Measuring Community Flood Resilience

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Zurich Insurance Group – Flood Resilience Program Lead
Community Partner F2F Workshop, Zurich Development Center, Apr 3, 2017
Context update
Where have we come from? Where are we going?
Contents

- The Alliance / Where we work
- Review of Approach and Framework
- Progress update
- From Baseline to Resilience-Building
- Highlights from 2016 learning
- Do we know where we are going?
- Resources for Additional Information
Zurich’s flood resilience program is one of Zurich’s key focus areas

- As insurers we know the impact floods have on people’s lives and how much damage they can cause. Our mission is to help customers understand and protect themselves from flood

- The flood resilience alliance comprises of 5 organizations

- The program comprises a five-year commitment, and includes an investment of ca. USD 37.2 million by the Z Zurich Foundation from 2013-2018

- Together with our alliance partners we focus on pre-event flood mitigation, as opposed to post-event flood relief

- We at Zurich provide in-kind work time, skills and expertise
Motivation for flood resilience?

- Floods globally affect more people than any other natural hazard
- We find: 1$ invested in prevention saves 5$ in future losses
- But only 13% go into pre-event resilience & risk reduction, 87% go to post-event relief
- Communities feel impacts most immediately. This is the level where we can take concrete action

Our motivations:
- Demonstrate and measure resilience-building impact by our alliance working model, thus enhancing the social return on the Z Foundation’s investment
- Create innovative resilience solutions by bringing in our skills & expertise and scale them beyond our alliance
- Creating shared value by benefitting communities, our NGO partners, public decision-makers and Zurich customers
- Be a leader to enhance pre-event mitigation over post-event relief
Alliance members and boundary partners

Indonesia
Mexico
Nepal
Bangladesh
Nepal
Peru
Afghanistan
Haiti
Indonesia
Nepal
Timor-Leste
Nepal (children-focused)
US: Cedar Rapids, Charleston
CH, DE, IND, MEX, UK, US
The Zurich Alliance Filling a Gap

A recent study (2014) by Thomas Winderl for UNDP reviewed all of the models that are publically available and concluded that:

“no general measurement framework for disaster resilience has been empirically verified yet.”

Why Develop a framework and tool to measure (flood) resilience?

– Demonstrating impact on the ground
– Addressing the measurement gap by providing a consistent process
– Contributing to the evidence of what is resilience
The Zurich Alliance Approach

A few definitions

- Flood resilience looks at resilience to a *specific peril* – i.e. floods

- Our focus it at the community level – where the flood impacts are often most acutely felt.

- Community Flood resilience, then, is the ability of a community to pursue its social, ecological and economic development and growth objectives, while managing its flood risk over time, in a mutually reinforcing way.
  - In other words, if a flood-prone community has flood resilience, its development will not be derailed due to flooding.
A set of existing models and Zurich’s Risk Engineering Approach led to our resilience measurement framework

**Sustainable Livelihoods Framework: The 5Cs**

- **Social Capital**
- **Human Capital**
- **Physical Capital**
- **Natural Capital**
- **Financial capital**

**Properties of a resilient system: 4Rs**

- **Robustness** (ability to withstand a shock)
  - for example, housing and bridges built to withstand flood waters

- **Redundancy** (functional diversity)
  - for example, having many evacuation routes

- **Resourcefulness** (ability to mobilize when threatened)
  - for example, a community group who can quickly turn a community centre into a flood shelter

- **Rapidity** (ability to contain losses and recover in a timely manner)
  - for example, access to quick finance for recovery.

88 Sources of resilience

Each mapped to 5C,4R...

Each Source graded A-D

*Developed by the Multidisciplinary Center for Earthquake Engineering Research at the University of Buffalo in the US (MCEER)*
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• Most of a total of 65 communities have now completed baselines. Some organizations have added “external” communities for additional benefit

• All organizations are moving along baseline analysis to selecting and implementing resilience-building “solutions” or “interventions”

• Post-flood surveys are ready in case of flood – some have been completed, some are underway

• From baseline, analysis process and post-floods: Lots of learning and feedback generated

• Rich data set is being analyzed and interpreted under the lead of our research partners
Progress update (cont’d)

Household Credit Access (4/17)

Notes for assessment criteria - This source looks at the availability of credit for members of the community. Key aspects of the assessment are: can it be formal or semi-formal, community access to financial services does not diminish during and after a flood and ever improves (greater access to financial services). Linking two data points with an AND logic: Access to formal and/or informal credit AND availability of credit post event.

Grade

- 100% of all households and >60% of vulnerable households have access to credit before a flood and this does not diminish post flood
- >60% of all households and >60% of vulnerable households have access to credit before a flood and this does not diminish post flood
- There is no formal or semi-formal access to credit for households in the community.

Comments

Were you confident grading this source? Yes No
Is this source relevant to assess resilience to flooding? Yes No

Answers

Question: In the event of a flood, what proportion of the community households can get access to credit?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 to 90%</td>
<td>Community</td>
</tr>
<tr>
<td>&gt;45%</td>
<td>Less than 45%</td>
</tr>
</tbody>
</table>

Question: Can the most vulnerable households also get access to credit in the event of a flood?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>More or less</td>
<td>Community</td>
</tr>
<tr>
<td>Many vulnerable households also have access to credit</td>
<td>More or less</td>
</tr>
<tr>
<td>Many vulnerable households have major problems in accessing credit</td>
<td>More or less</td>
</tr>
</tbody>
</table>

Comments

Please provide any feedback you have on this source, the grade definitions and how easy it was to grade based on the answers.

This source is well defined and easy to understand. I believe it is very applicable to overall flood resilience.

Were you confident grading this source? Yes No
Is this source relevant to assess resilience to flooding? Yes No
**Progress update (cont’d)**

**Community Flood Resilience Measurement**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>31</td>
</tr>
<tr>
<td>Human</td>
<td>52</td>
</tr>
<tr>
<td>Natural</td>
<td>66</td>
</tr>
<tr>
<td>Physical</td>
<td>43</td>
</tr>
<tr>
<td>Social</td>
<td>54</td>
</tr>
</tbody>
</table>

**DRM Cycle**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping</td>
<td>45</td>
</tr>
<tr>
<td>Corrective risk reduction</td>
<td>57</td>
</tr>
<tr>
<td>Crisis preparedness</td>
<td>50</td>
</tr>
</tbody>
</table>
Progress update (cont’d)

Data export

Start date begin
2016-05-01

Start date end
2016-05-01

End date begin
2016-05-04

End date end
2016-05-04

Organization
Practical Action

Country
Peru

Search operator

DOWNLOAD
Progress update (cont’d)

<table>
<thead>
<tr>
<th>Community</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boca de San Antonio Inicial</td>
<td>CREATE STUDY</td>
</tr>
<tr>
<td>(Red Cross / Mexico)</td>
<td>POST EVENT STUDY</td>
</tr>
<tr>
<td>Boca de San Antonio Inicial</td>
<td></td>
</tr>
<tr>
<td>Boltama (MercyCorps / Timor)</td>
<td>POST EVENT STUDY</td>
</tr>
</tbody>
</table>

**Community Flood Resilience Measurement**
Progress update (cont’d)

Flood Resilience Measurement

User Guide
of the
PRODUCTION VERSION – POST EVENT ANALYSIS
of the Community Flood Resilience Measurement Tool
May 31, 2016
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Picture: Practical Action Peru, Rio Rimac
Analyzing and interpreting results

The lenses through which results can be sorted and analyzed are

- The five capitals (5C)

- The four resilient properties (4R)

- **Ten themes**, effectively the topics by which questions will be asked in the community environment, such as health, education, food, governance, and the like

- The five steps of the **disaster risk management cycle (DRM)**

- The **context** or environment in which a source is embedded – i.e. internal (community) or external (environment)
Analyzing and interpreting results

Example of looking through themes lens – output from the tool
Analyzing and interpreting results

Example of potential insights from viewing Themes and 4Rs combined: While some good robustness has been built into the community, the community might benefit from focusing on building in some key redundancies or resourcefulness, particularly in assets and livelihoods, life and health and the natural environment.

<table>
<thead>
<tr>
<th>Themes / 4Rs</th>
<th>Rapidity</th>
<th>Redundancy</th>
<th>Resourcefulness</th>
<th>Robustness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets and Livelihoods</td>
<td></td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Education</td>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Energy</td>
<td>B</td>
<td>C</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Food</td>
<td>D</td>
<td>D</td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>Governance</td>
<td>C</td>
<td></td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Life and Health</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Natural environment</td>
<td></td>
<td>D</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Transport and Communication</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>D</td>
<td></td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>Water</td>
<td>D</td>
<td>B</td>
<td></td>
<td>C</td>
</tr>
</tbody>
</table>
Meaningful community sharing of results

- Needs to be contextualized
- Is not one-size-fits-all (and certainly not a PPT presentation)
- Each partner leverages their strengths and reinforces or complements with the 5C-4R framework and the tool
- Often goes beyond the community itself to key actors and decision-makers in the DRR space
- Has led to very interesting deep-dives into the matter of resilience-building
- Builds the basis for solution-finding and wider leverage of 5C-4R
Using the results

- Number and Grade: Not the outcome! Use as a guide to what the data means. No absolutes, but relatives and part of a time trajectory.

- Grades provide insight into planning processes as one of many sources to determine appropriate actions.
Using the results (cont’d)

- Results are not intended to replace intervention planning approaches. Not a decision-making process, but supports more-informed decision-making.

- Design innovative “interventions” that build resilience and solve a problem, rather than take pre-planned interventions and “hope they build resilience”.

- Data can be viewed through a number of lenses – don’t rely on just the raw “overall” score. Drill down into components.
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Giving people a voice and new skills
Implementing the Zurich Alliance flood resilience measurement tool with Plan International Nepal

But this time, the type and level of detail of the questions really sparked the interest of many people interviewed. They started realizing that resilience means more than “building back the river”, as a community member put it.

In fact, they got so curious they started to ask very relevant questions on their own, learning about the concept of resilience and how risk reduction before a disaster strike could apply to them. It was both educational for the community members as well as for our field-workers who conducted the interviews, said Isabe.

Educational effects and positive but unexpected consequences

Working with the tool was highly educational for the entire Plan International team dealing with the project. A participant by Isabe to the team in Nepal highlighted that measuring resilience not only brings a new approach to existing programs, it also a learning experience for Plan International employees and beneficiaries.

Being exposed to the questions coming back from the interviewees, and having the intense discussions with them, allowed the field-workers to reflect more deeply on the concept of resilience and what it means for them. We believe this is a critical step in finding new, innovative ways to tackle action on the tool’s results and design resilience-building solutions. The field-workers realized that even during the interviews, knowledge was transferred to the community. Because we asked so many questions on different sources of resilience, people realized that all these areas are important for making their lives safer.”

A very important point for Isabe is an inclusive approach. “Focus as a child rights organization is extremely important to make children’s voices heard and give them space to express.”

- From information collection to two-way communication

The measurement tool requires information on the five capitals of sustainable livelihoods that can be collected through different methods, one of which are household interviews. The discussion with householders directly is always an important information source, but in shorter, ‘stand-in interviews’ rarely a lot of interaction develops.

“There is a lot of information we need to collect in household interviews. We were afraid this would take up too much of people’s time, but in fact they appreciated that we took the time to ask about their experiences.”

Testing the new flood resilience measurement tool with our NGO-partner Plan International in Nepal has surprising effects

The non-governmental organization Plan International is one of five international organizations that has recently developed flood resilience measurement framework and tool. Our effort aims to demonstrate that flood resilience can actually be measured at community level in contexts ranging from the United States to Afghanistan, in Timor Leste and Nepal, and that practical action can then be taken to tackle the issues highlighted by the tool and therefore strengthen the resilience of the community to flooding. In Nepal, Plan International is mostly working with and through children, giving our approach a new spin. Since bringing the partners who use this tool all together in Zurich for a training workshop, they have all made big progress in their country programs. Here, Isabe Sommer, Program Manager for Plan International Switzerland, explains some of the surprising effects the tool has had, returning from a field visit to Kathmandu and the project communities in the Kosi River Basin in the eastern lowlands, the Terai of Nepal.

Plan International Switzerland, meeting with child representatives of LAMAI in Leeling, Nepal
Key learnings

- Work with and through partners. Learn from each other. Cross-learning / peer groups work really well.

- Getting the information, agreeing on measurement grades, analyzing results and setting up processes to find and implement solutions is tough and time-consuming. But it works, and works well.

- Depth of interviews is time-consuming but establishes trust and grabs the attention of the interviewee. Fosters a discussion.

- Taking time to analyze before implementation is key. “This is almost doing programs the other way round – and the way it should be.”

- “The process is almost as valuable as the data and results. It brings people together to think consistently about resilience.” It helps think and creates discussions beyond BAU across the full resilience spectrum.
Key learnings (cont’d)


- Early indication that framework, process and tool work. Scope (crazy 88 sources!), functionality and ergonomics can be improved.

- FRMT is meant to be scaled, and can be. Many organizations have already leveraged this into other programs, or wider contexts (Afghanistan Resilience Consortium; M-RED program etc).

- Good indications that this approach is
  - Creating discussions beyond the community scale.
  - Attracting further funding / budget provisions, achieving our high-level goal: **Shift the needle from post-event relief and recovery spending into pre-event resilience and risk reduction investments.**
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What is coming next?

• This face to face workshop and peer-group meeting helps us learn more, get enhanced feedback and understand progress (Days 1-2)

• Researchers can highlight initial findings (Day 3)

• We are >halfway to complete the first full measurement cycle

• More post-flood studies are needed to bring together “sources” and “outcomes” of resilience and understand what really works (Day 4)

• We are eager to learn about the changes in the communities over time through the endlines and the M&E program assessment. We are “nervous” to learn if resilience was really built (Day 4)

• All this information will help us improve and build a new, easier, leaner and better “Next Gen” flood resilience measurement tool
What is coming next? (cont’d)

• Technical and analytical support for post-flood and endlines will be provided as needed – please do reach out to us

• Flexibility in capturing endlines: Let’s discuss during this week (Day 4)

• Publish generalizable findings and validation results by 2018

• Scale & Replicate: A three-tiered approach
  – 1st tier: Scale within your own organization: Find synergies
  – 2nd tier: Scale within your network: Talk to your donors, partners
  – 3rd tier: Scale with the “big shots” – influence globally
Next steps in the timeline

- Complete all baselines
- Conduct post-floods
- Complete interventions
- Agree on “sweet timings” for the endlines to capture impact and also to enable researchers to timely access a full data set (discuss?)
- Capture all the feedback and reconstitute the FRMWG to develop the Next Gen tool
- Have NextGen ready and developed by H2 / 2018 (more on next page)
Based on the feedback and its analysis and all that we have learnt over this phase with the Core & Boundary Partners:

- Outline & assess feasibility of new specifications / design of NextGen
- Together with the developer, work together to build a mock-up of NextGen tool with new functionality and leaner usage
- Following the full data set analysis (baselines, post-floods and endlines), we can also enhance content (sources, questions, methods for data capturing, etc.)
- We want to have a version ready for User Acceptance Testing, writing guidelines/manuals and training users before the next deployment starts, i.e. before Alliance 2.0
More resources to understand the framework

- **Videos explaining the approach in detail:**

- **Four-pager explaining the approach in text and illustrations:**

- **The Flood Resilience Portal webpage:**
  [http://floodresilience.net/](http://floodresilience.net/)
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