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: akylbek2005@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 DRMI

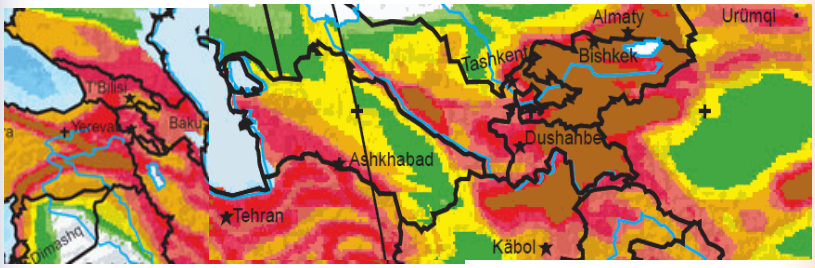
The Central Asia and Caucasus

Country	Area Km² ('000)	Area % of Region	Population Million	Population % of Region	Pop. density (km²)	% Pop. below poverty line*	Annual Pop. growth %	Urban Pop. (2006) %**	GDP growth annual %	GNI per capita PPP ($)
Armenia	29.8	0.7	3.00	4.0	101	26.5 (2006 est)	-0.3	64	13.7	5,900
Azerbaijan	86.6	2.1	8.57	11.4	99	24.0 (2005 est)	1.0	50	19.2	6,260
Georgia	69.7	1.7	4.40	5.8	63	31.0 (2006)	-0.8	51	12.4	4,770
Kazakhstan	2,724.9	65.0	15.48	20.6	6	13.8 (2007)	1.1	56	8.5	9,700
Kyrgyzstan	199.9	4.8	5.24	7.0	26	40.0 (2004 est)	1.0	34	7.4	1,950
Tajikistan	142.6	3.4	6.74	8.9	47	60.0 (2007 est)	1.5	24	7.8	1,710
Turkmenistan	488.1	11.6	4.96	6.6	10	30.0 (2004 est)	1.3	46	11.5*	5,300*
Uzbekistan	447.4	10.7	26.87	35.7	60	33.0 (2004 est)	1.4	36	9.5	2,430
Total	4,189.0	100.0	75.26	100.0						

Source: World Bank statistics:
(http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20535285~menuPK:1192694~pagePK:64133150~piPK:6413317 5~theSitePK:239419,00.html)
*https://www.cia.gov/
**http://www.adb.org/

Natural and Man-Made Hazards

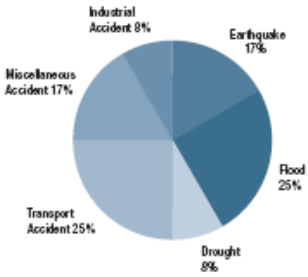
Central Asia and Caucasus are particularly exposed to many natural hazards like earthquakes, its secondary effects, and man-made hazards



Global Seismic Hazard Map - **GSHAP**

Region at Risk

Country Risk Profiles - Armenia



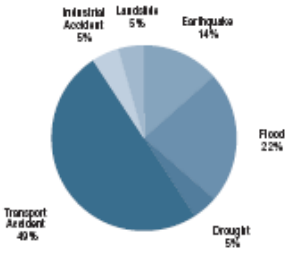
Disaster Risk Statistics (1988-2007)

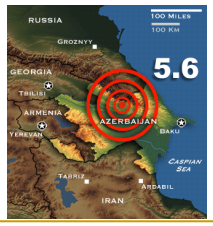
Disaster type	No. of disasters/ year	Total no. of deaths	Deaths/ year	Relative vulnerability (deaths/year/ million)
Earthquake	0.10	25,000	1,250	416.67
Flood	0.15	5	0.25	0.08
Drought	0.05		0.00	0.00
Transport Accidents	0.15	82	4.10	1.37
Miscellaneous Accidents	0.10	16	0.80	0.27
Industrial Accidents	0.05	21	1.05	0.35

Source: Sushil Gupta (2009) CAC DRMI

Earthquakes represent the dominant natural risk followed by droughts and floods

Country Risk Profiles - Azerbaijan





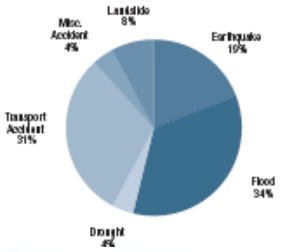
Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters / year	Total no. of deaths	Deaths/ year	Relative vulnerability (deaths/ year/ million)
Earthquake	0.15	33	2.00	0.19
Flood	0.25	16	0.80	0.09
Drought	0.05	-	0.00	0.00
Landslide	0.05	11	0.55	0.06
Transport Accidents	0.55	675	33.75	3.94
Industrial Accidents	0.05	25	1.25	0.15

Source: Sushil Gupta (2009) CAC DRMI

Droughts, floods and earthquakes are significant natural risks

Country Risk Profiles - Georgia



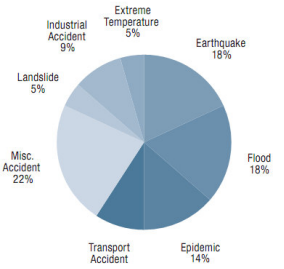
Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters / year	Total no. of deaths	Deaths / year	Relative vulnerability (deaths/year/ million)
Earthquake	0.25	118	6.00	1.34
Flood	0.45	10	0.50	0.11
Drought	0.05	-	0.00	0.00
Landslide	0.10	98	4.90	1.11
Transport Accidents	0.40	369	18.45	4.19
Miscellaneous Accidents	0.05	15	0.75	0.17

Source: Sushil Gupta (2009) CAC DRMI

Landslides and earthquakes are significant natural risks

Country Risk Profiles - Kazakhstan



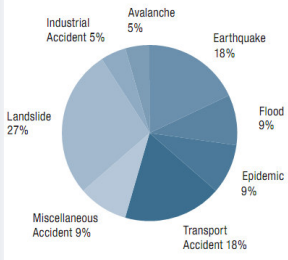
Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters / year	Total no. of deaths	Deaths / year	Relative vulnerability (deaths/year/ million)
Earthquake	0.20	15	0.75	0.05
Flood	0.20	10	0.50	0.03
Landslide	0.05	48	2.40	0.16
Extensive Temperatures	0.05	11	0.55	0.04
Epidemic	0.15	7	0.35	0.02
Transport Accidents	0.10	42	2.10	0.14
Miscellaneous Accidents	0.25	85	4.25	0.27
Industrial Accidents	0.10	64	3.20	0.21

Source: Sushil Gupta (2009) CAC DRMI

Earthquakes are the dominant natural risk followed by landslides and floods

Country Risk Profiles - Kyrgyzstan



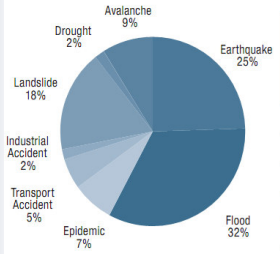
Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters / year	Total no. of deaths	Deaths/ year	Relative vulnerability (deaths/year/ million)
Earthquake	0.20	58	2.90	0.55
Flood	0.10	4	0.20	0.04
Landslide	0.30	238	11.90	2.27
Avalanche	0.05	11	0.55	0.10
Epidemic	0.10	22	1.10	0.21
Industrial Accidents	0.05	4	0.20	0.04
Transpot Accidents	0.20	88	4.40	0.84
Miscellaneous Accidents	0.10	21	1.05	0.20

Source: Sushil Gupta (2009) CAC DRMI

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

Country Risk Profiles - Tajikistan



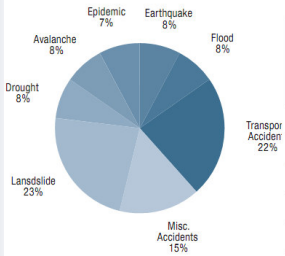
Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters / year	Total no. of deaths	Deaths/ year	Relative vulnerability (deaths/year/ million)
Earthquake	0.70	6,601	330.05	48.97
Flood	0.95	1,498	74.90	11.11
Landslide	0.50	339	16.95	2.51
Drought	0.05	-	-	0.00
Avalanche	0.25	100	5.00	0.74
Epidemic	0.20	171	8.55	1.27
Transport Accidents	0.15	124	6.20	0.92
Industrial Accidents	0.05	30	1.50	0.22

Source: Sushil Gupta (2009) CAC DRMI

Floods are the dominant risk followed by earthquakes and landslides

Country Risk Profiles - Uzbekistan



Disaster Risk Statistics (1988-2007)

Disaster type	No. of disasters/ year	Total no. of deaths	Deaths/ year	Relative vulnerability (deaths/year/ million)
Earthquake	0.05	9	0.45	0.02
Flood	0.05	-	-	0.00
Landslide	0.15	75	3.75	0.14
Drought	0.05	-	-	0.00
Avalanche	0.05	24	1.20	0.04
Epidemic	0.05	40	2.00	0.07
Transport Accidents	0.15	83	4.15	0.15
Miscellaneous Accidents	0.10	107	5.35	0.20

Source: Sushil Gupta (2009) CAC DRMI

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"