

**Open Cities Kathmandu:**  
Safer Schools through  
Community Mapping

Anil Pokhrel & Nama Raj Budhathoki  
Flagship 1 National Workshop : School Safety  
5 June 2013.

**OPEN CITIES**  
www.openstreetmap.org

**GFDRR**  
Global Facility for Disaster Reduction and Recovery

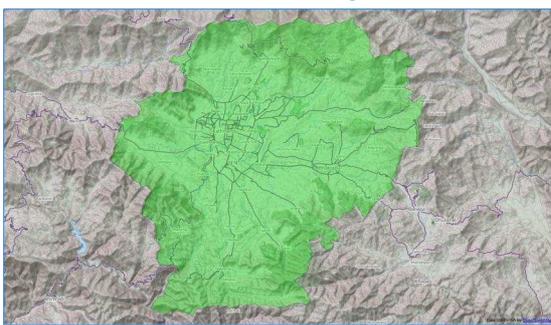
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Sustainable Development Department

### Open Cities Project Goals

1. Map major points of interest and critical infrastructure in Kathmandu Valley;
2. Collect exposure data of schools and health facilities in the Valley;
3. Share this data widely through open systems;
4. Sensitize, train and build a community around open openstreetmap and open data in Nepal;

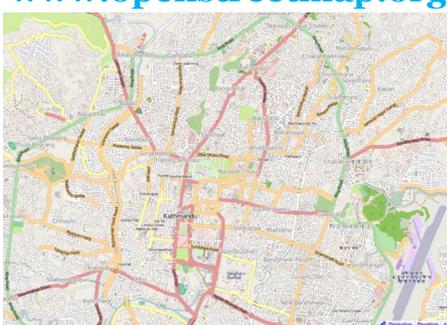
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### Kathmandu Valley



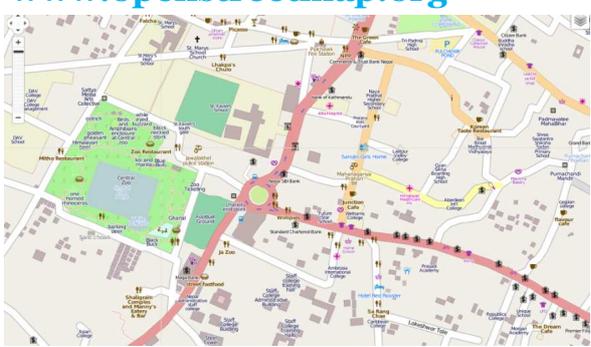
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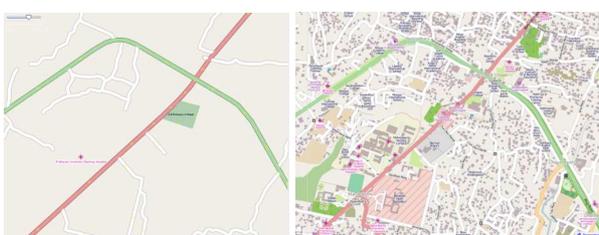
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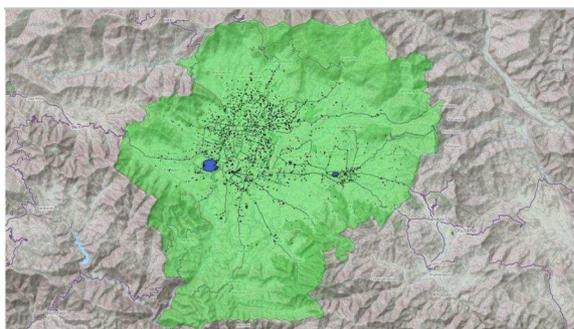
### Maharajjung, Narayan Gopal Chowk



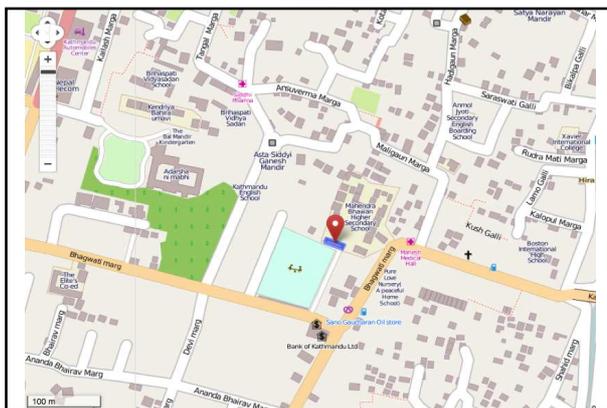
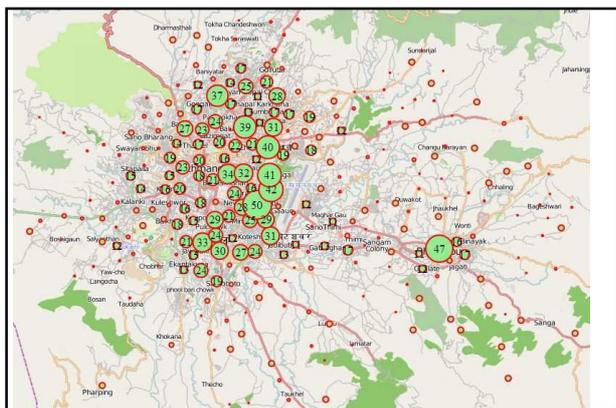
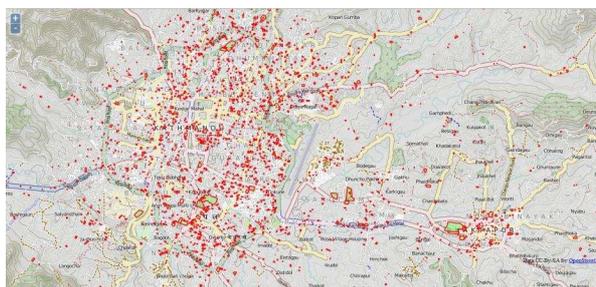
November 2012      Now

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## Where are our schools?



## Location of schools in KTM Valley



View Edit History Export

Data Close

View data for current map view

Hide areas

Mahendra Bhawan Higher Secondary School Details

amenity: school  
building\_count: 16  
isced:level: higher\_secondary  
management\_type: community  
name: Mahendra Bhawan Higher Secondary School  
personnel: 40  
students: 300  
Show History

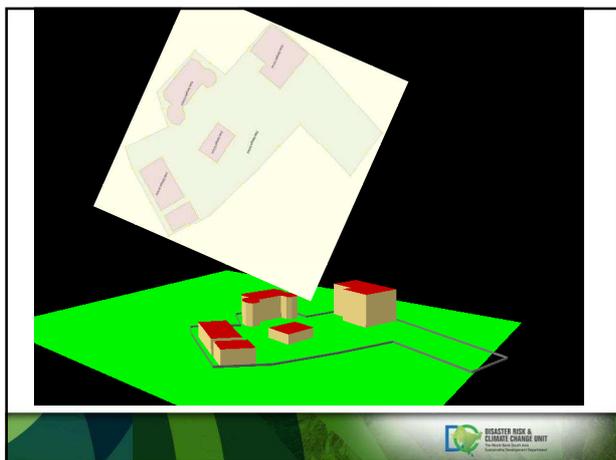
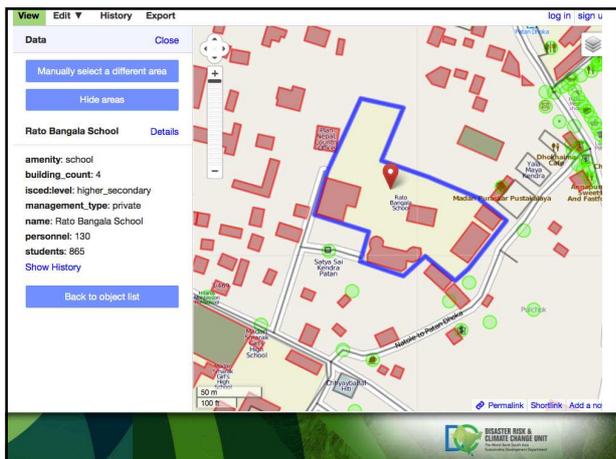
Back to object list

Disaster Risk & Climate Change Unit, National Institute of Technology, Surin

View Edit History Export log in sign up

building: school  
building:age: 1990-2000  
building:bays: 5  
building:baux: 2  
building:condition: Average  
building:floor\_material: RCC/RBC  
building:floor\_material:others:  
building:level: 2  
building:neighbour: Free\_Standng  
building:overhang: No  
building:owner: Self  
building:retrofit: No  
building:roof\_material: RCC/RBC  
building:roof\_material:others:  
building:roof\_slope: Flat  
building:roof\_slope:others:  
building:shape:elevation: Regular  
building:shape:plan: Rectangular  
building:soft\_storey: No  
building:structure: Non\_Engineered\_RCC\_Frame

Disaster Risk & Climate Change Unit, National Institute of Technology, Surin



**• We have already surveyed and mapped 1970 schools & 142 health facilities.**

**• In addition, we have created 85000 building footprints.**

### Update: mapping & initial exposure survey of Schools in KTM

- Total schools mapped: 1970
- Schools mapped and exposure survey completed in KTM valley : 1110 of 1799
- Mapping and exposure survey completed in additional 692 schools. Includes colleges and universities.
- Kathmandu: 728 of 1088
- Lalitpur: 169 of 396
- Bhaktapur: 213 of 315
- Plans to complete all schools by mid June 2013



## Comprehensive Process



1. Training

2. Field Kit

4. Field Measurement



5. Desk Work



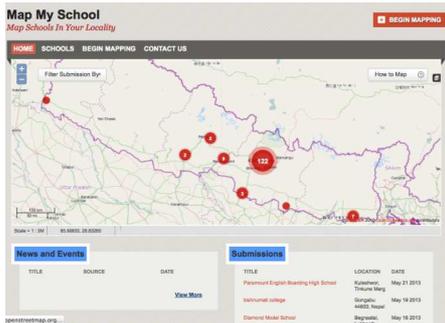
6. Validation



## Stories from the field

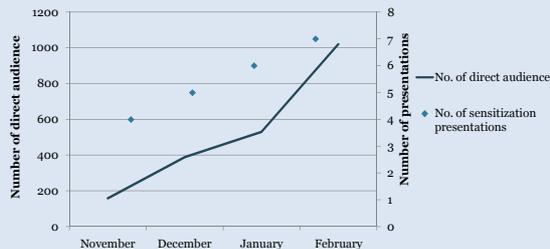


## www.mapmyschool.net



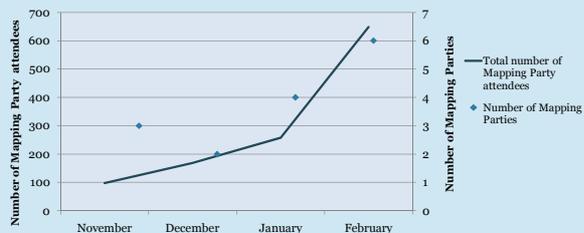
## Building Community

Reaching out to people through sensitization presentations



## Mapping Training

Number of Mapping Parties and Mapping Party attendees



## FaceBook Memberships

OSM members in FaceBook groups



## Philosophical root of this work

- No one knows everything, everyone knows something.
- A society that promotes the culture of data sharing is likely to prosper faster.
- Citizens have diverse motivations to participate in open mapping and knowledge sharing.

-Benkler, 2006

-Budhathoki, 2010

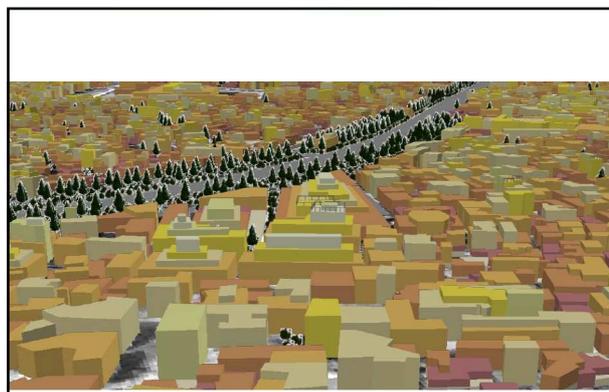


## Goal: Understand and Mitigate Risk



## Next steps

- Risk Assessment of community and private schools in KTM valley
- Component 1: Development of Input Datasets into Probabilistic Seismic Hazard Assessment and Historical Earthquake Loss Information
- Component 2: Development of Exposure Datasets and Vulnerability and Analysis of Community Schools, Private Schools, and Education related Administrative Buildings
- Component 3: Probabilistic and Deterministic Hazard and Risk Analysis for Kathmandu Valley
- Component 4: Visualisation, Analysis, and Results



Bhattarai 2010, JICA. Visualization of housing typology. New Baneswor Area of Kathmandu digitized and covered into 3D.



## Seismic Safety Program

<p><b>Ongoing</b></p> <p>SESP ADB World Bank/ Japan PHRD - Grant for pilot retrofit of schools Norwegian Government</p>	<p><b>Understanding Risk</b></p> <ul style="list-style-type: none"> <li>- Investment required</li> <li>- Appropriate approaches</li> <li>- Prioritization</li> <li>- Cost benefit analysis</li> </ul>	<p><b>Potential</b></p> <p><b>Seismic Resilience Program</b></p> <ul style="list-style-type: none"> <li>• School safety for KTM Valley</li> <li>• Safe schools in Nepal</li> <li>• Method: Retrofitting program and backup of country systems</li> </ul>
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## Using common platform

- Linkage with existing EMIS, DOE webpage
- Mapping schools where awareness trainings have been completed
- Mapping retrofitted schools



## Other usage

- Geonode: Sharing & Communicating Risk Information  
[www.geonode.com](http://www.geonode.com)
- Serves as foundation to develop decision making tools and development of applications

