Use of geo-referenced data for DRM in Central Asia, problems and prospective

Dr. Akylbek Chymyrov
Director, Kyrgyz Center of Geoinformation Systems
Member of the Public Supervisory Board, MES KR
KSUCTA, Bishkek, KYRGYZSTAN
E-mail: akybai2005@yahoo.com

Regional Workshop on Geo-referenced Disaster Risk Management System for South and South-West Asia, and Central Asia
10-12 July 2012, Kathmandu, Nepal

The Central Asia and Caucasus

Source: Sushil Gupta (2009) CAC DRM
The Central Asia and Caucasus

<table>
<thead>
<tr>
<th>Country</th>
<th>Pop (2000)</th>
<th>% Male</th>
<th>% Rural</th>
<th>% Unemployed</th>
<th>% Below poverty line</th>
<th>Annual FIS growth %</th>
<th>Urban Pop 2005 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>29.8</td>
<td>0.7</td>
<td>3.00</td>
<td>4.0</td>
<td>101</td>
<td>26.5 (2006 est)</td>
<td>-0.3</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>86.6</td>
<td>2.1</td>
<td>8.57</td>
<td>11.4</td>
<td>99</td>
<td>24.0 (2005 est)</td>
<td>1.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>68.7</td>
<td>1.7</td>
<td>4.40</td>
<td>5.8</td>
<td>63</td>
<td>31.0 (2006)</td>
<td>-0.8</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>2,724.9</td>
<td>65.0</td>
<td>18.48</td>
<td>20.6</td>
<td>6</td>
<td>13.8 (2007)</td>
<td>1.1</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>199.9</td>
<td>4.8</td>
<td>5.24</td>
<td>7.0</td>
<td>26</td>
<td>40.0 (2004 est)</td>
<td>1.0</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>142.6</td>
<td>3.4</td>
<td>6.74</td>
<td>8.9</td>
<td>47</td>
<td>60.0 (2007 est)</td>
<td>1.5</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>488.1</td>
<td>11.6</td>
<td>4.96</td>
<td>6.6</td>
<td>10</td>
<td>30.0 (2004 est)</td>
<td>1.3</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>24.7</td>
<td>10.7</td>
<td>26.97</td>
<td>36.7</td>
<td>60</td>
<td>33.0 (2004 est)</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>4,169.0</td>
<td>100.0</td>
<td>75.26</td>
<td>100.0</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Source: World Bank estimates

Natural and Man-Made Hazards

Central Asia and Caucasus are particularly exposed to many natural hazards like earthquakes, its secondary effects, and man-made hazards.
Earthquakes represent the dominant natural risk followed by droughts and floods.
Country Risk Profiles - Azerbaijan

Droughts, floods and earthquakes are significant natural risks.

Country Risk Profiles - Georgia

Landslides and earthquakes are significant natural risks.
Country Risk Profiles - Kazakhstan

Earthquakes are the dominant natural risk followed by landslides and floods.

<table>
<thead>
<tr>
<th>Disaster Risk Statistics (1988-2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disaster type</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Earthquake</td>
</tr>
<tr>
<td>Flood</td>
</tr>
<tr>
<td>Landslide</td>
</tr>
<tr>
<td>Extensive Temperatures</td>
</tr>
<tr>
<td>Epidemic</td>
</tr>
<tr>
<td>Transport Accidents</td>
</tr>
<tr>
<td>Miscellaneous Accidents</td>
</tr>
<tr>
<td>Industrial Accidents</td>
</tr>
</tbody>
</table>

Source: Sushil Gupta (2009) CAC DRMI

Country Risk Profiles - Kyrgyzstan

Earthquakes are the dominant natural risk followed by landslides, avalanches and floods.

<table>
<thead>
<tr>
<th>Disaster Risk Statistics (1988-2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disaster type</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Earthquake</td>
</tr>
<tr>
<td>Flood</td>
</tr>
<tr>
<td>Landslide</td>
</tr>
<tr>
<td>Avalanche</td>
</tr>
<tr>
<td>Epidemic</td>
</tr>
<tr>
<td>Industrial Accidents</td>
</tr>
<tr>
<td>Transport Accidents</td>
</tr>
<tr>
<td>Miscellaneous Accidents</td>
</tr>
</tbody>
</table>

Source: Sushil Gupta (2009) CAC DRMI
Country Risk Profiles - Tajikistan

Floods are the dominant risk followed by earthquakes and landslides.

Country Risk Profiles - Uzbekistan

Earthquakes are the dominant risk followed by landslides, droughts and avalanches.
National Mapping and Emergency Management Agencies (Caucasus)

Armenia
- Ministry of Emergency Situations
- State Committee for the Real Estate Cadastre

Azerbaijan
- Ministry of Emergency Situations
- State Land and Cartography Committee

Georgia
- National Environmental Agency (NEA) of the Ministry of Environment Protection and Natural Resources (MoE)
- Emergency Management Department of the Ministry of Internal Affairs
- Department of Emergency Situations Coordination and Regime of Ministry of Labor, Health and Social Affairs
- State Cartography and Geodesy Organization (SCGO)

National Emergency Management and Mapping Agencies (Central Asia)

Kazakhstan
- Ministry of Emergency Situations
- Land Management Agency of the Republic of Kazakhstan

Kyrgyzstan
- Ministry of Emergency Situations
- Kyrgyz State Service for Cartography and Geodesy

Tajikistan
- State Committee on Emergency Situations and Civil Protection
- State Agency for Land Management, Geodesy and Cartography

Turkmenistan
- State Commission for Emergency Situations
- State Committee Geodesy, Cartography and Cadastre

Uzbekistan
- Ministry of Emergency Situations
- State Committee for Land Resources, Geodesy, Cartography and State Cadastre
Hyogo Framework for Action
2005-2015 (HFA)

Building the resilience of nations and communities to disasters - 5 Priorities for action:

- Make disaster risk reduction (DRR) a priority
- Know the risks and take action
- Build understanding and awareness
- Reduce risk
- Be prepared and ready to act

All countries in the region are actively involved in HFA - ISDR - Central Asia Partnership
National Platforms are established in Armenia, Azerbaijan, Georgia, Kazakhstan and Kyrgyzstan

Regional Initiatives and Projects

- Global Earthquake Model “Earthquake Model of Central Asia”
- InWent, GFZ, CAIAG Project
- “Cross Border Disaster Prevention in Central Asia”
- NATO Project
- “GIS for seismic risk assessment in Bishkek and Tashkent cities”
- Swiss Disaster Risk Reduction Program in Central Asia
- UNICEF-USAID Project
- “Reducing vulnerability of children to disasters in Kyrgyzstan”
- UNDP Project: “Enhancing Disaster Risk Reduction Capacities in Central Asia”
- Central Asia and Caucasus Disaster Risk Management Initiative
International Trainings within the Project “Cross Border Disaster Prevention in Central Asia”

Kazakhstan, Almaty, KazNU – 8 participants
07.07-09.07.09

International Trainings within the Project “Cross Border Disaster Prevention in Central Asia”

Kyrgyzstan, Bishkek, KSUCTA – 12 participants
29.06-01.07.09
International Trainings within the Project
“Cross Border Disaster Prevention in Central Asia”

Tajikistan, Dushanbe, TTU – 10 participants
07.07-11.07.09

Turkmenistan, Ashkhabad, ISS – 10 participants
24.11-26.11.09
International Trainings within the Project “Cross Border Disaster Prevention in Central Asia”

Uzbekistan, Tashkent, IS – 12 participants
22.06-24.06.09

UN-SPIDER Expert Meeting “Managing Disasters using Space-based Information in Central Asia”

Kyrgyzstan, Bishkek, KSUCTA, 26.08.2009

Participants:
UN-SPIDER, UNOCHA, UNDP, DLR, Z_GIS, Representatives of Ministries and Committees of the Central Asian countries

• Disaster Management and Risk Reduction in Central Asia – Current Status and Needs/Expectations

• Discussion/Working Session
  ✓ Data Access – Sharing and Availability
  ✓ Local Capacities and Capacity Building
  ✓ National/Regional DM Policies and Plans
Results and lessons learned -1

- Trainings are very demanded by all involved participants and especially by specialists from the Government agencies and institutions in Disaster risk reduction and emergency management
- Central Asian countries have paper format topographic maps for all territories with good quality and resolution developed during SU period
- The importance of Geoinformation technology in DRR underestimated by the National Agencies in DRR and EM (GIS ≠ Maps!)
- Number of natural and technogenic disasters in the CA Region is rising (climate change, economic and demographic problems)

Results and lessons learned - 2

- All Central Asian countries do not have developed national geodatabases and NSDI for the efficient and timely data acquisition and analysis
- Regional cooperation between all involved Mapping and Emergency management agencies and institutions needs to be strengthened
- Realization of damage and vulnerability analysis methods should be developed in the international and regional scale by taking into account the national peculiarities and data standards
- Government capacities in Central Asia on implementation and use of geospatial data should be improved (sustainability of capacity building)
Problems/Needs identified

- Lack of reliable and accurate geo-referenced data of needed scale and resolution for large areas for DRR and timely early recovery;
- Insufficient professional level of specialists working in geodata processing and database management (capacity building);
- Lack of National/Regional Spatial Data Infrastructure or Standardized information system;
- National legal restrictions on data sharing – state security issues, commercial and political value of geodata;
- International/Regional Data Standards and Metadata issues;

Potential and prospective - 1

- Governments of Central Asian countries aware on the importance of DRR and EM activities
- There are number of International/Regional projects on DRR and EM ongoing, which need standardized geo-referenced datasets
- The Central Asian Institute of Geosciences (CAIAG) in Bishkek is one of leading regional institutions on geo-referenced data development and distribution (web-portal with geodatabases for all Central Asian countries at www.caiag.kg)
- Geo-referenced datasets of main and thematic map layers for Kyrgyzstan are developed by the Kyrgyz Center of GIS and available for DRR activities
Regional networking for the efficient and sustainable development of the geo-referenced data management for DRM
Active involvement of the Ministry of Emergency Situations in wider use of RS Data and GIS is planned;
Development of the standardized information system for collection, storage, management and visualization of the geo-referenced data (Geo-Portal?);
Establishment of the online network of DRR experts to remove the gap on regional cooperation
Strengthening of RS&GIS capacities of State Agencies on DRR

Thank you for attention!