The Potential of Crowdsourcing and Mobile Technology to Support Flood Disaster Risk Reduction

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Get involved now!

Participate in these ongoing projects and join the citizen science movement to help us address global land cover issues.

**Picture Pile**
Sort pictures and win great prizes! You can help us tackle global issues like deforestation.

**FotoQuest Austria**
Join FotoQuest Austria and explore the outdoors! Help us monitor changes in land use and land cover.

**Geo-Wiki pictures**
Capture different landscapes using your smartphone and share with others through Geo-Wiki.

**LACO-Wiki**
Discover the new web portal to validate your map products from local to global scales.

Visualize and provide feedback!

Engage in global environmental monitoring and collaborate with leading scientists.
Satellite image interpretation via Geo-Wiki
- ~50K observations of human impact
- ~80K observations of cultivation
- ~4.6 million observations of cropland
More mobile phones than people and multiplying 5Xs faster than we are
Disaster Risk Management

- Post-disaster response: Building back (better)
  - Pre-disaster: Risk Management, Reducing Risk
    - Risk Preparedness
    - Risk Analysis
    - Risk Prevention
    - Zurich Radar
    - Geo-Risk Wiki, InaSAFE
    - Missing Maps
    - Capra

- Relief
- Reconstruction
- Recovery

- Disaster Event
- Peta Jakarta, Ushahidi, Twitter
- NonOSM, Tender
- GSD, Bing Maps

Examples:
- Social
- Inactive
- Proactive
Collecting flood heights and flood occurrence e.g. PetaJakarta Twitter
Mapping of exposed elements, e.g. through OSM, HOTOSM, Missing Maps Use of InaSAFE
InaSAFE integrates data from multiple sources including citizens and free software to build scenarios for planning, preparedness and response activities.
The diagram illustrates the concept of risk as a combination of hazard, vulnerability, and exposure. Hazards include earthquake, tsunami, floods, cyclones, bushfires, landslides, and volcanoes. Vulnerability factors are engineering, economic, and social. Exposure involves people, buildings, businesses, and infrastructure.
SVI for Rotterdam

Koks et al. 2015 in Environmental Science and Policy
Zurich Global Flood Resilience Alliance

• Partnership between Zurich Insurance Group, IFRC, IIASA, Wharton Business School and NGO Practical Action

• To put more emphasis on risk reduction ‘ex-ante’ as opposed to recovery ‘ex-post’
  – Needs a community-based holistic approach
  – Need better information

• Resilience: robustness, redundancy, resourcefulness, rapidity

• Case studies in Nepal and Peru
Community-based Vulnerability Mapping in Nepal (Karnali Basin)

- Digitize the maps in OpenStreetMap
- Export to QGIS and add attributes related to vulnerability / draw flood risk zones
- View collectively across 74 communities e.g. on Risk Geo-Wiki
- Decision-support, raising community awareness, building resilience
Mobile Phone Data Collection

Building survey
Added on Thu, Dec 03, 2015 at 14:54

Select the level of this analysis
- Single Building
- Street / Neighborhood

Building use
How is this building used?
- Residential
- Commercial
- Industrial
- Agricultural
- Other
- Unknown (?)

Wall frame / Construction
- Wood
- Metal
- Reinforced concrete
- Concrete block
- Brick
- Stone
- Mud

Satida Collect
Data Collection & Mapping

Required: Please record your location
GPS coordinates can only be collected when outside.

GPS Locatisation
Latitude: N 7°41'39", Longitude: E 18°37'34"
Altitude: 23m
Accuracy: 5m

Required: What is the MUAC for this child?
- Red
- Orange
- Yellow
- Green

What did the household consume during the last 24 hours? (optional)
- Cereals
- Roots/Tubers
- Pulses/ lentils
- Milk/ milk products
- Eggs
- Meat/ offal/ bowels
- Fish/ seafood
- Oil/ fat
- Snack/ candy
Other Potential Ideas for Crowdsourcing and Mobile Devices

• Validation of flood risk maps
  – Perception vs. reality
  – Documenting flood heights post-event

• Crowd-based app for tagging location of assets
  – Evidence of flood proofing
  – Documenting location of assets
  – Documenting damage
Thank you! Questions?