ASSESSING THE FEASIBILITY OF USING LOCAL SPATIAL KNOWLEDGE IN DISASTER RISK MANAGEMENT IN GEORGIA

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BACKGROUND AND PROBLEM STATEMENT

Background
- DRM;
- Risk (Hazard, vulnerability and capacity);
- LSK is an oldest, accumulated practices/knowledge that is unique to certain local people in particular geographic area.

Problem statement
- Georgia is highly prone to natural hazards;
- There is also a lack of relevant detailed information needed for effective DRM, and a lack of interaction between local communities and government organisations.

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RESEARCH OBJECTIVES

Assess the feasibility of using local spatial knowledge about hazard, vulnerability, and coping capacity in DRM in Georgia.

1. Evaluate the existing situation in Georgia regarding DRM;
2. Critically review the methods of acquiring LSK from communities on hazards, vulnerability and coping capacity in a selected study area;
3. Test the potential for mapping LSK integrated with scientific knowledge;
4. Review the opportunity of acquiring and utilising LSK for DRM activities at different government levels.
RESEARCH METHODOLOGY

Objective 1
- Question 1, 2, 3, 4
- Existing articles, reports, documentation; Existing (non)geo information; Result from interviews.
- Literature review; Open ended interview.
- Chapter 3

Objective 2
- Question 1, 2, 3
- LSK on hazard characteristics, vulnerability and coping capacity
- Semi structured interview; Open-ended interviews; Mobile GIS (Arcpad;CB) connected with GPS; Photo mapping
- Chapter 2,4,6

Objective 3
- Question 1, 2, 3
- Data on hydrology, geology, geomorphology, landslide inventory, topo- maps, aerial photos, cadastral data, LSK, existing risk/hazard maps, etc.
- SPSS;MS Access; GIS environment (ArcGIS, ILWIS).
- Chapter 5

Objective 4
- Question 1, 2,
- Results from acquired and displayed LSK and other secondary data; results from interviews with officials.
- Observations and open-ended interviews
- Chapter 2,3,6
STUDY AREA (FIELDWORK IN KHELVACHAURI MUNICIPALITY, VILLAGE GONIO) AND WORKSHOP IN DUSHETI MUNICIPALITY

- Photo-mapping;
- Semi-structured interviews;
- Personal observations, open-ended interviews;
- 2 day fieldwork in Mleta using Cyber tracker;
MAIN FINDINGS FROM THE COUNTRY ANALYSIS REGARDING DRM

- Legal framework;
- Institutional framework
  Key institutions (NEA, EMD, MRDI);
- DRM is not a priority;
- Emergency respond oriented;
- Lack of detailed data.

Some progress
- International organizations, NGOs
  Matra project;

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FIELDWORK EXPERIENCE

About Tools

- Photo mapping;
- Semi structured interviews with GPS;
- Mobile mapping (Cybertracker).

About local people and government officials

- Local people indifferent;
- Officials are willing to use LSK but have to be cross checked;
INTEGRATION OF LSK AND EXPERT KNOWLEDGE ON HAZARDS

- Lack of detailed hazard maps at institutions;
- Lack of experience in flood hazard modeling;
- Landslide susceptibility map did not match with LSK;
- No credibility to LSK by the experts for LSK incorporation;
MAPPING VULNERABILITY AND CAPACITY

- Vulnerability was not cross checked by the local people;
- Capacity as the other side of the vulnerability;
PURPOSES FOR ACQUIRING LSK

a) Local hazard, vulnerability and capacity assessment needed by NEA (pg45)

Challenges:
- Lack of staff;
- Vulnerability and capacity is not a priority for NEA
- Community participation.

b) Hazard/Incident reporting to central office of EMD or NEA

Challenges:
- Awareness campaign will be needed;
- Communication access;
- Incentives for people are necessary.
SOME GENERAL CONSTRAINTS AND OPPORTUNITIES FOR LSK USAGE BY INSTITUTIONS

Constraints
- Poor resources;
- No legal framework for LSK acquisition;
- The local communities indifference without incentives;

Opportunities
- Pressure from outside (international on-going projects);
- NGO’s are involved;
- ICT development is on-going;
- Institutions are willing to accept the LSK, but cross check is needed.
CONCLUSIONS

- Low priority of DRM by policy makers;
- Wider range of tools would be more appropriate;
- LSK is not perceived as fully reliable by institutions;
- Local hazard/incident reporting is more feasible than local vulnerability and capacity assessment;
- Local community not only as information providers but as well as actors;
RECOMMENDATIONS FOR FUTURE RESEARCH

Need for in-depth interviews with government officials for required information identification before fieldwork;

Organise community discussions for cross checking the individual responses about hazards, priorities, vulnerability, capacity and needs for risk reduction;
THANK YOU

მადლობთ
**RESEARCH QUESTIONS**

1. What is the legislative and institutional framework for DRM in Georgia?
2. What is the existing (geo) information related to DRM used by the key institutions?
3. What is the information gaps related to DRM of key institutions?
4. What is the attitude of institutions regarding LSK?

2. What methods are suitable for acquiring LSK about DRM in study area?
3. What LSK about DRM can be collected in the study area?
4. What are the advantages and disadvantages of methods used for LSK collection?
RESEARCH QUESTIONS

3
- What are the hazard/risk maps from different sources (LSK maps; scientific maps; Local official maps; Government Institution maps) potentially available in the study area?
- What are the differences between the maps?
- What LSK about vulnerability and coping capacity can be presented on the maps?

4
- How can LSK be used in the national and local level DRM activities?
- What are the main institutional opportunities and constraints to use LSK in DRM in Georgia?
Respondents' perception on high hazard frequency and intensity overlaid on Mayors' photo maps.

- Not everything matches.
STRUCTURED LSK ACQUIRED IN GONIO
EXISTING HAZARD/RISK MAPS AVAILABLE AT GOVERNMENT
DATA AND METHODS USED FOR LANDSLIDE SUSCEPTIBILITY MAPPING USING STATISTICAL APPROACH

Existing data:
- Engineering geological map from 80th
- Landslide inventory from Google Earth image
- Topographic map of 25:000 scale
- Cadaster 2006

Produced data:
- Lithology
- Active landslide
- Contour lines (digitized in ArcGIS)
- Land use
- Building

Landslide susceptibility map:
- Lithology weight
- Slope weights
- Aspect weights
- Land use weight

Physical vulnerability assessment:
- Building vulnerability

Landslide assessment:
- Landslide Susceptibility map

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GENERAL PROCEDURE FOR HAZARD, VULNERABILITY AND CAPACITY ASSESSMENT

<table>
<thead>
<tr>
<th>Local Authority (Commune, village level) community members, NGO’s</th>
<th>Municipal, Regional or National level Institution (NEA)</th>
<th>Municipal, Regional or National level Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and select key informants</td>
<td>Preliminary meeting with mayors and selected key informants</td>
<td>Data processing and structuring in PC (MS Access)</td>
</tr>
<tr>
<td>Satellite (photo) mapping for vulnerability types identification (purposive sampling)</td>
<td>Pilot survey for LSK category identification for (semi) structured interviews</td>
<td>Data analysis</td>
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<tr>
<td>Random sampling within each homogenous units (based on the purposive sampling)</td>
<td>HH survey for LSK</td>
<td>Initial results</td>
</tr>
<tr>
<td>Community group discussion using (timeline, ranking, satellite (photo) mapping)</td>
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<td>Modification</td>
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<tr>
<td>Cross checking the initial results with community and experts from NEA</td>
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<td>Final results</td>
</tr>
<tr>
<td>Feedback to local authority and community members</td>
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<td>Other relevant institutions</td>
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<tr>
<td></td>
<td></td>
<td>MRDI Mitigation/prevention: Structural measures Spatial planning</td>
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<td></td>
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<td>EMD Preparedness Emergency response</td>
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