Flood resilience in Indonesia - Identification of innovations using the Lead User method

Moritz Goeldner
Daniel Kruse
Dr. Stephan Buse
Prof. Dr. Cornelius Herstatt

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Technology and Innovation Management at Hamburg University of Technology

Brief project summary

- **Project partner:** The International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva and Jakarta, the Indonesian Red Cross (Palang Merah Indonesia, PMI) and the Institute for Technology and Innovation Management (TIM) at Hamburg University of Technology (TUHH)
- **Project aim:** Identification of local innovations in rural and semi-urban areas in Indonesia that reduce the impact of floods to local communities and the environment
- **Methodology:** Applying the Lead User Method in order to thoroughly understand the most relevant macro and micro drivers causing floods in Indonesia and to identify promising local solutions developed by Lead Users

Causes of floods are top-down and can hardly be tackled by individuals

Our research goal:
Identifying local innovations – bottom up – for flood resilience in Indonesia

The Lead User Method

a method to identify local innovation

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Step I
Start of the Lead User process

- Kick-off workshop in Jakarta with PMI, IFRC, and TIM
- Defining the project scope: fluvial or pluvial floods, in rural or semi-urban areas with the origin preferably in Indonesia

Step II
Identification of Needs & Trends

- 210 experts were approached, 48 interviews were conducted
- Scanning of literature, internet, databases
- Selection of most relevant macro and micro drivers of floods in Indonesia

Step III
Identification of Lead Users

- Networking-based search for Lead Users lead to 25 solutions
- Field trip for 11 days across Indonesia to meet 5 Lead User, 4 experts, and visit 5 flood prone villages

Step IV
Concept Design

- Presentations, marketplace exchange and discussions among Lead Users at 1st Innovation in Flood Resilience Conference in Jakarta
- Ongoing: Evaluation and documentation of the concepts for further development and scaling

Adapted from Lüthje, C. and Herstatt, C., 2004. The Lead User method: an outline of empirical findings and issues for future research. *R&D Management*, *34*(5), pp.553-568.

International Federation of Red Cross and Red Crescent Societies

Macro driver & micro driver of floods in Indonesia

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Sea level rise

Change in rain pattern

Land subsidence

Drainage blocking

Reduction of absorption capacity of soil

Source: Result of expert interviews and literature screening

International Federation of Red Cross and Red Crescent Societies

Solutions

We identified 25 solutions clustered in 7 categories. 10 most promising examples are presented.

Tangible products	Nature-based	Education	Software & Apps	Community-based	Service & Business Model	Grassroot
4	5	1	3	4	3	5

10 selected solutions

A low-cost rain gauging device already used in several villages to warn about massive rainfall

A modern floating house to fight subsidence built with recycled plastics

A Black Soldier Fly (BSF) farm cultivating BSF that reduce organic waste and can be used as animal feed due to their high protein level

A nature-based solution called Vetiver grass forming a dense, permanent hedge preventing soil loss from runoff

A micro health insurance program which uses garbage as a financial resource to pay clinical services

A green board game that aims at sharing knowledge about environmental issues and on changing community behavior towards waste management

An app providing its users a social and hyperlocal ecosystem where users can exchange information about hazards

A holistic community-based waste management system - up to 92% of all waste can be either sold or reused

A river restoration movement that involves cleaning the river from waste and educating about the consequences of improper waste management

A virtual currency that incentivizes local communities to cultivate mangrove trees as a natural flood protection measure

Nine Lead User presented their innovative solutions during the first „Flood Resilience Innovation Conference" on Feb. 22nd and Feb 23rd in Jakarta.

Conclusion & next steps

The Lead User method was successfully implemented in the humanitarian sector in the area of flood resilience in Indonesia.

Next steps:

- Scientific evaluation of identified Lead User solutions
- Comparison of the Lead User method with alternative method to identify local innovations in Indonesia
- Enhancing support for further development of Lead User's solutions in Indonesia
- Dissemination of results in scientific journals and the humanitarian community
- Long-term goal: Implementation of the Lead User method in other target areas and/or other locations

Thank you for your attention!

Prof. Cornelius Herstatt, Dr. Stephan Buse, Daniel Kruse & Moritz Goeldner

Institute for Technology and Innovation Management
Hamburg University of Technology (TUHH)
TEL +49 40 42878-3775 • FAX +49 40 42878-2867
moritz.goeldner@tuhh.de

www.tuhh.de/tim