The Post Event Review Capability (PERC) medley: Key lessons learnt from 6 years of forensic disaster research

System Risk Conference – Potsdam, Sept 2019

Michael Szönyi (1), Karen MacClune (2), Rachel Norton (2), Kanmani Venkateswaran (2), Adriana Keating (3)

1: Zurich Insurance Group, Switzerland
2: ISET International, USA
3: International Institute for Applied Systems Analysis IIASA, Austria
In alliance with…

… we work on long-term, skills-based, flexible partnerships. Phase 2 of ZFRA: 2018-2023

Our objectives

Objective 1
Increase funding for flood resilience

Objective 2
Policy at global, national or sub-national level is improved

Objective 3
Improve flood resilience practice
PerC and learning (quick context to global approaches)

Sendai Framework for Disaster Risk Reduction
2015 - 2030

Priority 33 (j):
To promote the incorporation of disaster risk management into post-disaster recovery and rehabilitation processes, facilitate the link between relief, rehabilitation and development, use opportunities during the recovery phase to develop capacities that reduce disaster risk in the short, medium and long term, including through the development of measures 22 such as land-use planning, structural standards improvement and the sharing of expertise, knowledge, post-disaster reviews and lessons learned and integrate post-disaster reconstruction into the economic and social sustainable development of affected areas. This should also apply to temporary settlements for persons displaced by disasters;

Priority 25 (g):
To enhance the scientific and technical work on disaster risk reduction and its mobilization through the coordination of existing networks and scientific research institutions at all levels and in all regions, with the support of the United Nations Office for Disaster Risk Reduction Scientific and Technical Advisory Group, in order to strengthen the evidence base in support of the implementation of the present Framework; promote scientific research on disaster risk patterns, causes and effects; disseminate risk information with the best use of geospatial information technology; provide guidance on methodologies and standards for risk assessments, disaster risk modelling and the use of data; identify research and technology gaps and set recommendations for research priority areas in disaster risk reduction; promote and support the availability and application of science and technology to decision-making; contribute to the update of the publication entitled “2009 UNISDR Terminology on Disaster Risk Reduction”; use post-disaster reviews as opportunities to enhance learning and public policy and disseminate studies;
Why do we want to learn?

There is no such thing as a natural disaster….

https://twitter.com/nonatdisasters?lang=en


https://openknowledge.worldbank.org/handle/10986/2512
PERC at a glance

The Post Event Review Capability in 5 bullet points

• PERC is a **flexible method** that analyses the **root causes** of why events become disasters
• Answer at event level what has worked well and where opportunities are for further improvements
• It is a **unique forensic investigation** at societal level and puts people at the heart with **flexible** input (i.e. guiding questions) and output (i.e. report)
• Since 2013 covering events that provide a lot of opportunity for learning. 15 published +2 in draft
• Zurich Alliance supporting the Hyogo / Sendai framework’s mission to **generate and share learning**
14 post-event reviews on floods, 3 on wildfires
The PERC manual

Your guide and good friend to conduct PERC studies

- The PERC manual is open source
- It is available from our Zurich PERC page
- Studies and select recommendations are on the Portal’s search functionality for PERCs: https://floodresilience.net/perc
- Crosscutting studies and a PERC summary have also been published.

Abstract. With unprecedented growth in disaster risk, the need for an urgent need for enhanced learning and understanding of disaster, particularly to protect the vulnerable from the effects of increasing risk. Building on the disaster forewarning field, we introduce the prototype of the open PERC methodology: for systemically and historically assessing disaster events, and identifying actionable recommendations. PERC models are useful for studying the nature and impact of disasters and for incorporating decisions in disaster risk management. This also includes studying challenges despite variations in context, indicating uncertainty potentials for manual learning. These sources highlight the importance of integrated risk in distinct examples. We also assert the feasibility of the analytically explicit PERC approach and contribute to building a repository of learning on disaster risk management and resilience.

1. Introduction

Disaster risk is growing at an unprecedented rate. In some low- and middle-income countries, growth in disaster risk is outpacing economic growth (UNDRR, 2019). While the number of disaster events and the magnitude of their impacts are increasing (CGIAR-CSI, 2017; Marche, 2016; Swiss Re, 2015). The headline message from the Global Assessment Report on Disaster Risk Reduction 2017 is clear, while the Sendai Framework for Action 2015-2030 (United Nations, 2015) has renounced a successful outcome in disaster mortality (in relative terms), in many places there has been significant access to enduring the substantial increase in economic losses from disasters (UNDRR, 2015b, 2017). These disaster impacts have profound and long-lasting effects on development and well-being, and, in many cases, the wide-ranging and multi-faceted development progress achieved before these events occur.

There is much more that could be done to reduce disaster risk and prepare for future disasters. The 2015-2030 Sendai Framework for Disaster Risk Reduction (United Nations, 2015) provides the urgent need for learning about and understanding disaster events in the societal processes in which they arise. Disaster prevention is the need to understand and eventually remove trends in the future, which are leading to the increase in risk, namely hazard, exposure, and vulnerability (IPCC, 2013). Our preliminary conceptual (2016) identifies learning as central to building disaster resilience, with significant implications. Throughout disaster risk management (DRM) requires looking back and learning from past disaster events in order to achieve a forward-looking, resilient building. This study aims to expand the understanding of the nature of natural hazards and ways as well as increasing technical capacity to manage events and new, the current governance to achieve the goal for an approach that builds on structural and spatial protections. Building on to provide a methodology for informing the policy and practice of disaster risk reduction (DRR).
Deconstruction of key findings
What have we learnt using this approach?

Key findings from the PERCs conducted so far:
- DRM is catching up to larger exposures. More focus on secondary perils like flash and surface floods (mapping can be done!).

- Response spending still >> pre-event resilience investments

- Prevention investment still focuses on protecting physical structures and not enough on “no-regret” solutions, NBS, green engineering etc.

- Infrastructure protection produces false sense of security (“levee effect” - Tobin, 1995)

- Few incentives exist to encourage “building back better”

- Marginalized and most vulnerable groups suffer the most

Find this “PERC medley” report here: https://www.zurich.com/en/knowledge/articles/2019/05/events-are-natural-disasters-are-not
Deconstruction of key findings

Key findings (cont’d)

• Planning and resilience building are sound investments. Consider “5C-4R” approach as part of business continuity planning.

• EWS are effective, reduce ~40% of losses

• The vulnerability of critical infrastructure is often overlooked

• Disasters do not respect jurisdictional boundaries.

• Event return periods language leads to complacency and surprise when disasters occur (“100 year flood”). Change language use.

• The first line of defense is proactive: Prospective risk reduction.
Flood Resilience – Events are natural, disasters are not
The Disaster Risk Management (DRM) cycle

Role of Insurance as part of the integrated Risk Management Cycle

The DRM Cycle

Preparedness
The precautionary actions taken prior to hazard events

Response
The actions taken during and immediately after a disaster to contain or mitigate disaster impacts

Prospective Risk Reduction
The actions taken to avoid the build-up of new or increased risks

Recovery
The actions taken after a disaster (either in the short- or long-term) to help people cope with disaster impacts

Corrective Risk Reduction
The actions taken to reduce risk to already at-risk assets
Flood Resilience – Events are natural, disasters are not

The creation of risk. 1. Understand the hazard

What can you do? Conduct a hazard assessment

- Consult flood hazard maps
- Historical flood information
- Use predictions about future climate change impacts on flood (and other) hazards based on the lifetime of your infrastructure
- See it probabilistically (“x percent chance of occurrence in any given year”)
- Sign up to weather alerts / early warning systems. Designate responsibility and train staff
Flood Resilience – Events are natural, disasters are not
The creation of risk. Avoid the creation of new risk

What can you do? Don’t create new exposure in hazard zones
- Be proactive about hazards when thinking about development (natural hazards as part of disaster risk management strategy)
- Natural hazards are a location-based factor that should be priced
- Don’t assume it is safe just because it has not happened yet
Flood Resilience – Events are natural, disasters are not
The creation of risk. Manage your existing risk. Reduce vulnerability

We need to address risk holistically, i.e. look at hazard, exposure, vulnerability

Risk = Hazard x Exposure x Vulnerability

What can you do?
- Build climate-smart and risk-informed (leave space for water; avoid putting concrete; use climate-smart materials and color, etc.)
- Use latest building codes and best practice for natural hazards
- Consider natural hazards for operations, inventory and supply chain, not just the physical structure
- Consider flood hazard and climate change adaptation in every maintenance and upgrade project
- See risk management as an investment, not a cost
- What’s the cost of doing nothing?
- Get the right insurance coverage

Social and physical vulnerability to the hazard
Flood Resilience – Events are natural, disasters are not
Location-specific guidance on flood resilience

Flood Resilience – Events are natural, disasters are not
Concluding remarks / take home messages

- Events are natural, disasters are not (!) There’s a lot we can do pre-event

- Resilience is a broad and rich concept going beyond infrastructure / “engineering” protection: The 5C-4R model

- Integrate development and prevention thinking → Resilience is a forward-looking concept. Plan in future changes over the lifetime, not just past statistics

- Prevention is an investment, not a cost. Incentivize prevention in your organization

- Building resilience to natural hazards is a multi-step and multi-stakeholder approach

- Collaboration and combination of prevention elements into a prevention strategy is key

- Insurance for natural hazards is an important element. But: A risk insured is not a risk reduced
Announcement: EGU NH9 session on forensics!

Thank you

Zurich Insurance Group – Flood Resilience
https://www.zurich.com/flood-resilience

Photo: Michael Szőnyi
This publication has been prepared by Zurich Insurance Group Ltd and the opinions expressed therein are those of Zurich Insurance Group Ltd as of the date of writing and are subject to change without notice.

This publication has been produced solely for informational purposes. All information contained in this publication have been compiled and obtained from sources believed to be reliable and credible but no representation or warranty, express or implied, is made by Zurich Insurance Group Ltd or any of its subsidiaries (the ‘Group’) as to their accuracy or completeness.

This publication is not intended to be legal, underwriting, financial, investment or any other type of professional advice. The Group disclaims any and all liability whatsoever resulting from the use of or reliance upon this publication. Certain statements in this publication are forward-looking statements, including, but not limited to, statements that are predictions of or indicate future events, trends, plans, developments or objectives. Undue reliance should not be placed on such statements because, by their nature, they are subject to known and unknown risks and uncertainties and can be affected by numerous unforeseeable factors.

The subject matter of this publication is also not tied to any specific insurance product nor will it ensure coverage under any insurance policy.

This publication may not be distributed or reproduced either in whole, or in part, without prior written permission of Zurich Insurance Group Ltd, Mythenquai 2, 8002 Zurich, Switzerland. Neither Zurich Insurance Group Ltd nor any of its subsidiaries accept liability for any loss arising from the use or distribution of this publication. This publication does not constitute an offer or an invitation for the sale or purchase of securities in any jurisdiction.

The Group does not assume any responsibility for the linked third party website, including its content and operation. The Group does not control, endorse, monitor or review such third party website.
More resources to understand the Alliance

- Zurich Flood Resilience Program webpage: [https://www.zurich.com/flood-resilience](https://www.zurich.com/flood-resilience)


- Four-pager explaining the approach in text and illustrations: [https://floodresilience.net/resources/item/the-flood-resilience-measurement-for-communities-frmc](https://floodresilience.net/resources/item/the-flood-resilience-measurement-for-communities-frmc)

- The Alliance knowledge & learning webpage: [http://floodresilience.net/](http://floodresilience.net/)

More resources – Scientific output (selection)