risks. To do this, we collected information on people’s experiences in past floods and then used these insights to identify vulnerabilities based on people’s preparation for and responses to flooding. We developed tools to facilitate the transfer of information from the comprehensive FRM plan presented by GIZ to those who are actually at risk based on these insights.

*Figure 15: This flowchart details the processes from our research objectives to our goals.*
3.1 Understanding the GIZ project and the Flood Risk Management Plan.

3.1.1 Key Informant Interviews

Key Informant interviews, used to gain expert information on specific topics, allowed our team to expand our understandings of past, current, and future flooding events in the Shkodër region. Our team held a total of five key informant interviews including our sponsor, GIZ, the civil emergency responder director, Aarhus, and IGJEUM. The interview protocols and transcription can be found in Appendix A.

3.1.1.1 Key Informant: GIZ

Upon arrival to Tirana, Albania, our team held a key informant interview with our sponsor, Merita Mansaku-Meksi, the deputy team leader of GIZ’s Climate Change Adaptation in Flood Risk Management, Western Balkans (CCAWB II) project. This allowed our team to gain better insight on the current state of the plan and outreach strategies currently in place.

During the interview, our team sought information on the current state of flooding in Albania, whether there was an existing flood warning system, who were the key players in flood management and what their roles were, and what, in her view, were local perceptions on flooding. In addition to this, we received a briefing on the role of the Drin River dams in the flooding events of 2010, as well as the role of the Civil Emergency Department in the management of emergencies in the region.

We also asked which locations in Shkodra were of primary interest to GIZ to determine if there were any geographic areas which were distinct enough to warrant special investigation. Additionally, we asked about key community members and contacts that GIZ has related to flood risk management. The flexible structure we prepared for this initial interview is in Appendix A. This interview, while important to developing a baseline understanding of the state of the GIZ project, was in no ways the limit of the information the GIZ office was able to provide to us. The GIZ office continued to provide us with information over the course of the project. Numerous emails were exchanged and small meetings were held to discuss new information and discuss the direction of our work.
Mr. Ridvan Bushati was our team’s second key informant. We talked to him about the emergency response during the 2010 flood and the current state of emergency response. This interview began with simple questions asking him to go through what he remembered about the flood. He described his time as a police officer and the difficulties of emergency responses, specifically those involving flooding. He described to us the lines of communication for a flooding event as well as what his role is as director and head of civil emergencies. Our team interviewed him to get a varying perspective from a person who experienced the flood as an emergency responder.

Edison Suma is a firefighter and the team leader of the high capacity pumping team at the fire department in Shkodër. The high capacity pumping team is trained to use pumps to move large volumes of water away from residential areas in a flood. We interviewed him about his experiences during the 2010 flood and his opinions on the current state of emergency response.
3.1.1.4 **Key Informant: IGJEUM**

To better understand the geographical and meteorological aspects of flooding, our team held a key informant interview with the members of IGJEUM, the Institute of Geosciences, Energy, Water and Environment. We spoke with Amparo Samper, hydrologist, Anjira, Environmental Engineer and expert forecaster, and Klaudian Zaima, hydrologist.

3.1.1.5 **Key Informant: Aarhus**

Another key informant interview was held with Alminda Mema, Executive Director and Projector Manager of the Aarhus Information Center, Shkodër. She is in charge of various meetings to educate people at risk for floods. Her meetings are with both women and children group, and they are held in local community centers and schools. This interview followed a semi-structured interview format.

3.1.2 **Key Informant Analysis**

To analyze the key informant interviews, field notes were recorded in notebooks and transferred to a shared document online. The key informant interviews with Aarhus, IGJEUM, the Director, and audio recordings of the interviews were transcribed.
3.2 Understand the Experiences of Those Impacted by Previous Flooding

We worked with the university students and heavily utilized the GIZ flood risk maps to identify the eight communities we worked in. These included rural and urban communities, people from various socioeconomic levels, and people with a range of exposure to the flooding event in 2010. The communities we worked in were Zuktha, Obot, Zotehnike, the Illyrian village, Zus, Muriqan, and Dajc. In both Zuktha and Dajc, we went to two separate locations, bringing us to a total of 10 interviews.

3.2.1 Collaboration with Shkodra University and Students

In order to conduct our interviews, we needed local guides who knew the areas of severe flooding, people who spoke exceptional English and Albanian in order to act as translators, and people who were interested and willing to work on the project with us. The University of Shkodra was able to provide us with four students that met each criteria. Professor Lediana Xhakollari and Professor Visar Disdari welcomed us to the university and introduced us to the students who would guide us through Shkodër as we proceeded to complete interviews with key informants and flood affected residents of various communities. These students, Manuela Probibaj, Amel Pervizi, Edra Vitoja, and Ledina Preza, all contributed to our work by being both translators, guides, and confidants.
### Location of Interviews

**Figure 16 – Location of Interviews**

<table>
<thead>
<tr>
<th>Interview</th>
<th>Location</th>
<th>Family/ People</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zuktha</td>
<td>Urban family with approximately seven members present.</td>
</tr>
<tr>
<td>2</td>
<td>Zuktha</td>
<td>Older woman and her daughter.</td>
</tr>
<tr>
<td>3</td>
<td>Obot</td>
<td>Four relatives: Luk Frenja, Tone Frenja, Maria Frenja, and Vat Frenja. Ranging in ages 56 to 83 years of age.</td>
</tr>
<tr>
<td>4</td>
<td>Zoteknike</td>
<td>Three members of family were present. Middle aged father and mother with a young girl.</td>
</tr>
<tr>
<td>5</td>
<td>Roma Settlement (Illyrian Village)</td>
<td>Village Head named Dushi and some other village residents.</td>
</tr>
<tr>
<td>6</td>
<td>Xhabije (urban)</td>
<td>Family of three; Muharrem, Drita, and Ledina Preza.</td>
</tr>
<tr>
<td>7</td>
<td>Zus</td>
<td>Budrin Restaurant’s owner’s son.</td>
</tr>
<tr>
<td>8</td>
<td>Muriqan; (Rural)</td>
<td>An elderly woman living alone; Saima.</td>
</tr>
<tr>
<td>9</td>
<td>Dajç (Samrish)</td>
<td>Zadrima family. The middle-aged mother and father were present.</td>
</tr>
<tr>
<td>10</td>
<td>Dajç (Samrish)</td>
<td>Mhillaj Family. The mother, father, and three children were present.</td>
</tr>
</tbody>
</table>
3.2.1 Convenience Sampling

Once we identified the locations, our team along with a student or two from the University of Shkodër would take a taxi to the community. The students were invaluable partners to us. They walked up to people on the street or in their houses and told them about our project and how we were how to conduct interviews on flooding. If the people they talked to had been impacted by flooding, they almost always invited us into their house. If they had not been impacted by flooding or were busy, they pointed us to another house down the street that they thought could help us out. All the people we interviewed had direct experiences with flooding, although not everyone’s house or living space had been flooded, just the areas around in some cases.

3.2.2 Semi-Structured Interviews

In order to identify how people were affected by recent floods and how they reflected upon their experiences with flooding, we used semi-structured interviews to elicit people’s memories of the flood, how they responded, and what they saw were their current vulnerabilities. Semi-structured interviews offer the flexibility to collect rich oral histories, investigate critical research areas, and adapt to changing conditions (Galleta, 2013). Interviewees were able to offer insight into what was important to them while also allowing us to explore categories related to our project goals. For each interview, we asked for consent to record audio and use the participants’ names.

We asked the residents about the following topics: information on flood risks, warning systems, flood preparation, evacuation procedure, physical damage, recovery, post-flood clean-up efforts, and compensation. We also focused on social risks and vulnerabilities, investigating issues such as loss of livelihood and adverse psychosocial effects (APFM, 2013). We asked people what they see are the flood risks and vulnerabilities in their lives and communities, how they would attempt to reduce them, and what information and outreach they want to have access to.
For warnings, we explored what information people used to make decisions about protecting their property or evacuating the area, and to what extent the information was accurate, timely, and useful. We considered how people prepared for a flood by asking about the steps they took to safeguard their property and what guidelines if any they were given by local authorities to prepare for a flood. We wanted to know if people stayed in their homes or if they evacuated and on what basis they made that decision. We also explored people’s experiences after the flood and how they recovered from it. For example:

- Did they have drinking water, food, or access to medication?
- What did they rebuild?
- What clean-up efforts were made after the flood and were these efforts effective?
- Did they received any compensation for flood damage, and, if so, by whom?
- The complete list of semi-structured interview questions we asked the participants are in Appendix B.

### 3.2.3 Photography & Walking Tours

Semi-structured interviews were complemented by the use of other tools, such as photography and physically walking around people’s property. After asking for verbal consent, we took photographs and made video recordings of our interviewees, their homes and neighborhoods. When relevant, we had people show us around their houses and point to the height of the water as they remembered it. We took photographs as they showed us around. Some items we looked out for were visible damage from flooding, livestock, structure of the house, and any instances where the person pointed to the height of the water. Then, we asked them if they had any photos or videos of the floods that they would be willing to share with us, with the understanding that the content of the photos is rarely the most informative; rather, photos generate meaning for the participant that is discovered in the semi-structured interview (Clark-Ibáñez, 2004). We used the photos we took and collected in the development of our video.
3.2.4 Data Organization

We organized our data in Google Drive by interview number and date with a brief description of who was present, including the University of Shkodër students, and the location of the interview. Each folder includes our notes, audio, and video for each interview. We all took notes by hand during the interviews, so at the end of the day we typed these up and added them to the appropriate interview folder. Then we added notes about our own observations of behavior and what we thought were important points. Finally, we added a section for any questions that we felt were raised by the interview and points we would like to pursue further in future interviews.

3.2.5 Interview Analysis

We transcribed the audio from all the interviews, and coded them inductively to let participants’ experiences, perceptions and opinions drive the analysis instead of attempting to fit data into categories defined in previous literature. This method helps reduce the influence of preconceptions when collecting and analyzing data (Thomas, 2003). We had two people highlight important topics from each interview transcription. Using an Excel spreadsheet, we input these highlights side by side for a direct comparison. Then, we combined the two sets of topics for each interview into one complete topic list per interview. The topics from all ten interviews were put into one master list of 54 topics. These topics were condensed into 10 categories themes. These categories are Flood Characteristics, Warnings, Media and Communication, Access to Food, Water and Supplies, Losses, Recovery, Preparation for Past and Future Floods, Perceptions of Flooding, Evacuation and Place Attachment, and Emotions and Trauma.

Figure 17: Coded themes from Interviews
**Figure 18 shows topics within the ten themes.**
3.3. Develop Flood Risk Communication Materials to Inform the Community About Strategies to Reduce Vulnerability to Flooding

We looked at the existing flood risk related information that is being distributed to the public. This is comprised of the printed out flood risk maps in each town hall and the civil emergency department, the GIZ leaflets, and the Aarhus emergency guide. These tools are full of rich information that needs to be distributed, understood, and turned into actions by the public. We selected and developed two outreach methods and tools to draw on and complement the existing outreach work.

We identified potential new outreach tools based on previous examples used across Europe (Hoppner 2012), as well developing our own criteria with our understanding of the needs in the Shkodër region. The criteria was developed from the interview with Aarhus Executive Director and Project Manager, Alminda Mema, informed by the target demographics identified by the Shkodër University survey, and included our analysis of the semi structured interview done via coding. As a group, we discussed the following objectives for potential outreach tools:

- Simple and Easy to Understand
- Interactive
- Vehicle for Discussion
- Teaches Risk Management
- Useful for Target Demographic and Ages
- Develops Agency and Responsibility
- Encourages Community Action

After comparing all the outreach tools previously used across Europe against our criteria, we placed each outreach tool into one of two categories: “Good Fit for Flood Risk Communication in Shkodër Region” and “Poor Fit for Flood Risk Communication in Shkodër Region.” We then sorted the tools into more categories, as shown below in figure 19.

Figure 19: Outreach Strategy Sorting Overview
3.3.1 Testing the Outreach Tools: User Tests

We selected a pamphlet and an interactive game as outreach tools to prototype and evaluate. The Fill-In Emergency Guide was developed entirely by our team as a way to consolidate the information provided in the more in-depth GIZ leaflets.

The game, Before the Flood, was developed based on Before the Storm available on the Red Cross/Red Crescent Climate Centre website (http://www.climatecentre.org/games/3/before-the-storm) with many examples of games to be used for teaching, collaboration, and discussion. Our first prototype of the game had action, situation, and time cards similar to the setup of Before the Storm.

Figure 20: English to Albanian Prototype Example
We first user tested both the English versions of game and the pamphlet with our two project advisors and a group of 3 fellow WPI students who were in the Shkodra region with us. The first user test with our project advisors was meant to be an initial screen of the game. After this user test, the situation cards were renamed from “forecast” and “result” to “current weather” and “forecast.” This reduced confusion about the meaning and purpose of these cards. The gameplay mechanics were also changed after the first user test by changing how the facilitator referred to the people. The switch was from calling people the “judge” to “first decision maker.” Additionally, we decided to allow participants to rank the action cards during each scenario instead of just the first decision maker. The second user test was with another project team of WPI students. Our goal was to determine if the game was understandable by people who have little to no experience with flooding. There were no changes made to the game after the second user test. Next, a Shkodër University student, Manuela, translated the game, pamphlet and video into Albanian. We then user tested the Albanian versions of the pamphlet and the game at Arka, a nearby youth hostel, with three people who spoke both English and Albanian. Before starting this user test, we had decided to hand out the action cards to participants as well as show them the time and situation cards and then explaining the game. Previously, the facilitator had explained the game and then handed out the cards. We kept this change in the game after discussing the Arka user test. Finally, we took the game and pamphlet to the waiter, Amadeus, whom we had befriended at a nearby restaurant. We asked him to review the wording of the game cards and guide. There were no changes made to the game or pamphlet after this user test.
Figure 21: The English and Albanian Prototype of the Fill-In Emergency Guide
3.3.2 Focus Groups

We utilized focus groups to improve our outreach tools because they capitalize on group interactions to allow people to talk about their own priorities and experiences when they otherwise may not feel comfortable sharing in a one-on-one interview setting. They also provide access to forms of communication such as jokes, teasing, anecdotes, or disagreements that would be difficult to access in other interviewing strategies (Kitzinger 1995).

3.3.2.1 Procedure

Groups were formed with 3-5 participants each. Participants were assembled through the University of Shkodër, as well as by returning to sites of previous interviews: The fire station, the Roma community by the Buna River, and Obot. A translator was present to help both explain the activities and allow our team to receive more detailed feedback from the participants. The groups each started by playing both phases of the game. There was then a short discussion of their past flood experience if applicable to help us understand their responses. The final phase of each focus group was to present them with the Fill-in Emergency Guide. Participants were walked through filling out each part of the guide and were allowed to ask questions about the process.
Focus Groups

Top left is a group of Masters students from Shkodër University. Top right is a filled in Fill-In guide. The bottom photos are from the firefighter focus group.
3.3.2.2 Data

Note taking for the focus groups will include notation of the types of interaction that occurred, such as asking questions or deferring to the opinion of another participant, as well as verbal responses, and body language. This can help define the narrative of the conversation and provide insight into how the group dynamics may have influenced the content of the discussion (Kitzinger, 1995). Specific instances of misunderstanding will be noted for reconsideration in the final design phase. This will allow us to pick out where, for example, wording is hindering understanding. In addition to detailed notes, photographs were collected throughout the session to help document the results of each round of the game, as well as the body language of the participants. After each group, all notes and relevant pictures were consolidated into a folder in Google Drive. Individual notes were combined into a single document for ease of access. A ‘write-up’ of the most important or interesting aspects of each focus group was then completed by referencing the collected notes and pictures. From these, design recommendations were derived and applied to the Game and Guide during the final development phase.

3.3.2.3 The Final Development Phase

The analysis from the focus groups and recommendations from the user testing phase were then referenced to identify changes from the working prototypes of the Game and Fill-in Emergency Guide. These changes were then applied in the development of the final versions of these tools.

3.4 Schedule

Much of our working schedule was dictated by what location we were in. We spent some weeks in Tirana, working out of the GIZ Climate Change Adaptation in the Western Balkans Tirana office, and the remainder in Shkodra, doing field work and collaborating with Shkodër University and their students.
3.5 Presentations

We presented our process, findings, and developed tools at Tirana Polytechnic University. Presentations were also made to the Social Work Department at the University of Shkodra. Both presentations included working demonstrations of the final versions of the outreach tools, but the Shkodër University presentation did not include a viewing of the video.

We also presented final versions of the “Before the Flood” Game, Fill-in Emergency Guide, and Video, in an interactive workshop to our sponsor, GIZ. This included demonstrations of the developed outreach tools, along with a summary of the process and findings that led us to these final products. This presentation also included a short discussion of some outreach opportunities which were determined to be viable and relevant to flooding in Shkodër, but were not feasible for our team to attempt to develop in our limited time in Albania.
Chapter 4: Findings

Left:

_A boat owned by a resident of Obot, kept on hand in case a flood comes again._

*Photo by Donald Dione*

Table of Contents

I. Experiences
II. Perceptions and Limitations of Current informational Outreach Strategies
4.0 Findings

4.1 Experiences

Understanding the experiences of those affected by the 2010 flooding events in the Shkodër Region was central to our team’s development of outreach tools and strategies. Our team conducted numerous semi-structured interviews in eight different communities in the region that represented different areas that were flooded. Out of ten interview sessions, our team compiled notes and recorded audio of personal stories from more than twenty individuals who experienced the 2010 flooding events. Interviews took place in homes, the university, a Roma village warehouse, the fire station in Shkodër, and at the Budrin restaurant in Zus. Most people vividly recalled the 2010 flooding event, as that was the worst flood that had ever occurred in most people’s memories. Flooding events occur every year, and in 2013 there was another notable flood; however, that flood was not as devastating as the 2010 event. For this reason, our research focused on the 2010 event, using that event to explore perceptions of future flooding in the region. The interviews gave our team insight into the lived experience of the traumatic 2010 flooding event, the actions people did or did not take to prepare for the flood, and potential plans for the future if an event like the 2010 floods were to occur again.
These stories, along with field notes, transcriptions, and photos allowed our team to identify ten consistent themes pertaining to people’s perceptions of the 2010 flood. These themes, as seen in figure 22, are: flood characteristics, warnings, access to food, water, and supplies, media and communication, losses, recovery, preparation of past and future floods, perception of flooding, evacuation and place attachment, and emotions and trauma.

We incorporated the information we learned in these ten themes to help inform the content, design, and need of our outreach tools: Before the Flood (game), the Fill-In Emergency Guide, and Stories of the 2010 Flood (video). We drew a significant amount of the actions that people should take to prepare from the GIZ Flood Risk Management plan and the Aarhus Family Emergency Guide. The game, Before the Flood, and the Fill-In Emergency Guide were tested in focus groups in communities at risk for flooding to determine if they were interactive, informative, and easy to understand.

Figure 22: The Coded Themes from Interviews

Photo of Vat Frenja and Age Frenja after a focus group
### 4.1.1 Understanding Flood Characteristics

#### 4.1.1.1 Hydrology

People in the Shkodër region understand that the natural hydrological system surrounding Shkodër is one reason that floods occur. Director of the Civil Emergencies Brigade, Ridvan Bushati, described in detail how the rivers, lakes, snow from the mountains, and wind from the Adriatic Sea all combine to create the ideal conditions for flooding. People know that when it rains, the rivers fill up and the water needs somewhere to go.

#### 4.1.1.2 Dams

When talking about why a flood as bad as 2010 happened, Drita Preza, the mother of Ledina, one of our University of Shkodër student partners, said that it was normal for people to blame the government for bad management of the dams. Luk Frenja of Obot also blamed the floods on the government’s bad management. However, experts from the Institute for Geosciences, Energy, Water and Environment (IGJEUM), said that, legally, the water released from the dam is not allowed to exceed what the natural release would be. They said that it should be “like the dam did not exist.” Merita Mansaku-Meksi, Deputy Project Manager, Climate Change Adaptation in Flood Risk Management, Western Balkans, GIZ, told us that in 2010 because of melting snow the dam operators had to open the gates to save the dam. She said that the government is power oriented, rather than disaster risk oriented, and wants to make money. So, the implication is that the government will open the spill gates when it is most financially beneficial. Furthermore, Merita Mansaku-Meksi said that the dams’ operators have low cooperation with IGJEUM for warnings.

The Director and Head of the Firefighters and Civil Emergency Brigade, Ridvan Bushati, said that he thought that in 2010 the dam operators didn’t send any warnings out so that they wouldn’t scare people. Legally, he said that the dam operators are required to call him two hours before they open the spill gates. However, in 2010 nobody called him. He said that this is because of political problems, elaborating that this “seems strange but is the truth.” He said that a flow rate of 3,500 m$^3$/s was declared for the 2010 flood, and this is found in a report by the Red Cross as well (Red Cross). However, he believed that the actual flow rate was closer to 5,500 m$^3$/s. Director Bushati described the natural choke point in Dajc where water built up to over 5,000 m$^3$/s in 2010. He said that the natural limit is 3,000 m$^3$/s of water at this point. Because there is uncertainty regarding the actions of dam operators, it is necessary to create a plan well ahead of when a flood might occur. Our outreach tools are designed to help people come up with this plan.
4.1.1.3 Unexpected Inundation

Many interviewees showed us and discussed the water height and how quickly the water came in the night during the 2010 flooding events. Interviewees gestured, pointing to their shins, chests, doorways and more as markers to show the highest level of water. Many recounted how the water came quickly and unexpectedly. A middle-aged woman living with her family in a single story home from Zuktha, stated that the “water reached one meter” up their walls. The rural community of Samrish in the Dajç administrative unit is located inside a bend in the Drin-Buna river. The Zadrima family from Samrish explained how “for two hours the water came” and proceeded to share how in this time the water rose between one-and-a-half meters to two meters (Interview 9). When visiting the Budrin Restaurant on the banks of the river in Zus, we spoke with the owner’s son who pointed to the height of the water (Figure ?). As seen in this photo, the water came up to the restaurant but did not enter. However, the damage outside their home was significant. They lost chickens, refrigerators, fruit trees and over 70 chairs.

Others also expressed shock at how quickly water levels rose. Saima, an elderly woman from Muriqan said the water came “at first slowly, then, when the gates were open[ed], it was all at the same time. It was very fast.” The gates she is talking about are the dam spill gates. The extreme water levels and fast rising water gave our team a sense of the intensity and unexpectedness of the 2010 floods.
4.1.1.4 Carcasses, Odor and Filth

Along with memories of extreme water levels, images of pollution and recollections of foul odors post-flood are still vivid to many interviewees. Drita Preza recalled a traumatic walk home from work. She clearly remembered her difficulties traversing the murky water, saying that “the water was dirty so I couldn’t watch my feet.” It was “like a tragedy because we didn’t know if we will go to our house alive because we didn’t know where we were moving, where we were walking.” She said that “when the water goes down all that is left is rubbish.”

Others described the aftermath mess as being just as traumatic as the flood itself. A middle-aged father in Zoteknike explained how it took 10 days to clean the house because the water carried 50 snakes into his home. The father of the Mhillaj family from Dajç said, “I saw chickens behind the wall all dead.” This family lost 40 chickens. In Obot, Vat described his experiences coming home after the flood waters started to recede. When asked what it smelled like, he said “It smelled too bad. It smelled awful.” We then asked what it looked like and he said, “Disaster… I saw all the dead animals. We had to move with boats. The animals in the water had died… I’m sorry I get emotional from the memories… I have been paralyzed after that. We didn’t know what to do… With my neighbor, just the two of us, we were shocked from the things we saw.” The water brought rotting trash, animal carcasses, and filth, making cleaning up homes an emotionally traumatizing event.

Photos given to our team by the Mhillaj family from Dajç
4.1.1.5 Flood duration and variations in recovery time

Many people remarked on the duration of the flood. The first family we interviewed in Zuktha said that the water stayed between 1-2 months. Vat from Obot said the water stayed in his home for only 10 days, but in the surrounding land for two months. The long duration of the flood made access to supplies and living conditions difficult. Because their homes, land and businesses had remained saturated in flood water for an extended period, most people returned to destroyed yards, ruined farms and waterlogged furniture. Full reconstruction and clean-up took some residents only ten days (Interview 10), while others are still recovering more than ten years later. For example, in Zuktha, the second family we visited in late 2017 had just finished repainting their walls (Interview 2). This difference in recovery time has to do with how intense the flooding in the area was and what financial resources were available to families and businesses. Not surprisingly, families that were wealthier were able to recover more quickly, whereas families that did not have as strong of a financial standing are still working towards recovering from their losses from the flood.

4.1.1.6 Dangers

Dangerous situations arose during the flood. Many people found walking through flood water difficult and scary because the water was dark and polluted. In the Illyrian village, near the Buna River, and across from Rozafa castle, the Roma community leader, Dushi, was forced to take a boat across the flooded river in order to receive supplies. She could not swim, but had to take the risk in order to help her village. Our translator explained how “with [her] strength, she took two boats everyday with food and with needs they had, and brought it back to the village. She doesn’t know how to swim, in the first week that she went out, the young boys took her by the arms” to help her. Several young men that we spoke to when we came back to the Roma community to do focus groups said that they swam across the river to get food and supplies. They would carry the supplies on their head.

The Frenja family in Obot recalled recounted the story of another family in the Shkodër region that tried to use a generator during the flood since their power went out (Interview 3). That family brought the generator into their home with them while they waited to be evacuated, and the fumes silently accumulated. Emergency responders arrived just in time to remove them before they were asphyxiated (Interview 3, Key Informant: Edison).

This lack of information about the dangers of floodwaters informed a significant part of the content of our game, specifically the cards to turn off gas, water, and electricity.
Photo given to our team by the Mhillaj family from Dajç
4.1.2 Warnings

Another consistent theme among interviews was problems surrounding warning systems and the perception of how much time affected residents would have needed in order to fully prepare for a flooding event. Most interviewees responded “no” when asked if they had received any flood warnings before they were flooded in 2010. Families in Dajç were the only interviewees who reported that they had received warnings before the flood. The families in Dajç were some of the last homes to be reached by the flood waters, so they were able to watch the news and receive updates from their village director (Interview 10). The father of the Mhillaj family said that the Army helped them build a barrier by the river to try and keep out the water. However, after ten days, this collapsed. Due to the severe rains, some of the land had already flooded, but no one was warned that the flooding would reach the levels they experienced.

4.1.2.1 Early Warning System

The country-wide early warning system that currently exists in Albania is managed by the Institute of GeoSciences, Energy, Water and Environment (IGJEUM) and includes a daily bulletin that is posted on IGJEUM’s website at noon. An example bulletin is shown below in figures 23 through 26. This particular bulletin, dated November 30th, 2017, is from a time when flooding risks were especially high, and thus an extra page was included in this specific bulletin. The bulletin’s purpose is to give alerts for Forest Fire, Meteorological and Hydrological risks and provide suggestions to the public with a 36 hour lead time and a 65-70% accuracy. The daily bulletin is also posted to IGJEUM’s Facebook page (currently 1,940 likes) for special alerts (IGJEUM). An example post from the same daily bulletin is shown below. In addition, when IGJEUM notices a potentially hazardous situation such as a possible extreme flood event, they alert the General Directory of Civil Emergency which is a part of the Ministry of Interior (IGJEUM). IGJEUM has a direct link to the General Directory of Civil Emergency (GDCE), which uses the information it is given to decide whether or not to send out warnings. If the GDCE decides that is necessary, they will send out information to TV stations and alert other departments.
Figure 23: Bulletin page one

Figure 24: Bulletin page two

Figure 25: Bulletin page three
4.1.2.2 Current Ground System

The current country-wide ground data collection network has various problems that are not easily fixable, according to IGJEUM. For example, there are no flow meters present in the Drin and Buna rivers, as they are very expensive to purchase (IGJEUM). These flow meters would measure the river speed of both the Drin and Buna rivers and are essential to building a hydrological model (IGJEUM). There are currently 115 manual meteorological measuring stations as well as 95-98 manual hydrological stations (IGJEUM). The manual hydrological stations record measurements such as water height while meteorological stations record precipitation and snow levels (IGJEUM). The operators of the manual hydrological measuring stations collect and report water levels twice a day at 7:00 am and 7:00 pm (IGJEUM). These operators are paid approximately $29 dollars a month and they generally live in the area where they go to take measurements (IGJEUM). According to IGJEUM, the problem with the manual measuring stations is the lack of consistent parameters being collected across manual hydrological and meteorological measuring stations (IGJEUM). Operators are expected to record 18 different measurements, however, not all 18 are consistently measured and reported (IGJEUM).

Yet another problem with the ground system is the lack of properly functioning automatic measuring systems. There are currently 49 automatic measuring stations nationwide that report measurements at varied intervals of 50 minutes, 2 hours and 4 hours (IGJEUM). These intervals can be adjusted remotely during high flood risks to report measurements more frequently. However, only seven of them have been continually maintained since installation and remain in good condition, while 15-18 are not functioning at all (IGJEUM). Due to these inconsistencies with the measuring stations, as well as the absence of flow meters in the Drin and Buna Rivers, IGJEUM has been unable to build a hydrological model for the Shkodra region that is able to meet their goals of increasing warning time and accuracy.

Figure 26 Bulletin as a Facebook post in 2017
4.1.2.3 Perception of Warning Lead Times

Residents have their own perceptions about how much time they would need to feel adequately warned about a severe flood and be able to prepare. Perceptions vary depending on previous experiences and locations. According to an estimate made by Dushi, the head of the Roma community, her community “would need at least one week to be prepared.” Whereas, when speaking at the Budrin Restaurant with the owner’s son, he claimed he didn’t “have a lot of things to move, so three days should be enough.” This was in part because there would be no way for him to move the planted decorative trees around the outdoor patio, so there was little outside the restaurant to deal with except to move chairs and tables inside if a flood to the height of the 2010 flood came again.

The limitations of the existing warning system are addressed in the game where the time cards represent the possible times to prepare for a flood. While the one month card reflects the need to take many actions well in advance of a flood, the other cards represent three feasible possibilities for when a warning may be given. The five day card would be the ideal warning time, the one day card is the warning time existing, and the five minute card represents the complete lack of warning in the 2010 flood to many residents.
4.1.3 Media and Communication

It became evident that interviewees were unaware of the flood risk management information available to them. When shown the GIZ leaflets and asked if they had seen the information before, the answer was “I don’t know how to read” or just a simple “no.” When presenting people with the GIZ leaflets and during our focus groups when playing the game, we observed that not all residents living in flood risk areas are able to read and write. We also observed a firefighter struggle to read our emergency planning pamphlet.

It was clear that television was the most popular form of media among various demographic groups. Many respondents told us that they watch at least some television daily, mainly just for the news. The ability to watch television did range among groups, due to work times and schedules. However, almost every home we visited reported having a TV. Interviewees also reported that the television, at least at the time of the 2010 flooding event, was not broadcasting any type of warnings about severe flooding until after the flood waters came.

Through both observation and interviews, our team found that cell phone usage was an important device for Albanian adolescents, young adults, and adults. The mother of the Mhillaj family from Dajç explained how while she does not use Facebook, her son shows her news stories that may interest her. The use of social media, whether Facebook or Instagram, is popular among students both at the high school and college level.

We also realized residents were, in general, not familiar with the emergency numbers for the police, fire station, and ambulance. Residents have not memorized these three-digit numbers, and we did not observe them posted in public spaces where they might help people potentially at risk for disasters. Deputy Project Manager Merita Mansaku-Meksi from GIZ and Suma, the team leader of the high capacity pumping team, expressed their concerns about how residents do not know these important numbers, especially in the case of an emergency. In user testing and focus groups, participants made it clear that having the numbers on the back of an accessible pamphlet was helpful since most people reported that they do not know the emergency numbers.

Figure 27: Emergency Text from Government
4.1.4 Access to Food, Water, and Supplies

A common concern was people’s ability to access food, water, and supplies for the duration of the flood. Transporting these items was a difficult and dangerous task for many people during high levels of water. Some residents owned boats and were able to transport goods from dry places back to their homes. Some, like Muharrem Preza, put on tall boots and to wade into the flood waters so that his family could have fresh bread.

Many communities relied on various organizations for aid. The Department of Civil Emergencies, specifically the fire brigade, worked with the military to help transport bread to some, but not all, affected areas. Suma, a firefighter and the team leader of the high capacity pumping team, expressed concerns about equipment and transportation. The firefighters have to “wait for the military to transport their boat [because] it takes more than ten people to move the boat to the truck.” The ability for emergency responders to respond in the case of a severe flood is difficult with limited numbers of trained workers and equipment. There are only two working fire trucks, and they are both 35-years old. They don’t have large trucks to go through flood waters, only personal cars. Additionally, while the fire station does have two pumps which were described as very good by Suma, they do not have the means to transport them.

Churches and mosques were another source of food, water, and supplies for sufferers of the 2010 floods. Many interviewees reflected on how they received most of their aid from these communities. The Zadrima family in Dajç elaborated on their evacuation story, told us that the family was “thankful to their priest” because he came to their home and picked them up in his boat and took them into his home.
4.1.5 Losses and Compensation

Losses in the 2010 flooding event add to the devastation and trauma the people still remember clearly today. Livestock, furniture, important documents and more were destroyed by the flood waters. Livestock and agricultural losses were some of the largest economic losses. While Saima, an elderly women from Muriqan, did not lose any animals because her husband was able to save them, she can no longer farm her land because the water destroyed the soil. The Frenja families in Obot, along with families in Dajç, lost livestock such as chicken, pigs, and cows. We were told that the average cost of a cow was approximately $850 USD, and a pig cost $85 USD. This cost is not easily recouped and was not always compensated. The loss of animals and farmland affected the livelihood of the people by taking away an important part of their income and causing financial distress.

4.1.5.1 Government Compensation

Government compensation was viewed negatively throughout the interviews, even when money was given. As our partner and translator from the University of Shkodër, Amel Pervizi said, “Everything here is, ‘If you know somebody, you can take something from the government.’ They can compensate you, they give you money, but if you don’t know them you can’t take anything.” When talking about the 2010 floods, Luk Frenja in Obot said “It was not equal, some got money some did not.” In Zoteknike, the middle-aged father who lives in a one story house told us that “no the government didn’t help, nothing, nothing at all. I went with other people to protest in the city to get help from the flood damage. After they promised us they would help us with compensation, they didn’t, so that’s what we were protesting.” Additionally, Vas, the elderly man from Obot said “The second time, 2013, people came to find out what happened. They said they would give us money but they never gave us enough for what we needed.” The elderly woman in Zuktha said that, “The mayor has come here and distributed some things, clothes or food, but it wasn’t enough, and we got $600 but it is nothing for us.” If they did receive some money, people never perceived the compensation they were given as even close to enough to rebuild their homes and lives.

Many items that were lost or destroyed in the flood could have been moved or kept in a dryer, higher, and safer place. Livestock could have been moved to higher ground for a better chance at survival. The identification of common losses helped inform the content of the outreach tools we developed.
The decorative trees in Dajç were damaged.

The image to the left is of damage being fixed currently in Zuktha.
4.1.6 Recovery

4.1.6.1 Church Aid

People’s ability to physically recover from the 2010 flood was influenced by the aid they received after the flood as well as their initial socioeconomic vulnerability. One difficulty was the loss of personal furniture items. Church aid, in the form of shelter, donated beds and stoves, was very important to many families. The middle-aged father of the family we talked to in Zoteknike said, “nobody helped our family but the church.” The church gave them a bed and stove, since the flood waters had damaged everything in their one story house.

4.1.6.2 Community Support

When asked whether they helped their neighbors after the flood, responses ranged considerably. In Zuktha, the middle-aged mother said “we have helped each other... to clean or to offer them something they need.” Drita Preza, indicated a disconnect between her family and their neighbors that stopped them from helping them both during and after the flood. “We didn’t know how to help our neighbors... in fact at that period of time we were new in this neighborhood and we didn’t know a lot of the other people.”

4.1.6.3 Socioeconomic Status

People with a higher socioeconomic status were, not surprisingly, able to recover faster from a flood. In 2017, the poorest families we interviewed had still not recovered from the 2010 flood. The water was still in their walls, or they were using furniture the flood water had saturated. Those with more money have been able to replace their furniture and repaint their walls. Additionally, some families, like the Zadrina and Mhillaj families from Dajc, have finished and furnished the second floors of their homes so that if another flood comes, they will be able to move their most important belongings upstairs. In contrast, the family from Zoteknike tried to build a new, raised home which would protect their belongings in a future flood, but their financial situation made this project impossible to complete. The wealthier families we spoke to said that if another flood like 2010 were to happen again, they would move out of the area completely. This geographic mobility is not an option for the poorest families as a way to escape the floods.

Making sure that the most vulnerable groups are able to access flood risk information in a way that is easily understandable and inspires them to take action to prepare was an important part of testing our outreach tools.
4.1.7 Preparation for Past and Future Floods

Knowing that one lives in a floodplain is the first step to being able to prepare for a flood. Some of the families we talked to had no idea that they were moving into a floodplain. In Dajc, the Mhillaj family said they built their house 25 years ago. When asked if they knew if it might flood in this area when they built the house, they said, “No, we didn’t know, because it didn’t happen before… the first time we were flooded was in 2010.”

The preparations residents made for past floods is not necessarily the same as the preparations they will make for future floods. While some people said they would do the same thing in the next flood as they did the last time, others have been very proactive by, for example, building second floors to their houses out of fear for another flood like in 2010. It became clear to us that residents had varying knowledge of how to prepare and what actions to take. Having food and drinkable water were always mentioned as things that people would need in the event of another flood. However, while people usually have parts of an emergency kit like important medicines or documents in one place (Frenja family in Obot), we did not talk to anyone who actually had a kit like the one outlined in the GIZ leaflet. Additionally, residents did not have a formal family emergency plan as recommended by the GIZ Flood Risk Management plan and Alminda Mema, Executive Director and Project Manager of the Aarhus Information Center in Shkodër.

Alminda Mema discussed how the people of Dajc use well water and don’t get it tested after a flood event, which may contribute to illnesses post-flooding. Additionally, a veterinarian needs to come to disinfect houses if dead animals are found inside. However, residents generally had a plan if they were able to get some warning time. People said they would move their livestock and clothes to higher ground, and get more water. Without any warning or knowledge that they lived in a flood zone, some families lacked any preparation to deal with the flood waters in 2010. One goal of our outreach tools was to provide people with a simple way to understand the actions they could take to prepare for future floods.
4.1.8 Perceptions of Flooding

Perceptions on the 2010 and 2013 floods are intertwined with people’s views on future flooding. The flood in 2013 was seen as “not too much water” compared to 2010. All of our interviewees focused on the worst event in their memory, the 2010 flood. When asked to talk about their views on future flood events, responses ranged from “the 2010 will never happen again” because the father in Zoteknikë believed the government had improved its management of the dams to “I pray to God and hope the flood will not come anymore” from the first Dajc interview.

When asked what they believed caused the 2010 flood, people blame heavy rains, bad government management of the dams, corruption, and politics. In Obot, Luk Frenja said there was “too much corruption, people who follow one party are more privileged. Not like Canada, where no matter who is elected they still help and support everyone.”
4.1.8.1 Responsibility for preparedness

People associate different responsibilities for a flood event with different people. When asked what people can do to prepare for a flood, Edison Suma, Team Leader of the High Capacity Pumping Team from the fire station, said that “I want to say they can not do so much, they only can get help from us, and also from the military. They can’t do so much because the flood, it doesn’t come fast, but it stays for a long time.” According to IGJEUM, Deputy Project Manager Merita Mansaku-Meksi of GIZ, Executive Director Alminda Mema of Aarhus, and Director of the Civil Emergency Brigade Ridvan Bushati, people need to help themselves and their communities too. Some people did not think they had the ability to improve their own preparedness in another flood event, which means they are thinking of themselves as victims rather than as having control. “If water comes here we don’t have anything to do, we don’t have anywhere to take our things inside the house.” Others focused on what they couldn’t do if another flood came. “I don’t know what to do, I cannot take the firewood and [decorative] trees anywhere. I can only put the chairs inside.” By victimizing themselves and seeing only what they can’t do, they transfer the burden on reducing flood risks on others.

The people responsible to reduce flood risks include government officials, organization professionals, those who live in areas at risk for flooding, and each community at risk. According to Merita Mansaku-Meksi, Ridvan Bushati, Alminda Mema, and scientists from IGJEUM, experts are in charge of managing the dams, ensuring that warnings are timely and accurate, and generally maintaining the flood protection infrastructure. This infrastructure maintenance includes cleaning the largest drainage channels and maintaining any barriers or levees such as the bypass currently being constructed. Communities are responsible for collective action like building temporary barriers, such as members of Dajc did, maintaining the smaller channels around houses and neighborhoods, and keeping trash and leaves out of the channels.

Families and locals directly at risk are responsible for family and personal preparedness. This includes having an emergency kit and knowing their emergency plan. The Fill-In Guide and game are designed to address the need for a tailored emergency plan.
4.1.9 Evacuation and Place Attachment

People live in floodplains because they are attached to their land and their homes. Vas, the elderly man from Obot, said that he was born at the house across the road from where he now lives. Now, he’s 75 years old. He and his wife moved to Oblike when he was 40 years old for ten years, then they moved to the house here. He said that his land was valuable because it is so fertile. For this reason, one of the most important documents he said he owns is his land deed. “My son was born here, when my son was 17 years, there were no floods for those 17 years. My family has lived here 100 years. My grandfather and father lived here...We know the water comes here but the homes are raised.” As Merita Mansaku-Meksi from GIZ and the Director and Head of the Firefighters and Civil Emergency Brigade said, people have illegally built on floodplains but now that they have built homes, it is too late to do anything except to try and protect these people and their homes. The areas that some people have built on are identified floodplains, however, when people moved into their homes, they did not always know of the possibility of flooding. When they did, it is usually evident by appearance of the houses raised up a few feet above the land by concrete. In these areas where everyone’s house was raised, the knowledge was passed down and became a community understanding.

People evacuate because their homes are flooded, but they risk danger when they return home early before the waters completely go down by wading or swimming through it. A wide range of evacuation methods was used during the 2010 floods. Some people were picked up by the military/civil emergency department, however there are cases where people did not want to leave their home and had to be forced to evacuate by the police. Moreover, some people were evacuated by a resourceful friend with a boat such as a nearby priest or the mayor of the community. Additionally, some people did not evacuate their houses at all, and just went to higher ground nearby. Communities also worked together to evacuate and support each other. The Roma village worked together to move families from the lower level homes to higher ground during the 2010 flood. This variation is indicative of a lack of evacuation planning, but also is partially a result of the lack of warning, as in many cases the water arrived too quickly for safe land-born evacuations to take place. Those who returned home before the waters went down and people like Ledina Preza’s father, Muharrem, who went to get bread everyday and check on his workplace during the flooding, put their safety at risk. Having enough food and water, as well as securing livelihoods and homes, is placed above one’s own personal well being during an extreme flooding event.
Because people are so attached to their homes and sometimes reluctant to evacuation, it is important to have a community discussion about where people will evacuate and to make sure residents know the evacuation route for themselves and their family. These aspects are clearly reflected in both the game and the Fill-In Emergency Guide.

The bed to the left is from a home in Obot. The water rose to the height of this bed in the 2010 flooding event (Interview 3). The Photo in the bottom right is from Obot as well, it was their old barn.
4.1.10 Emotions and Trauma

Flooding can have lasting psychological effects and people often blame many illnesses on the effects of flooding, whether true or not. More than one person associated their husband’s death with the flood. Saima, the elderly widow from Muriqan, said that the stress of dealing with the flood conditions made her husband’s heart worse. She also correlated her husband’s illnesses and eventual death with the flood event of 2010. The combination of these physiological hazards and psychological trauma may have resulted in the illnesses mentioned above, but there is also a chance that this is an example of correlation rather than causation.

People’s feelings about future flooding events and their willingness to act are affected by their past. The 2010 flood was the most extreme flooding event in memory for the people of Shkodër. Even though it was seven years ago, locals and experts can still clearly recall what happened and what actions they took.

The people who lived through the flood have a unique perspective on the importance of preparedness having experienced the devastating effects of a severe flood before. It is important to draw on the experiences of these people to communicate to others through conversation and the sharing of stories to help motivate preparedness actions. The “Before the Flood” game and “Voices of the 2010 Flood” both offer a platform for this type of peer-to-peer communication.

4.1.10.1 Heuristics, Fallacies and Floods

Various fallacies contribute to people’s decision making process. Heuristics and psychology helped to inform us as to why people made the decisions they did, as the people we interviewed in the field were directly affected by flooding, specifically the severe 2010 flood. Both the availability heuristic and gambler’s fallacy may have played a role in how they recounted their experiences and how they reacted to such a severe flooding event. The availability heuristic may explain why many people are worried about future flooding events. The rain associated with the floods created a heightened level of fear for the residents who were directly affected by the flooding events. Across the majority of interviews, residents said that “everytime it rains, I am scared” (Interview 2, 3, 5, 8). This is consistent with literature explaining how rain causes stress and anxiety to those who have suffered flooding events.
People such as Drita Preza, Saima, and the Frenja family in Obot are deeply worried that an extreme flooding event could occur again. Gambler’s fallacy could explain both a lack of preparation for the severity of the 2010 flood and a lack in motivation to change how they may prepare for a future flood. Effectively, this heuristic deals with the fact that this was the only severe flood in living memory for people and as such they may not believe it will happen again in their lifetimes.

The observation of these fallacies indicate the importance for an opportunity for people vulnerable to floods to share any potentially inaccurate opinions during discussion, and therefore an opportunity for misconceptions about the likelihood of another severe flood to be addressed. The importance of this participant-to-facilitator information transfer was considered when designing our outreach tools.

4.1.11 Experience Summary

As Vanderlinden stated, people make claims based on relevance, evidence, and social norms (2017). Our findings from key informant and semi-structured interviews reflect these three categories. As a result, a plan to mitigate flood risks in Shkodër must be co-constructed with the affected communities so that their cultural norms and values are fully taken into account. Throughout this section the impact of our observations and analysis of the experiences people shared with us provided us with numerous qualities that would be desirable in outreach tools. We have fit the design of our tools to the experiences of the communities of interest so that the information included, as well as the way in which it is shared, makes sense for the situation in Shkodër.
4.2 Perception and limitations of current informational outreach strategies

The GIZ leaflets and flood risk maps are a comprehensive guide to flood risk management in the region of Shkodër. They are particularly useful to the Civil Emergency Department, first responders, and local government officials as they provide a concrete plan of action and map out where the flood waters will hit first. The Director of Firefighter and Civil Emergency Brigade Ridvan Bushati and Suma, the team leader of the high capacity pumping team, both attributed the GIZ Flood Risk Maps to their ability to respond faster to flooding events now that they know where the flood is likely to go.

There is a large version of the risk map hanging on the wall of the fire station in Shkodër. However, when we presented residents with the GIZ Flood Risk Management leaflets for their municipal unit, they had never seen them before. People were generally interested in looking at them, but they appeared to skim over the information and primarily looked at the photos. As mentioned earlier, some people were unable to read the content.

The observed responses to the GIZ leaflets inspired the design of a less extensive pamphlet which resulted in the Fill-In Emergency Guide. The importance of having tools that are somewhat accessible to those who can not read or write was considered specifically in the design process of “Before the Flood,” where the inclusion of pictures on each card function not only to make the game visually appealing, but also to explain the content of the card to those who can not read the text.

Figure 28: This is the inside of a GIZ Informational Leaflet.
4.2.1 Aarhus Workshops

Aarhus, an international NGO, was selected by GIZ to conduct the “Workshop(s) on Disaster Management/Emergency response planning workshops(s)” that are called for in the GIZ Flood Risk Management Plan. Executive Director and Project Manager Alminda Mema described her work for the Aarhus Information Center. She said there are currently two types of these workshops: one for women and one for children. There were six women’s workshops at health centers in villages during the months of October and November 2017, with 20-22 woman attending each one of these meetings (Aarhus). Both of these types of workshops are centered on teaching what to do before, during and after floods. Additionally, they are meant to reduce people’s sense of victimization by showing them how they take responsibility for their flood preparedness (Aarhus). Our team had the opportunity to observe an Aarhus children’s workshop, discussed below.

4.2.1.1 Aarhus Children’s Workshops

Workshops for children take place at various schools in the Shkodër region, with an audience of approximately 30 children at a time, ranging between 10-18 years old (Aarhus). Aarhus conducted 14 of these workshops at 14 different schools during October and November 2017. They selected children on the basis that they are more open-minded than adults, and with the hope that they might spark their parents’ interest in reading the materials they bring home as well as start a discussion about how the family could prepare for a flood. These materials are the GIZ leaflet and Aarhus Family Emergency Guide.

The particular children’s workshop we observed was at the school in Dobraç, attended by 24 children in grades 7-9. The workshop was led by Executive Director and Project Manager Alminda Mema. At the beginning of the workshop Alminda introduced herself and explained the objectives of the workshop. Both the GIZ pamphlet specific to the Rrethina region and the Aarhus pamphlet were then passed out to the children. Alminda explained to the children what to do before, during and after a flood and posed hypothetical situations and asked children what they would do in each situation. She would correct incorrect responses. She also showed the children a sample emergency bag. The meeting lasted 37 minutes, and while the children were overall attentive, they started to lose interest towards the end of the workshop.

One of the main challenges we observed during the workshop was getting and holding the attention of the audience. One of the main principals of the design our outreach tools focused on was engagement. “Before the Flood” and the Fill-In Emergency Guide achieved this though being interactive and required participation.
4.2.2 How Outreach Tools Can Complement Aarhus Workshops

Alminda Mema said that a short video, used as a hook at the beginning of Aarhus workshops, would be extremely helpful in generating people’s interest in what she had to say. Ideally, the short video would show damage from the flooding, cause meeting attendees to remember their own experiences, and spark their own desire to take action for their own flood preparedness.

In addition, Alminda expressed the importance as media as way a different way to reach people beyond her meetings, including the family members of children who attended her school meetings. She is currently hoping that Aarhus will develop a movie to be broadcast on TV. Finally, Alminda Mema also mentioned that more interactive materials would be helpful in her meetings, such as a flooding song for children.

These recommendations for where to focus our project’s outreach were taken under heavy consideration in the selection process, especially through informing our sorting criteria for potential tools. This process is described in detail in the following section.

Alminda Mema teaching at a school group Aarhus meeting.
4.2.3 Outreach Tools to Improve Flood Risk Preparation

Based on the interviews and observations noted above, our team identified a set of tools to develop based on the current climate of flood risk and preparedness information distribution in the Shkodër Region. The results of an “outreach brainstorm discussion” consolidated the findings from the coding of our semi-structured interviews with flood affected people and Key Informant interviews. This discussion resulted in a list of potentially useful tools for increasing the reach and staying power of flood information outreach. This list is based on the criteria developed to determine what outreach tools best fit the Shkodra region. This criteria is discussed and detailed in the methods chapter.

This list was divided into two main categories: Tools we could potentially develop in our time here, and those we thought would be useful, but fall beyond the scope of what our team could accomplish alone.

A short video, interactive pamphlets, and a game were selected as the most viable options for our team to create. Below we detail why each tool was selected and how the development process for the Fill-in Emergency Guide, and Before the Flood: A Flood Preparedness Game was shaped by the results of the Focus Groups.

<table>
<thead>
<tr>
<th>Feasible to Produce &amp; Test Now</th>
<th>Useful tools for Potential Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Short Video*</td>
<td>• Flood Art</td>
</tr>
<tr>
<td>• Cartoons</td>
<td>• Graphic Novel</td>
</tr>
<tr>
<td>• Mini-doc</td>
<td>• Bracelets/stickers and handouts</td>
</tr>
<tr>
<td>• Interactive Pamphlets* (Became the Fill-In Emergency Guide)</td>
<td>• Radio</td>
</tr>
<tr>
<td>• Webpage</td>
<td>• TV outreach of our stuff</td>
</tr>
<tr>
<td>• Social Media Accounts</td>
<td>• Political Cartoon challenge ideas</td>
</tr>
<tr>
<td>• Posters</td>
<td>paragraph with research on how</td>
</tr>
<tr>
<td>• Game or interactive activity*</td>
<td>effective with maybe an idea.</td>
</tr>
<tr>
<td>*Selected to be created</td>
<td>• Sirens</td>
</tr>
</tbody>
</table>

Figure 29: Outreach tools sorted by feasibility for our work.
4.2.4 The Video

The video “Voices of the 2010 Flood” is almost entirely documentary in its content, but its purpose extends beyond creating a record of people’s experiences. The two minute video was designed to serve as a “hook” to draw people into a small-group conversation about the effect of flooding on the community, and how they can prepare for a future flood. Our goal is for people to watch the video and remember how the 2010 flood affected them. The video and follow-up conversation would take place in a situation like the Aarhus information meetings. The video intentionally contains direct quotes paired with pictures of the people we interviewed to keep the focus on the people of the Shkodër Region and their experiences from their own perspectives.

We did not present the video to the focus groups we conducted as it was incomplete at the time, but we were able to do preliminary user testing. When we presented our first rough cut to WPI advisors, we received feedback to include the faces of the people who were speaking in order to better connect the concepts of flooding damages with actual Shkodër residents.

We did have the opportunity to present a half-English, half-Albanian language version of the final video at our final presentations to GIZ and Tirana Polytechnic University, where we observed that the video got people's attention. This was confirmed by chatter among the crowd as the more moving quotes appeared on the screen. Upon presenting to the GIZ office, they described the video as ‘very attractive’, and were excited about its potential uses going forward. The final version of the video can be found as a link in Appendix F.
4.2.5 Before the Flood: A Flood Preparedness Game

The ‘Before the Flood’ game, modeled on the Red Cross/Red Crescent Climate Centre’s game, Before the Storm, was designed as a tool to start discussions about the steps that individuals and communities can take to reduce their own risk in a flood by taking preparatory actions.

We identified a tendency to place the responsibility for flood preparation, response, and recovery on the government. However, the GIZ’s Flood Risk Management Plan and leaflets are filled with non-structural actions that demonstrate how people can take responsibility for themselves. The established outreach tools which GIZ has developed best fit a one-way communication strategy. Our ‘Before the Flood’ game is a two way communication tool in that a facilitator has the opportunity to discuss best practices, and participants can share their existing knowledge and past experiences. This allows a session to be tailored to specific ideas or situations relevant to participants. This game is a tool to promote discussion about what actions people can take to prepare for a flood, and when they should be taken.

The game is centered around the actions that people and/or communities can, should or might take to reduce their flood risks given a certain time to prepare. These actions were taken from the leaflet and FRM plan from GIZ, the family emergency guides from Aarhus, and from the Climate Centre game, Before the Storm. They were also based on what we learned from interviews. We made sure to include and emphasize animals and livestock for many families, as their animals are an important part of rural livelihoods. We created cards indicating the option to move livestock to higher ground, move their food to higher ground, and untie animals. Many measures, such as turning off the electricity, were included because of stories we learned during our interviews. For example, when speaking with the Roma community, we learned of a time when a man swimming into a flooded home was electrocuted upon touching a metal object.
The first phase of the game where participants must rank flood risk mitigation measures based on relevance to a certain situation succeeded at drawing out people’s personal priorities, although getting players to explain their decision making process was a challenge. There was a situation comprised of the current weather and forecast card, and a time card to represent the time people have to prepare. Each participant was given action cards, and they each chose one to apply to the situation then took turns ranking them in order of priorities. The second, or pile-sorting phase, where the participants were asked to sort all the action cards into a timeframe to prepare before a flood where they made the most sense to do succeeded in generating lively conversation and debate including shouting and moving cards back and forth between categories.

We presented ‘Before the Flood’ to nine different focus groups. To understand the responses of the focus groups to our outreach tools, we documented the demographic makeup of each group, along with their previous exposure to flooding, as well as information about personal and community flood risk mitigation measures.
Focus Group Introductions:

Focus Group 1 - Shkodër University
This group was composed of four psychology bachelors students from the university of Shkodër, aged between (19-25). None of these participants had directly experienced a flood before. Two of the participants, Edra and Amel, had worked with us as translators in the interview phase of our fieldwork, so had a basic understanding of our project. However, this was the first time any of the students saw the outreach materials we were testing in the focus groups.

Focus Group 2 - Shkodër University
This group was also composed of four students from the University of Shkodër ages (19-30). None of these participants had directly experienced a flood before, and mentioned no previous experience with GIZ’s outreach campaigns.

Focus Group 3 - Shkodër University
This group was made up of three masters students ages (22-23) studying psychology at the University. These participants had worked with Professor Lediana Xhakollari on the preliminary study about community awareness. Therefore these students were very familiar with personal flood risk mitigation measures that are recommended in GIZ’s Flood Risk Management Plan.
Focus Group 4 - Illyrian Village
This group was composed of four women of various ages (13-64) from the Roma community in the Illyrian Village. Some notable qualities of this group include the fact that some of the participants had experienced flooding first hand, and three of the participants could not read or write. Also the large variation in ages influenced the dynamic of the group.

Focus Group 5 - Illyrian Village
This group was composed of four young men ages (15-16) from the Roma community in the Illyrian Village. All except one of the participants in this group had experienced flooding before. The one who hadn’t had moved to the community after the 2010 flood. Literacy was inconsistent so most of the cards were read aloud.

Focus Group 6 - Illyrian Village
This final group from the Roma community was composed of four men ages (15-32). These men had all experienced flooding beforehand. One participant spoke intermediate English. The participants occasionally struggled with reading and understanding the cards due to illiteracy.
Focus Group 7 - Civil Emergencies Brigade

The participants of this group were firefighters at the Civil Emergency Brigade ages (25-60). These first responders had not experienced flooding themselves, but had been exposed to GIZ’s recommendations for flood preparation due to their job.

Focus Group 8 - Obot

To conduct this group, we returned to the community in Obot and spoke with Lolosh (50), Vat (75), whom we had previously interviewed, and his wife, Age (70). All of them said they had experienced previous flooding. All of the participants were unable to read.

Focus Group 9 - Aarhus Meeting - Dobraći School

This focus took place after the conclusion of an Aarhus presentation at a school. Four 11-15 year old students volunteered to stay after the meeting and take part in our final focus group. These students had been exposed to GIZ’s materials immediately before taking part in our game. Alminda Mema present during the pile sorting phase. None of them had directly experienced a flood before.
4.2.5.1 Gameplay Observations

When asking each person in the group to take the action cards and make their own ranking decisions, people tended to sort the information in one of two ways. They would rank getting information higher than taking concrete actions, or the opposite. We have three examples of this. The first example is the second focus group at the University composed of female undergraduate students. The situation was that they had one month to prepare for a flood of up to 15 cm of water. Two students thought that getting information from IGJEUM’s bulletin was the second highest priority, over having an emergency kit and stocking up on medicine. The two others thought that checking the IGJEUM bulletin was the lowest priority. The second example is from the firefighters. The situation was that they had one month to prepare for a flood up to 5 cm of water. Three of the firefighters thought that monitoring the river or listening to the radio for warnings was the first priority, while one firefighter said that preparing an emergency kit was of the greatest importance. So, even among experts, there was discrepancy about whether getting increased information was more or less important than taking actions to prepare. The third example was in the first focus group of all women in the Roma community. The situation was that it was a sunny day and would remain that way for at least five minutes. Dushi, the village leader, and a young girl both put listening to the radio for warnings as the most important over getting sandbags, cleaning up trash, and planting trees to protect the river banks. However, an elderly woman and the other girl ranked listening to the radio as the lowest priority and taking these actions as higher.
Another pattern for the card playing phase was that people tended to agree with the decision-making process of the person/people who went before them. In the first focus group of undergraduate students at the University of Shkodër, people tended to have the same reasoning for why a card was important, but they put them in different order. We did not get a good sense in many cases why people preferred one order over another. In the second group of all women at the University, many said “I agree” with the rankings of the person before them or reiterated the importance of each card. In focus group four, the Roma group of all women, the young girls would not say much, just agreed with the responses of the women.

People’s body language, the amount they were saying, and how loud they were talking increased noticeably from the card playing, situations phase of the game to the pile sorting phase. In the card playing stage, there was some discussion among players as to the best order to play cards. This was evident throughout all focus groups. In focus group two, the four University students agreed with each other’s reasoning for sorting the action cards in a certain way. Focus group 4, the female Roma group, was even more reserved and the children barely spoke. However, in the pile sorting phase, both groups became much more animated. They talked louder and they disagreed about cards which we could see when they moved cards back and forth between piles. In the Roma group, the women and children became much more interested in moving the cards around and they talked to each other much more.

Throughout all the focus groups, this shift from controlled, reserved thinking to animated, lively discussion was evident.

The pile sorting phase of the game was also more attractive to people in the area near the event. For example when the during this phase was occurring in a more public environment, such as the Civil Emergencies Brigade, and the Illyrian village, people who were not actually participants in the group would begin to gather around the table and observe, or even voice their opinion. This round even enticed those in a leadership position, who simply observed the first phase, to contribute, and in some cases, even take over.

During focus group 4, once the conversation livened up, as mentioned above, Dushi, the leader of the community, jumped in and began reorganizing the cards to her liking. A similar situation occurred at the fire station. When the pile sort began, Director Bushati, who was initially skeptical of our purpose, also joined into the activity. He initially reached over his employees, before sitting down and taking the lead on the activity. The power of the collaborative pile-sorting phase to draw people into the activity was repeatedly demonstrated.
Based on the above observations during our focus groups, the final prototype version of the game was restructured from the version actually presented to the focus groups. We rewrote the rules to make the game more engaging by removing the lower-energy first phase and instead focusing on the conversation-heavy group pile sorting. This was done because of the extreme difference in engagement described above. The pile sorting phase created a momentary sense of community, sparked discussion and debate, and kept people’s attention. We also created a facilitator’s guide to provide instructions on how to play the game to get people to discuss their decision making process, and we included a brief wrap-up and discussion section to review the best practices.

4.2.5.2 The “Before the Flood” Game as a Teaching Tool

The actual results of the pile sorting phase during the focus groups also provide insight into the value of this phase. For example one interesting sorting result was from the Aarhus children’s meeting, where Alminda Mema, the expert running the meeting, talked through the decisions made by the children participants as they sorted.

This took place immediately following her presentation to the participants, so they represent in many ways the people who have attended the various Aarhus meetings. The final result was not the direct thoughts of the participants themselves, but rather had been filtered through discussion and debate with an expert. Alminda took the opportunity to use the game to reinforce and clarify the information she had presented, and the final result of the sorting could be seen as an example of the “correct” way to sort the cards, based on the recommendations of someone with extensive experience in this area.

Figure 30: Pile sorting results at a children’s Aarhus meeting at Dobraci School. Alminda Mema helped facilitate and teach during this pile sort.
In another example of notable results, there was a divide between how people who have been exposed to flood risk management plans and those who haven’t when sorted their cards during the pile sorting phase. The focus group conducted at the firefighter brigade, and the second was the conducted at Shkodër University, comprised of Masters students who had worked on the Shkodër University Survey on community knowledge of flood risk mitigation measures. Both of these groups sorted far more of the action cards into the 1 month category and 5 day time frames. This would appear indicate that these groups believe that most of the actions to prepare should be done five days, one month, or more, before a flood. These two groups have been directly exposed to GIZ’s informational materials and are the likely the most aware of the best practices to take to prepare for a flood. On the other hand, the groups completed in Obot and the Roma community with people who had not yet been exposed to the GIZ’s informational materials tended to sort the cards more evenly between all four time categories. These results can be observed in figures 31 and 32.

Figure 31: Pile Sorting Results: left FG 7 (Fire Brigade), right FG 3 (Shkodër University 3)
These results may indicate that people are more inclined to take action and prepare earlier if they were informed by GIZ and have knowledge of the best practices, although there are many other factors such as education level or the fact both of the ‘prepare early’ groups were from an urban area which could skew this. Regardless of the forces behind people’s responses, the pile sorting phase of the game remains an opportunity to understand current state of people’s knowledge on flood risk and preparation.

The strongest example of the capability of this tool as a feedback opportunity came from the aforementioned Aarhus meeting, where Alminda was directly discussing the material and any misunderstandings from the prior meeting with the participants. However, even without an expert facilitator who spoke Albanian, the disagreements, and misunderstandings about the relevance of the actions on the action cards were easy to notice. While sorting the action cards, people would discuss their decisions out loud as they explained their responding to their fellow participants. For example, in focus group five, the action card “hold a community meeting to plan evacuation routes” was sorted into the “one day before the flood” category. This card in reality would likely take at least a week to organize and complete. This misunderstanding about the value of planning as a community a long time in advance was not universal among the participants as evidenced by them moving this card back and forth between one month and one day categories. Considering the fact that our team was able to decipher some misunderstandings such as this while not understanding every word of the conversation further reinforces the ability of the tool to provide information about the knowledge, misconceptions, and perceptions of the group sorting the cards, furthering educational opportunities.

Figure 32: Pile Sorting Results: Left Focus Group 8 and Right Focus Group 6
4.2.6 The Fill-In Emergency Guide

The Fill-In Emergency Guide was developed with two primary goals in mind. The first was to condense and simplify some of information contained in the GIZ Leaflets into something more accessible in a crisis situation. The second was to develop personal responsibility by requiring families to personalize their flood preparation actions.

The informative purpose of this guide centers on having a family/personal plan for emergency. We also included the emergency numbers since, as noted above, many people do not have these numbers memorized. The Fill-in Guide also outlines the contents of an emergency kit. Aarhus director Alminda Mema identified these as the most important measures for people to take that they currently didn’t. Of note, only one our field interviewees, the family in Obot, had a box prepacked with important documents. No one that we talked to had supplies prepacked in a waterproof bag. This is especially concerning considering these interviews were conducted towards the beginning of the very wet winter months, when flooding is most likely. For these reasons, making emergency kits part of one of the outreach tools we developed was pertinent.

In the focus groups, participants were presented with the Fill-In Guide. We noted whether people understood what to put in each blank space. Even though there were some sections that were not always applicable, the inclusion of each section was based on an observed need from our findings. An example of this was the “plan for livestock” segment, which was included for the people lost much of their livestock, as explained in the above section 4.1.5 Losses. Participants in the focus groups stayed to fill out their entire plan, even when they were relying on our translator to write it for them because they could not read or write themselves. We left the plans with people who filled them out as a tool they can use to stay prepared.

Figure 33: Back of Fill-In Emergency Guide
Watching the firefighters fill out the emergency guide was especially interesting because of how they shifted their role from the ‘Before the Flood’ game to the Fill-In Emergency guide. While during the game, they were answering as preparedness experts, upon moving to the guide, they began responding instead as private citizens and community members. Although they did not necessarily live in a floodplain, they completed the exercise as if they did. One of the participants commented upon finishing his guide, that if families took the time to plan at this level of detail now, it would make their job of protecting the people of Shkodër easier.

Filling out the guide was not only a solitary experience. In focus group 5, composed of four young men from the Illyrian Village, there were two brothers who worked collaboratively to fill in their guide. This is representative of the ideal situation. The brothers debated and joked about who would be responsible for what parts of preparation. In Obot, Vat and Age worked together to fill in their guide as well since they are married and live together. The fact the Fill-in guide facilitate a discussion about the division of responsibilities within family units is valuable as this was identified as a specific weakness of Shkodër residents’ preparation during our discussion with Aarhus Director Mema.

These fill-in guides would be best used in the presence of a facilitator who can list examples of items that are appropriate for each section, as well as to clarify any questions that may appear. For this reason, meetings with groups, or whole families are the recommended mode of distribution. Without this guidance, there is a possibility of the guide being filled out incorrectly or incompletely.
Lumit dhe raportimi i rritjeve drastike tek autoritetet emergjente

Pergatitja e një cante emergjente e shpall me ushqim, uje dhe ilaqe të miaftueshme

Kontrolloni njëtime kur zyrata te shkurtërera në lidhje me rrezigjet natyrore prsh ne faken e GJEM ose ne faken e facebook

Te degjojmë radio per lajmët e fundit dhe paralajmjerimet
Chapter 5: Conclusion

Table of Contents
I. Summary of Findings
II. Limitations
III. Ethics
IV. Reflections: Curiosity, Connection, and Creating Value
V. Concluding Remarks

Left:
Action cards from “Before the Flood” after being prioritized in a focus group with the Civil Emergencies Brigade.
Photo by Donald Dione
5.0 Conclusions

Our project is centered on communities in the Shkodër region who were affected by devastating floods and who are expected to face floods in the future. From local villagers to the head of Civil Emergencies in Shkodra, each stakeholder has experiences, roles and responsibilities that may help their communities reduce flood risks. Throughout our endeavor, we spoke with experts on hydrology and the GIZ flood risk management plan; and we gathered information about what local people experienced in 2010, and how they were, and continue to be, vulnerable to floods. Through these interactions, we were able to develop material, namely a video, an interactive facilitated game called “Before the Flood,” and a Fill-In Emergency Guide to complement the work of the GIZ.
5.1 Summary of Findings

The experiences of community members and, importantly, their memories and perceptions of their experiences, influence their decision making process. Their memories of the height and uncleanliness of the water were vivid and people remembered the duration of the flood and the dangers that were present. We also found that people did not think the warnings they received, if any, were not provided long enough in advance of the flood event to prepare.

Additionally, the speed at which the flood advanced in the 2010 flood event and the peak height of the flood water took every stakeholder we interviewed by surprise, from the Civil Emergency Department to the residents. Furthermore, while many people received aid during the flood from churches, NGOs, and the government, not everyone received equal aid, such as already-marginalized residents in the Roma village.

In addition to lived experience and perceptions, the ability to access information affects how area residents know when to prepare and what they can do. Television and social media are common ways people hear about the news, but those communication channels were either not in effect or were not effective a decade ago. With no warning in 2010, people lost workable land, livestock, clothing, and furniture as a result of the floods. These losses affected their ability to recover, as sometimes these losses affected their livelihood, and they did not have enough money to purchase new animals. Outside aid was also vital to helping people recover, but government compensation was inconsistent and often perceived to be inadequate.

The actions people took in previous floods, and the preparations people have or have not made usually did not align with the recommendations set forth by GIZ in the Flood Risk Management Plan. While people knew to gather food and water in advance of a flood event, they did not have family emergency plans or emergency kits in place. Flood risk information should be accessible to people living in floodplains, and that is why GIZ distributed the flood risk maps to all of the local government buildings. By having these maps in community buildings, people should be able to better understand their vulnerability if another flood like 2010 were to occur.
Local residents hope that a flood as severe as 2010 will never happen again, and many do not expect one to. However, experts know that the hydrology of the land allows for another extreme flood event like 2010 to occur again. People told us they felt like there was nothing they could differently from what they did during the last flood event. It is the aim of our project, and the resulting outreach tools, to raise awareness of measures individuals and communities can take, and to support stakeholder agency regarding best practices and effective decision-making in the event of a flood.

We have highlighted how place attachment affects people’s willingness to evacuate, and informs why they continue to live in floodplains when they know the land would flood every year. Finally, we found that floods have a lasting psychological impact. All of this information informed the creation of the “Before the Flood” game, the video and the Fill-In Emergency Guide.

Those tools that we developed -- the game, the guide, and the video -- serve different purposes but all serve the role of increasing preparation and awareness. Outreach tools are most effective when they are tailored to the needs of specific communities, and as such, our tools were designed with the qualities of the communities we interacted with in mind.

The game and guide are interactive outreach tools. The game “Before the Flood” is useful to start conversations about the best practices for flood preparedness, act as the impetus for community action, and encourage group discussions where misconceptions can be resolved. According to our research, the game we developed and tested was a useful teaching tool, a platform for interactive engagement, and a vehicle for discussion between participants on why they thought actions belonged in certain time categories. We tested the game on groups of all women, young men, men, children, a family and taxi driver in Obot, social work and psychology undergraduate students, and graduate students.
The second tool, the Fill-In Emergency Guide frames the participant as the owner of their plan by having them fill it out to fit their own and their family’s needs. This tool in particular is helpful for defining and supporting personal responsibility in flood preparation. Promoting agency at the individual, family, and community level was an area our tools focused on. If these groups know best practices and act on them, then flood risks, and therefore losses, may be reduced. Additionally, people believe they need more time than they could possibly have with the current warning system. Therefore, early preparation and having a plan is important so the small amount of time that is available between a warning and a flood is maximized.

Finally, the video sets the tone for discussion of the severity of flooding events and why ongoing preparation is necessary. Although not interactive, images, voices, and faces from the people actually affected by the floods in 2010 act to draw audiences in as well as keep memories of this devastating flood alive. One of the main challenges was making the video understandable with and without audio, as we noticed that many times news stations will be playing in a restaurant or cafe with the audio off. This would also make the video useful for posting and sharing on social media, as most social media sites, such as Facebook, will automatically mute videos that autoplay as users scroll past them. With Facebook and TV being two of the most common methods of media intake in our interviews, tailoring the video to the constraints of these platforms made sense. We wanted to make sure the video was visually interesting enough to get people to click on it, or watch it with or without audio.

These tools aim to inform residents about individual and community measures they can use to reduce the damage caused by floods. These measures can help make the jobs of the relevant professionals responding to a flood easier. Our tools are designed to center around interactivity and simplicity to maximize the information a user can absorb.

The three outreach tools have been developed to complement the tools and campaigns that GIZ has already implemented, or plans to implement in the future. The “Before the Flood” game and Fill-In Emergency Guide are most effective in the presence of a facilitator who can answer questions and guide conversations, so group meetings such as the ones Aarhus has been holding across the Shkodër Region would be an ideal way to implement these tools. As stated above, the video is tailored to use on social media and TV, but its original purpose was also to aid in community meetings, specifically to serve as an attention grabbing “hook” to get people invested in the meeting.
5.2 Limitations

While we were able to talk to many people, travel to a range of locations throughout Shkodër, and test our tools on different demographic groups, we recognize that our results may not be reflective of the thoughts, actions, and feelings of all individuals and every community in the Shkodra region. We reached people in severe poverty, as well as those who displayed high levels of financial resources. Every person has a slightly different story, thinking process, and approach to decision making. The better documented and understood these details are, the more organizations such as GIZ and Aarhus will be able to develop and deploy effective outreach strategies.

People who had never experienced flooding, or who are illiterate struggled to play the Before the Flood game, thus potentially reducing its usefulness. However, the tools were not nullified by this obstacle. For example, with the Fill-In Emergency Guide, people understood its purpose and had the meaning translated to them, so when the completed guide was given to them to keep, it was still useful as a physical reminder of the value of planning. Additionally, illiteracy also prevented some people from filling in the guide (some had help from the translator, a colleague or friend). There may need to be alternative games and guides that are more intensively visual, with more pictures and graphics that will make the information and plans more accessible to low and illiterate members of target communities.

Additionally, the spirit of hospitality our team experienced when interacting with the communities may have influenced people’s reactions to our tools. Our position as foreign American students provided an advantage when engaging with people, in that we were often viewed as guests rather than professionals. This informality may have inhibited our ability to evaluate the ability of the tools we created to engage users. The focus we received from participants may possibly be attributed to respecting us as guests, rather than actual interest in the activities.

Photo of a Mosque in Shkodra during the 2010 flooding event (Photo taken at the fire station)
5.3 Ethics

Our project sought to understand the experiences and needs of various communities in the Shkodër region, and we now better understand that each community deserves to have its voice heard, experiences documented, and needs engaged with. That engagement, though, raises some ethical considerations. For instance, when conducting our semi-structured interviews, we had to make sure we were not making promises outside the scope of our project. Our role was to document experiences and develop outreach tools to raise awareness, support learning and encourage personal responsibility for preparedness. Our role was not to give compensation or provide physical aid, as was sometimes assumed upon our arrival. Our presence sometimes caused confusion. For instance, a family in Obot asked us why we were there now when the flood happened seven years ago. Because we entered people’s homes and asked to interview them, we believe this may have led some people to assume that we would be offering aid or other support in the future. We were careful to explain that we were there to document people’s experiences and to research what happened in past floods in order to create tools to help people better prepare in the future.

Our experience in the Roma community requires special consideration. The Roma people in Albania are discriminated against based on their way of life, and in most cases, they are the poorest and most marginalized people in Albania. Without our University of Shkodër translator Manuela Probibaj, getting access to this community would have been very difficult. A few members of our team were reluctant to return to the Roma community after our first interview with them. Our perceptions of the Roma were influenced by the people we saw asking us for money on the streets, or going through trash. Unconsciously, we likely judged this group for their way of life. Even though our initial interview was really interesting and informative, the sights and smells of this very poor community were off-putting to a few of us.
When we returned to the same Roma community a few weeks later, we had no idea how the focus groups would work out. Over the course of the three focus groups we did there, we could feel ourselves going from teachers to collaborators. We started to work with the Roma people to help them figure out what their personal plans for preparing for a flood would be, instead of remaining distant like from our first visit. Seeing the depth of thoughtfulness and care the Roma people put in to deciding on their actions in the game and making a personal plan really changed our perspective. Initially, we had limited their capabilities in our own minds, but this was not an accurate depiction of them. We talked to people of different age ranges, education, previous experiences of flooding, and risks for future floods. This stratified sample means that we were able to cover a wide range of perceptions, experiences, and vulnerabilities. However, accurately representing the needs and opinions of each group would require more interviews and focus groups.

Government management of the dams was represented very differently by experts and residents. There was a notable discrepancy between how the dam operators should legally behave and how they behaved in 2010. The game includes the possibility that, once again, there may be no warning for future floods. The five minute card is meant to represent this. If water is released with no warning, it will cause extreme damage and result in more victims of bad management. So while our outreach tools are meant to encourage people to plan out their own preparations for a flood, these tools cannot address people’s lack of control over how the government manages the dams. In the ideal situation, the government would send out a timely warning to all residents who would already be prepared to grab their emergency kit, important documents, and evacuate. However, this may not be the case for future floods.
5.4 Reflection: Curiosity, Connection, and Creating Value

Our team was able use our strengths as science, technology, and engineering students and build on them to grow into social scientists as well. Our more technical background made it possible for us to more easily understand the scientific causes of the flooding, but the real focus of the project was on people. Providing engineering, or otherwise technical solutions to problems without consideration for the people who need interact with or implement these solutions is irresponsible and inefficient.

Our team sincerely wanted to make a difference with this project, and that drove us to new places and unfamiliar situations. The project was driven forward by the curiosity we held for both the facts of the 2010 flood, and how people felt and thought about the event. The issue was more complex than we ever imagined during our preparation in America, but our team took this complexity as an opportunity to reach out to a wider range of experts to piece together the complex story of flooding in Shkodër. Our experiences during this project shaped us as researchers and teammates. Our ability to form partnerships and develop connections was tested as we reached out to various organizations and people for interviews or information. As the project progressed as we went from being four individuals in a country far from home, to a team with friends, partners, and contacts in places where we were invited to treat people’s home as our own home. Our team discovered it functions best when we are brainstorming a way to solve an issue as a group. We linked our own ideas to come up with outlines, ways to ask a better question, or analyze our findings. Our team has grown to recognize just how important it is to utilize every member to their maximum potential.
Our team struggled at the beginning to figure out how to overcome the language barrier, to know where to go to conduct interviews, and to figure out the best way to conduct an interview that would bring about all the information we wanted to know. The partnership we built with the students from Shkodër University was invaluable in overcoming this obstacle. By acting as translators, guides to the region, and research partners they allowed us to maximize our time in the field in a way that would’ve been impossible without this connection.

We believe that one reason people were so willing to talk to us because flooding is so devastating and traumatizing. Even people who were not directly affected by floods were willing to talk and cooperate because of how deeply severe floods have affected the entire region. Being able to talk to people with so many different perspectives opened our eyes as to just how important the work of our sponsor, GIZ, is.

Working on this project provided an opportunity to create a literal connection between theory and practice. The technical recommendations from GIZ need to be transferred into action by vulnerable communities to make a difference in the case of a flood. The value in creating usable products and recommendations is a lesson that will be easily applied to our work going forward as scientists and engineers.

Flooding affects people’s lives, socially, economically, and psychologically. Being responsible for creating things that will hopefully help people be more prepared in the future not only protects them from economic loses and physical danger, but gives a group of people who describe themselves as hopeless an opportunity to take action. Our tools, and the work of this GIZ project, allow people to live life with a little less fear of the next flood, a little more confidence that their efforts can change the outcome of a flood, and the knowledge that people do care about their experiences and situations.
5.5. Concluding Remarks

While we were in Albania, for the first time the National Government sent an SMS message to phones with a message warning of potential flooding and to take caution. This historic first frames our work collecting stories and creating tools as a small part of a growing effort to increase preparedness, raise awareness, and maximize recovery after a flood. Reality dictates that the Shkodër region will likely face severe flooding events in the future, and this project is a contribution toward making the next flood less damaging to people’s lives than the last.
Works Cited


Grothmann, T., and F. Reusswig (2006), People at risk of flooding: Why some residents take precautionary action while others do not, Nat Hazards, 38, 101–120, doi:10.1007/s11069-005-8604-6


Hysenaj, M. (2012, June). Application Of Geographic Information Systems Towards ... 
Retrieved from 

Kellens, W., Zaalberg, R., Neutens, T., Vanneuville, W., & De Maeyer, P. (2011). An Analysis of 
the Public Perception of Flood Risk on the Belgian Coast. Risk Analysis, 31(7), 


for Flood Risk Communication Program Design, (February).

Lo, A. Y. (2013). The role of social norms in climate adaptation: Mediating risk perception and 

Resilience to “Surprises” Such as Natural Disasters. Ecology And Society, 13(1). 
https://doi.org/10.5751/ES-02232-130103


Pictures Cited

<table>
<thead>
<tr>
<th>Photo</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Earth. December 13, 2017</td>
<td>30</td>
</tr>
</tbody>
</table>

Note: The Mhillaj family in Dajc was generous enough to send us their photos of the 2010 flood event, several of which we used in this report. We are also grateful to our sponsor, GIZ, for sending us photos from the 2010 flood event as well.
Appendix A - Key Informant Interview Protocols
A.1 - GIZ

Interview Questions
1. Can you describe the role of this branch of GIZ in Albania?
2. What are the natural and manmade factors that cause flooding in Shkodër?
3. What do residents believe are the causes of flooding?
4. What is the existing flood warning system and can you tell us what you think are its strengths and limitations?
5. What makes the floods so devastating?
6. What are the most important things people can do to reduce their risk?
7. Who provides aid during and after floods?
8. Can you describe the outreach being done?
   a. What are the tools being used?
   b. What is the content of these tools?
   c. Who is being reached?
A.2 - Director and Head of the Firefighters and Civil Emergency Brigade, Ridvan Bushati

Interview Questions

1. What was your position at the time of the 2010 flood?
2. Can you explain how the emergency response was coordinated between the Shkodër government, the national government, outside aid groups, the military etc.?
   a. What roles did the communities themselves play in this effort?
   b. What role did religious organizations play?
3. How has GIZ interacted with the Civil Emergencies Brigade and the Municipality?
4. How soon before a flood do you receive warnings?
   a. Is this consistent?
   b. Was this the case in 2010?
5. When a flood happens what is the first thing you do to prepare?
6. Can you explain the steps from 2010 and say how it is different now? How have you adapted?
7. Do you know if there have been efforts to spread awareness of the maps to the public?
8. Is evacuation resisted or embraced?
9. Were you involved in any efforts to clean up after the floods
   a. Who’s responsible for this?
10. In your opinion, what is the best way to warn people about floods?
11. Do you feel that you’re able to distribute enough supplies for people?
12. What can be done to improve flood risk management on the community side of things?
13. What does your department need to increase its flood-response capacity?
A.3 - Team Leader of the High Capacity Pumping Team

Interview Questions

1. What was your experience in the 2010 flood as a first responder?
   a. Describe the event in your own words.
   b. What were some of the specific challenges you faced?
   c. Were there any issues convincing people to evacuate?

2. In your opinion, what can people do to help themselves prepare for a flood?

3. What would you describe as the biggest limitation to flood response by your department?

4. What training have you/the brigade had?

5. Do you have any pictures of emergency responders from during the flood?

6. You’re a team leader, what does this entail?

7. Were there mandatory evacuations?

8. How is information shared between the emergency departments in Shkodër?

9. Do you think people are more prepared one?

10. What do you think is the best way to contact people in Shkodër with information?
A.4 - IGJEUM

Interview Questions

1. What are the goals/responsibilities of this section of the institute?
2. How does the early warning system that you are a part of operate?
   a. In what ways do you distribute warnings?
      i. Are there any other ways you think would be helpful?
      ii. What is your role in informing people compared to issuing warnings?
   b. What is the purpose and content of the daily bulletins you publish?
   c. How accurate would you estimate your warnings to be?
3. How do you collect the data you use to develop warnings?
   a. What types of data collection stations do you have?
   b. What are the weaknesses in your data as of now?
4. What is our understanding of the causes of flooding in the Shkodër Region?
   a. What makes floods so devastating?
   b. What is climate change’s role in making flooding a forthcoming issue in Shkodër, and Albania as a whole?
   c. How do the dams on the Drin River Cascade affect flooding?
Interview Questions

1. Where do you hold community meetings?
   a. Why schools?
      i. What are the specific benefits of informing kids rather than adults?
   b. Why health centers?
   c. Is there anywhere else that you think could be effective?

2. Who attends these meetings?
   a. How many people have you been able to reach so far?
   b. How many do you plan to reach?

3. What physical materials are distributed at these meetings?
   a. What is the importance of each object you distribute?

4. Walk us through, with as much detail as possible, what you tell people to do before, during, and after a flood.
   a. Out of these examples that you’ve given us, what do you think that people need to improve on the most?
   b. Which of these, in your opinion, are most important to the safety of people?
      i. The failure to do which of these result in the largest monetary loss?

5. Have you found that the administrators have been supportive?
   a. Have the communities themselves been receptive?

6. Have you observed that people are learning and remembering the information that’s presented?

7. Has there been any changes in the meetings over the times you’ve returned to the same location?

8. What other GIZ sponsored outreach efforts have Aarhus/you been a part of?

9. Can you think of any tools that would help your meetings, or would otherwise be useful to help inform people?
Appendix B - Semi-Structured Interview Protocol

Interview Questions

Warnings
● What do flood warnings look like on TV?
  ○ Can you describe what they look like?
  ○ What information is presented?
  ○ Are there increasing levels like watch, warning, etc.?
  ○ How often are they shown when they are active?
  ○ Which channels show them?
  ○ Do you believe them?
● At what hours do you watch TV?
● What did you do to prepare for the flood?
  ○ Did you have your own plan?
  ○ Were you given guidelines/guidance?
● How much time in advance to a flood do you feel you are given information about a potential disaster?

Trust
● Media
  ○ How reliable do you think the weather forecasts are?
  ○ Is there a news channel you trust more or less?
  ○ Do you listen to the radio for news?
  ○ Do you follow news on Facebook?
    ■ Are you online in other ways?
○ Do you talk to your neighbors, friends, or family about what you see on the news?
  ■ What do you talk about?
○ What people on TV do you like, watch, or trust the most?
○ How do you feel when you see government people on TV?
  ■ Why do you think you feel that way?
○ What people do you see on TV giving information in emergencies?
  ■ What kinds of people do you trust the most to give this information e.g. citizens, mayors, emergency responders, local or national government officials?
● Organizations
  ○ Have you personally interacted with anyone from the government?
    ■ Do you trust different government people differently?
      ● Do you trust local or national officials differently?
      ● Do you trust emergency responders, military, or police differently?
    ■ How do you feel about outside aid organizations?
      ● Which ones do you know about?
      ● Which ones do you trust the most?
      ● Which ones are the most helpful in your opinion?
○ How do you feel when the police or military come to your home to evacuate you?
○ Do you believe that they will protect your house?

Effect of Prior Flood Experience on Preparedness
● If you have a few hours only to prepare for a flood, what do you do?
● Does it flood frequently in your neighborhood?
● What do you do during the small floods that are even just a few inches?
● Do you usually know about how severe a flood will be?
○ If so, how do you estimate this?
● What do you consider a minor vs major flood?
● Do you have insurance on your home?
   ○ Does it cover flooding/water damage?
● Would you consider moving away from the floodplain?
● What steps did you take to prepare for the flood?

**Evacuation Procedures**
● Are there reasons you would not evacuate?
● Where did you go?
● What did you do while there?
● Did you worry about your house?
   ○ What were you most worried about while you were gone?
● When did you decide to return?
   ○ How did you decide it was the right time to return?
● How long would it take you to prepare to evacuate right now?
● Where did you go during the flood?

**Flood Awareness**
● How often does it flood here?
● Do you know if you live in a floodplain?
● What would you say factored into why the flooding occurred?
● Are you afraid of future flooding here?
● Why do you continue choose to live here despite the risk of flooding?
- Do you believe the severity of flooding in this area is changing over time?
  - What do you think might be causing this?

**Drainage Channel Responsibility**
- Who do you believe is responsible for cleaning each of the channels?
  - 1st, 2nd, 3rd level
- Do you think that the drainage channels are being maintained correctly?
  - Why or why not?
  - What could be done to improve maintenance?
- How helpful do you think that drainage channels are to mitigating flooding?
- Do you know how to properly clean drainage channels?
  - What tools or resources would you need to accomplish this?

**Expectations for Flood Events**
- Who do you think should be helping you during the flood?
- What do you think you need?
- What is the government’s role when flooding occurs?
- Do you believe the government should compensate you?
- Do you have a plan if an extreme flood were to happen again?
  - Do you know where you would go and evacuate to?
  - What supplies would you stock up on?
  - What inside your house would you need to secure and protect?
  - What outside your house would you need to secure and protect from flooding?
  - How would you manage your livestock in the event of flooding?
- Did the military, police, or fire brigade help you?
  - How did they help you?
〇 Did they give you something?
〇 Did they give you clear directions?
● What worries you most about the next potential flood?

Lines of Communication
● Who do you talk to daily?
● Who do you contact in an emergency?
● How do you contact them?
● Who contacts you directly in an emergency?
● How do they contact you?
● Do religious organizations contact you to give you help?
● How connected do you feel you are to your family?
● Who do you live with?
● Do you feel as though your family connections are hindered when flooding occurs?

Recovery
● Would you be willing to volunteer to help your community if there were organized clean up efforts?
  〇 Are you aware of any efforts of this kind?
● Would you be willing to help emergency responders evacuate people, pump houses, rescue livestock?
  〇 Are you aware of any example of this in your community?
● What was at risk in the flood?
● What was damaged by the flood?
● What was the worst part of the flood?
● What did you do to recover following the flood?
○ What did you rebuild or repair?
○ How did you help your neighbors?
○ How did your community help you?

● What organized efforts were made to clean up after the flood?
  ○ How effective were these methods?
  ○ What would you have done to improve these methods?

● Were you given any governmental help or compensation after the flood, and from whom?
Appendix C - Focus Group Protocol

Roles:

1. Facilitator - This role will be one person who knows the game well or has access to the facilitator’s manual. This person will make sure the game is played appropriately and that the main ideas around flood preparation are discussed in depth. The facilitator is responsible for ensuring the game is played correctly and guides discussion about people’s understanding of flood risk mitigation techniques.

2. Players - This role includes three to five people. Each player will listen and follow the facilitator’s instruction. As players begin to understand the process of the game, their ideas and perceptions on what to do during flooding events should start to have more depth. Players will explain their choices so that the other players can start to see other thought processes and options available during a flooding event.

3. Translator - The role of the translator is to help the non-Albanian facilitator understand the thought process of the players and the choices they make with the ordering of the cards.

4. English Note Taker - quotes

5. Body language note taker (includes pictures of results and body language throughout)

Procedure:

- Intro to our project - purpose is to test outreach tools
- Consent for photos
- Game
  - Intro
    - Facilitator introduces types of cards
    - Explains gameplay mechanics
- Plays example hand
  - Phase 1: Situations and Prioritizing
    - One round per person playing
    - 4 person groups with 4 cards each or 5 person groups with 3 cards each
    - Each person has cards face up in front of them
    - Choose one person to start, they choose the cards for the first situation
    - Each person puts in card of choice
    - Each player has a turn ordering the cards by priority in the given situation
    - Move cards to next player and they re-group cards and talk about their process
    - Eliminate a time and weather card
    - Each person gets a new action card and the first person to start the process rotates
    - Complete 1-2 rounds
  - Phase 2: Pile Sort
    - Ask the group to organize the cards in groups by time frame
    - Explain why some of the things people didn't think were important actually are to flood preparedness.
- Fill-in Emergency Guide
  - Each player receives a Fill-In Emergency Guide
  - Each person fills it out
  - Take photos of the final Guides
Appendix D – Game: Before the Flood

Attachment: game_albanian.pdf
  Description: Game cards in Albanian
Attachment: game_english.pdf
  Description: Game cards in English
Attachment: game_facilitation_guide.pdf
  Description: Facilitator’s guide for the game
Appendix E – The Fill-In Emergency Guide

Attachment: fillinguide_albanian.pdf  
Description: Fill-in guide in Albanian.
Attachment: fillinguide_english.pdf  
Description: Fill-in guide in English.
Attachment: fillinguide_facilitation_guide.pdf  
Description: Facilitator’s guide for the fill-in guide.
Appendix F - Link to Video: Voices of the 2010 Flood

Voices of the 2010 Flood: https://youtu.be/7IWolinJpxc