



# Overview of Water Environment Information and Data Management Status in Georgia

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## **CAREWIB Seminar on Development Water Environment Network in the South Caucasus**

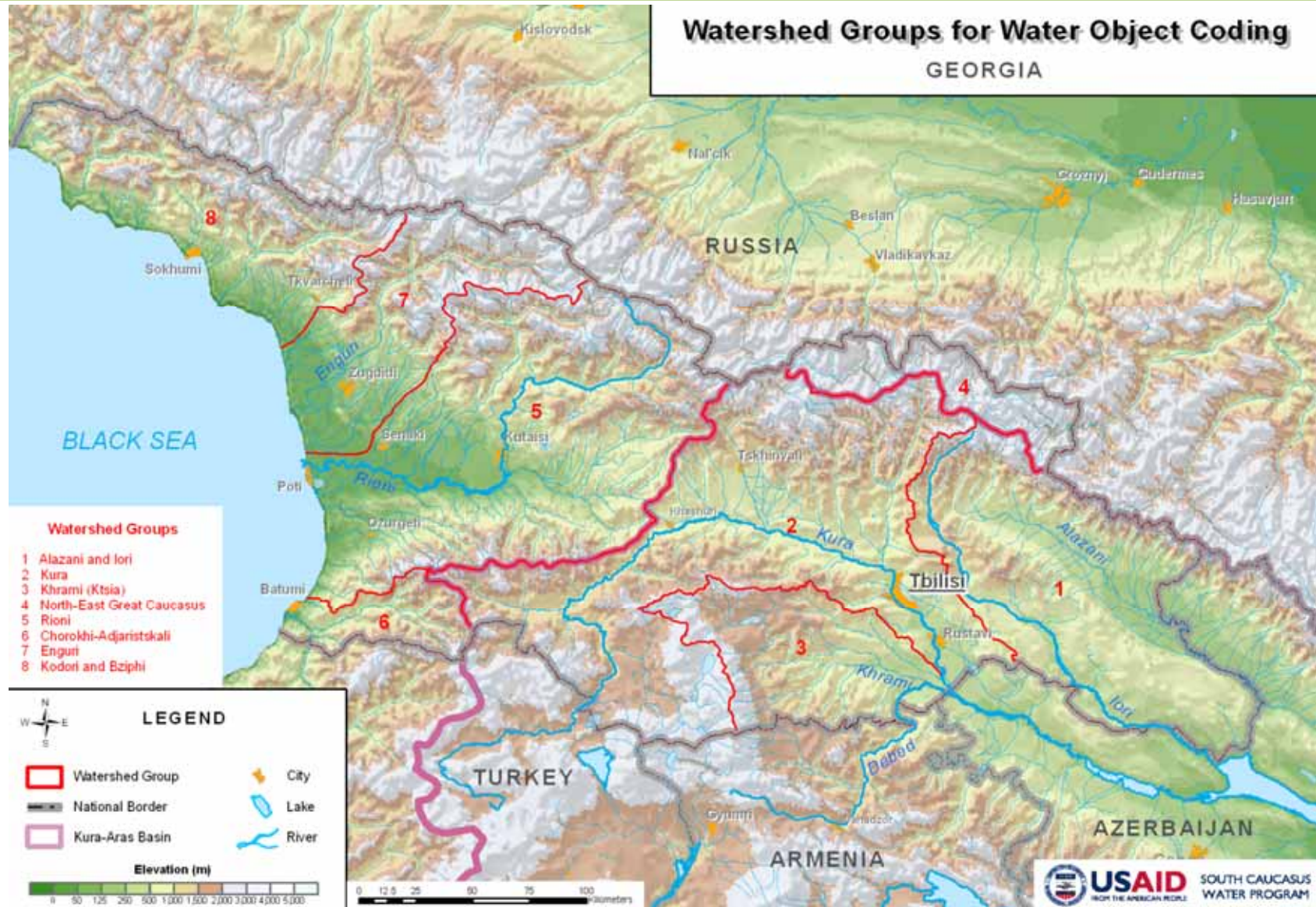
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## Hydrology Background

- Georgia is a very rich country with hydrological resources - both surface and ground waters
- Country is divided on the Black (39%) and Caspian Sea Basins (61%)
- There are more than **26,000** rivers in Georgia with total length of **58,976** km, 99% from which is a small river (up to 25 km, or smaller)
- There are 860 natural lakes with total area of 170 km<sup>2</sup> and 43 artificial water reservoirs, 35 of which belongs to the Caspian Sea Basin, total volume of which amounts 1703.8 mil. m<sup>3</sup> and 8 - to the Black Sea Basin with total volume of 1471 mil.m<sup>3</sup>



# Main Watersheds of Georgia



## Hydrology Background

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- Annual average water flow of the surface waters equals to 65.8 km<sup>3</sup>, 75% from which (49.7 km<sup>3</sup>) comes to the Black Sea Basin and only 25% (16,1 km<sup>3</sup>) to the Caspian Sea Basin rivers
- Major river of the Caspian Sea Basin within Georgia is Kura – with watershed area of 21,120 km<sup>2</sup>; other important watersheds, that at the same time are parts of the Kura, include: Alazani – 12,000 km<sup>2</sup> ; Khrami – 8,260 km<sup>2</sup>; Aragvi – 2,724 km<sup>2</sup>
- Two important watersheds of the Black Sea Basin are the Rioni Basin- 13,418 km<sup>2</sup> and the Enguri basin – 4,062 km<sup>2</sup>



## Hydrology Background

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- River flow in Georgia is generated by snow, rain, groundwater and glacier waters
- The richest water-flow period is spring (March-May): 47-58% of the annual flow; the poorest - winter and fall: 10-14% of the annual flow
- Hydrological characteristics of the Kura River - the main watercourse of the region (within Georgia):
  - mean annual maximum water discharge rate equals to **2,450** m<sup>3</sup>/sec
  - mean annual minimum water discharge rate - **12.0** m<sup>3</sup>/sec
  - average annual discharge -**180.0** m<sup>3</sup>/sec



## Water Use

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- **Approximately 1.2 billion cubic m of water per year are used by households, industry, agriculture, commerce, the public sector and for other consumption in Georgia**
- **The main water users in the basin are:**
  - Agriculture: cropland irrigation
  - Industry: chemical, construction materials, non-ferrous metallurgy, food processing
  - Municipalities: drinking water supply, sewerage
  - Energy sector : hydro and thermal energy generation
- **Current Supply/Demand statistics show that there is no deficit in water consumption balance among the different industry sectors in GEORGIA**



## Institutional Arrangement

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The **Ministry of Environment Protection and Natural Resources** is a key government agency for management of water resources in Georgia. The Ministry is responsible for:

- Regulation of surface and ground waters use
- Inventory of water resources
- **Licensing of water use**
- Water discharge permits
- Controlling efficient use of water resources
- Controlling industrial and municipal water discharges
- Monitoring quality and quantity of water resources through it's subordinate quasi-governmental institution: the **National Environmental Agency - NEA** (formerly HYDROMET)



## Water Quantity/Quality Monitoring

- Georgia had well developed network of hydrological monitoring in the mid 1980s. Observation was carried out on 76 hydrological stations, covering all major water bodies
- About 21 stations out of this number remains operational currently
- Equipment for 15 more fully automated stations have been purchased and will be installed in 2010
- Regular pollution monitoring (mostly chemical and morphological) was practiced at 113 observation points throughout Georgia
- Currently this number is reduced to 41 points, covering 22 rivers and 4 lakes

**Network of Hydrological Monitoring**



**Network of Water Quality Monitoring**





# Network of Hydrological Monitoring Stations

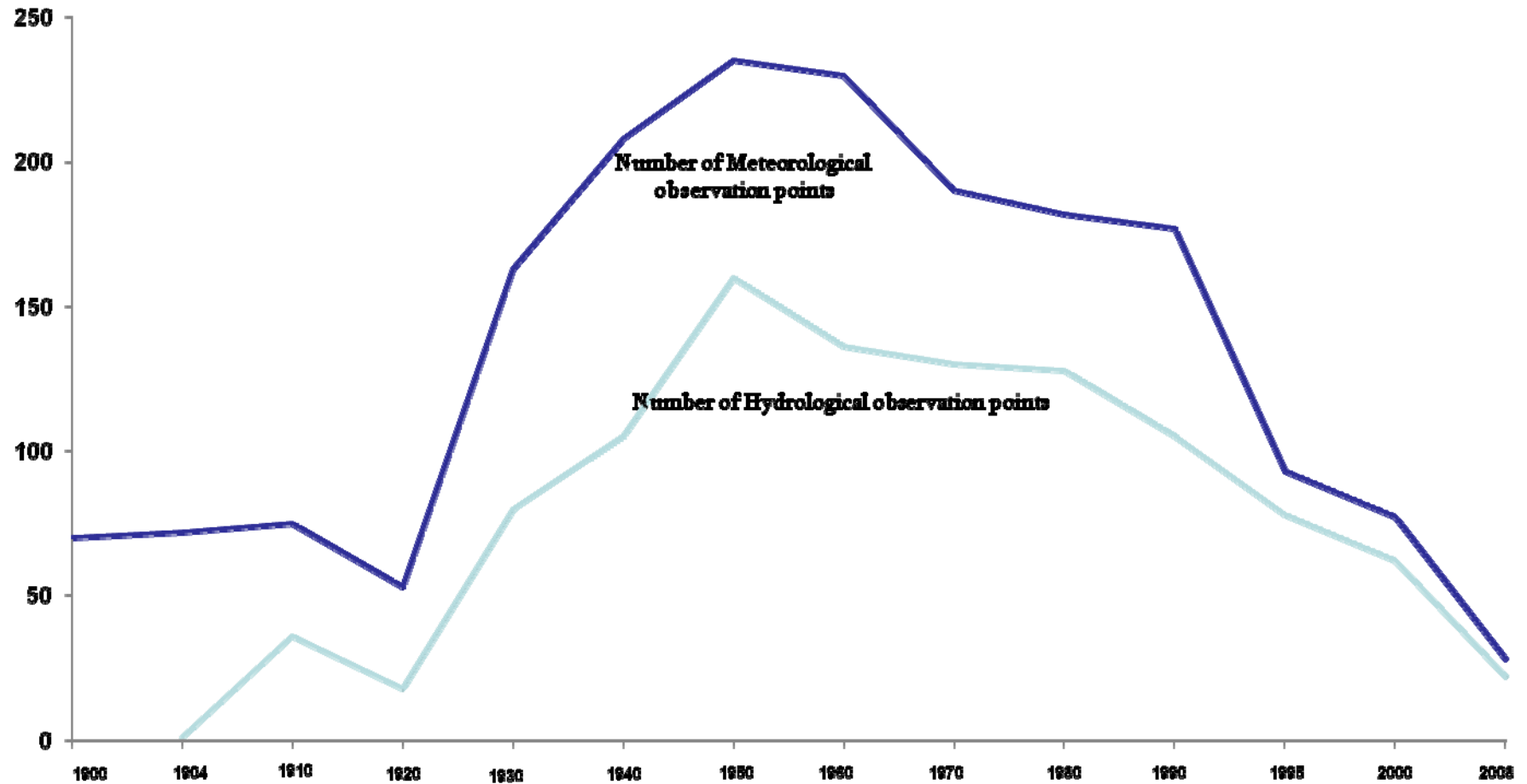


# Network of Water Quality Monitoring Stations

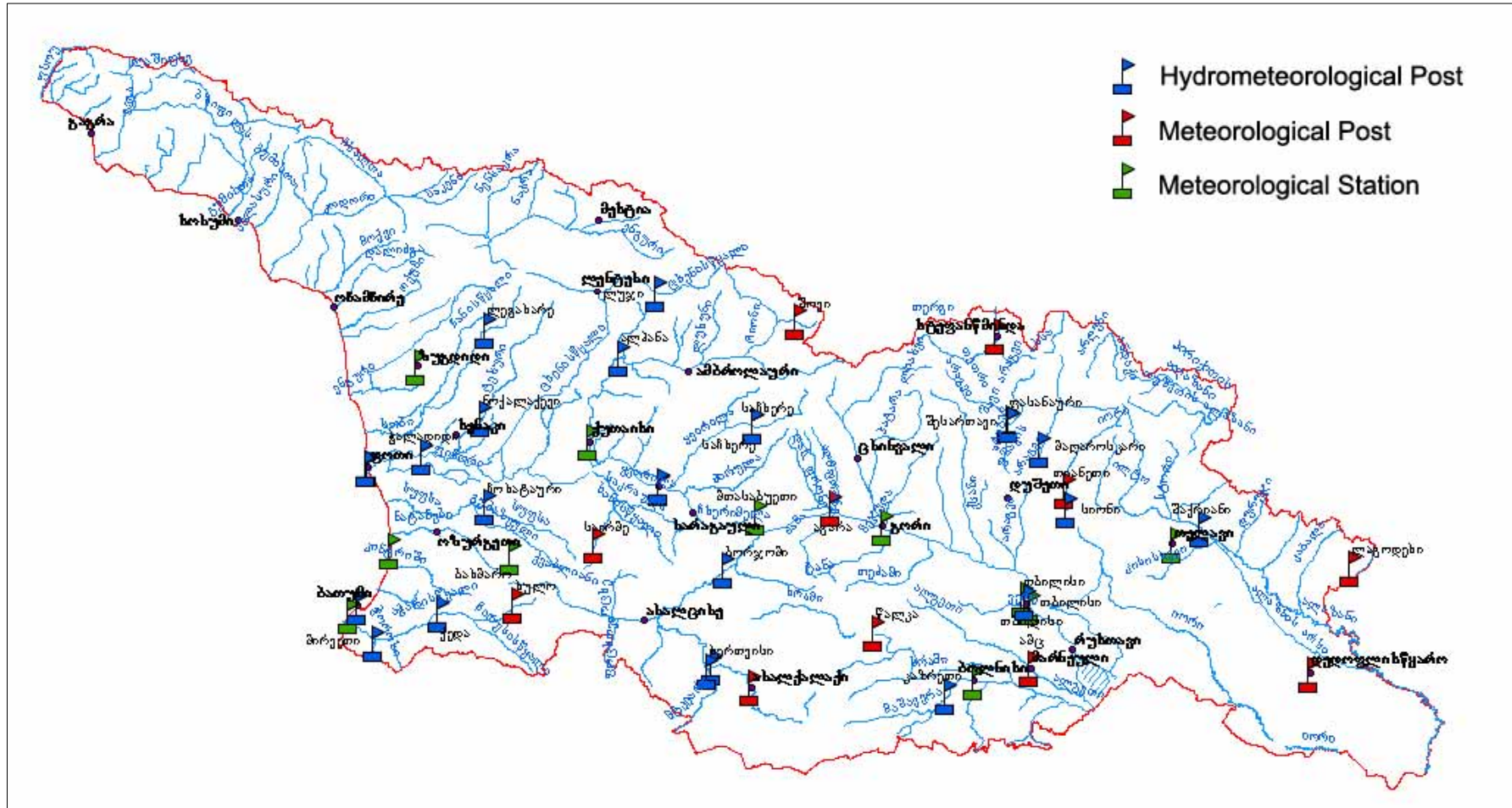


# Changes in the Number of Hydro-Meteorological Observation Points

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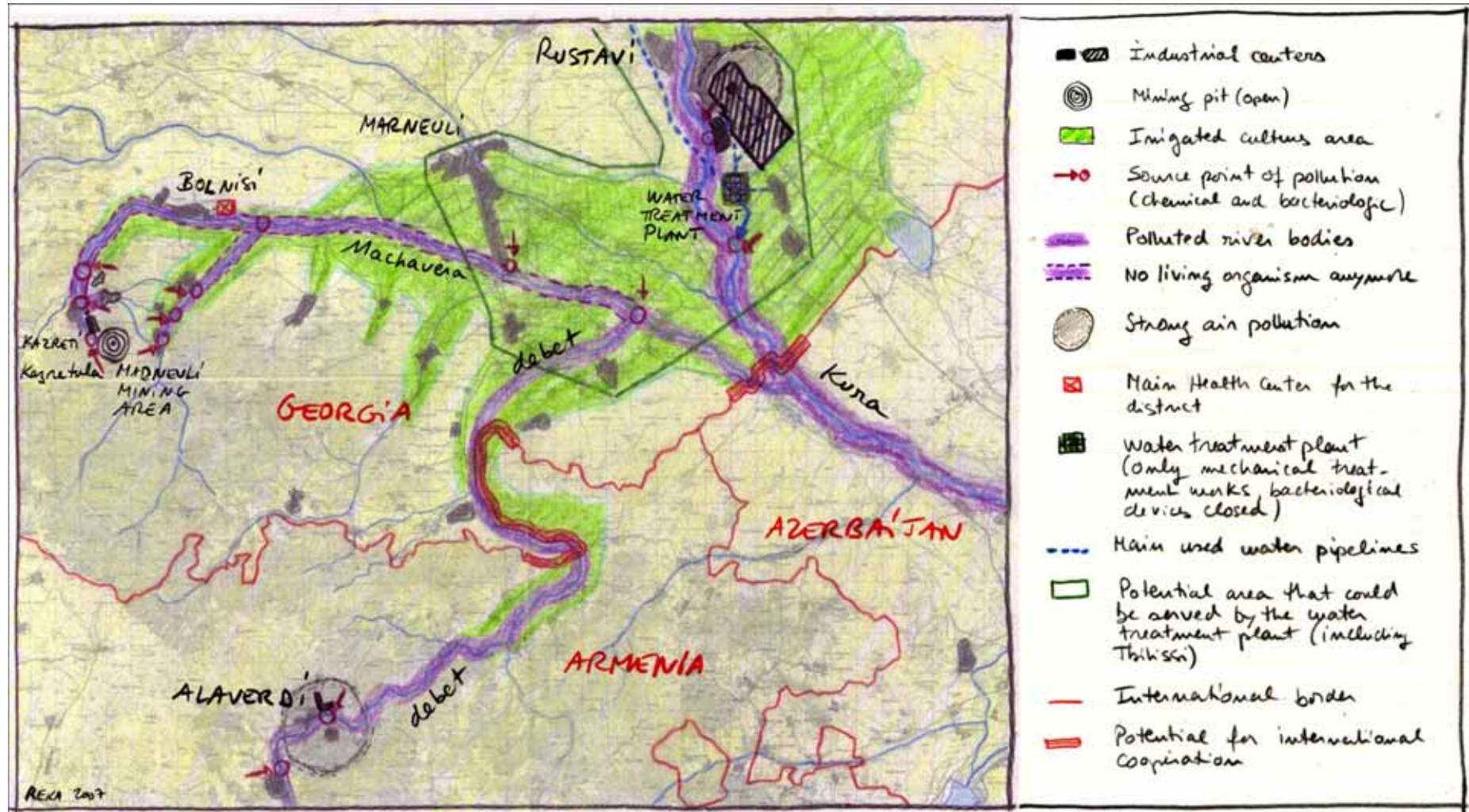


# Current Hydrometeorological Monitoring Network

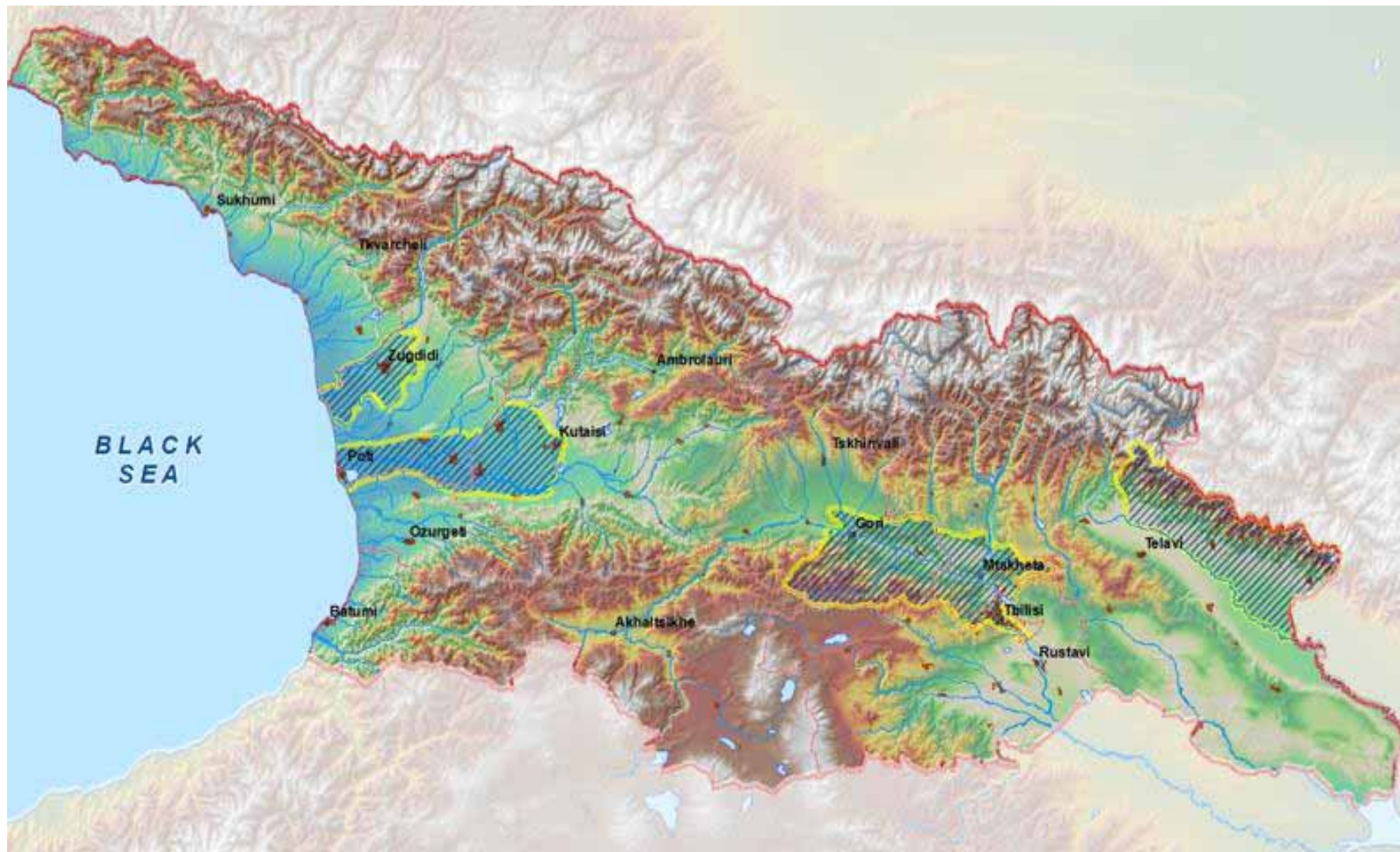




# Trans-boundary degradation of Surface waters

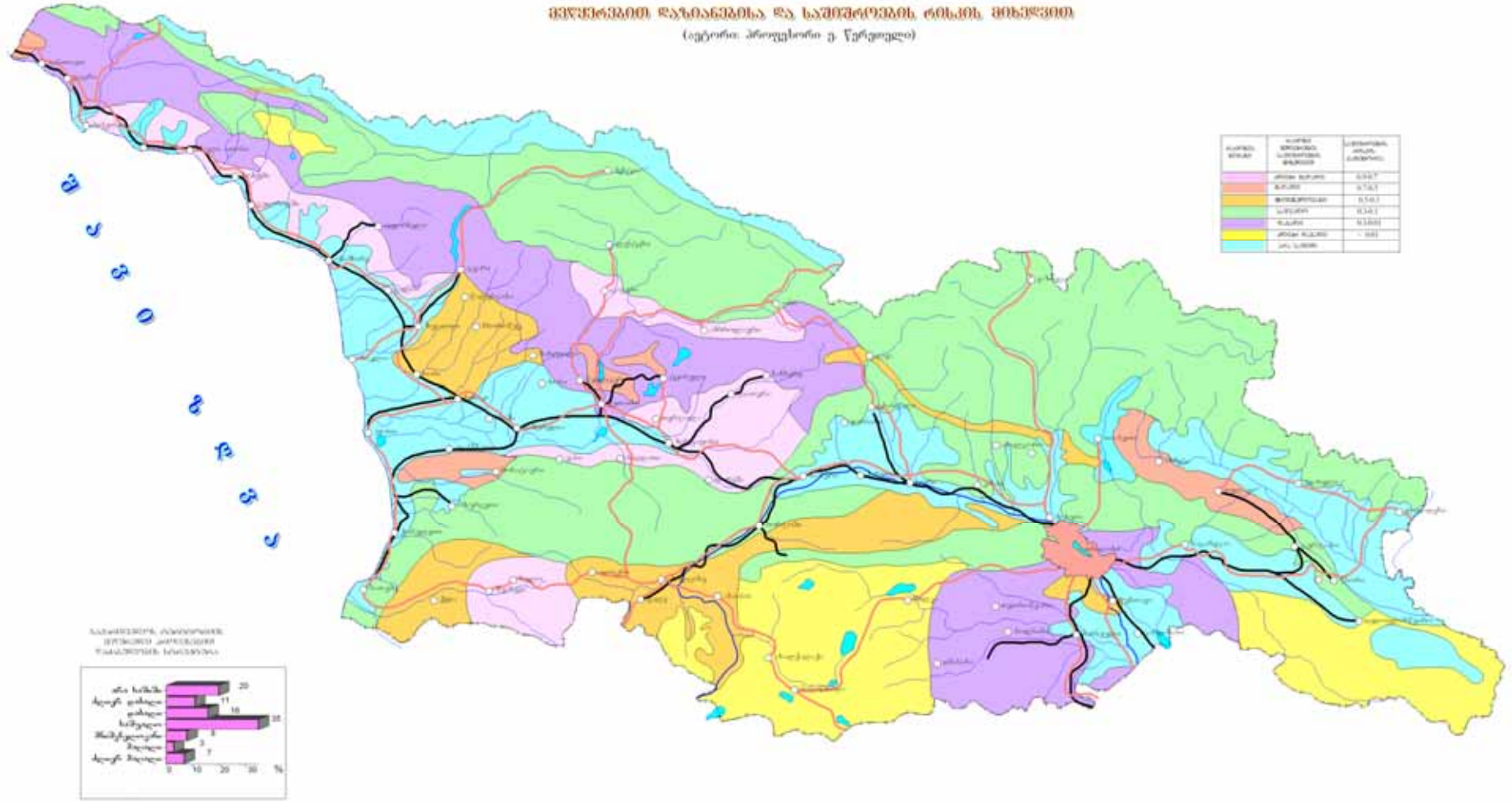


# Major Flash Flood Risk Zones



# Landslide Hazard Areas According to a Level of Risk

საქართველოს ტერიტორიის რაიონების რუკა  
 მსუხმობის რეკონსტრუქცია და ხაზოვანი რეკონსტრუქცია  
 (ეჭრთა პროექტის 2 ნაწილი)





# Mud Flow Prone Areas According to a Level of Risk

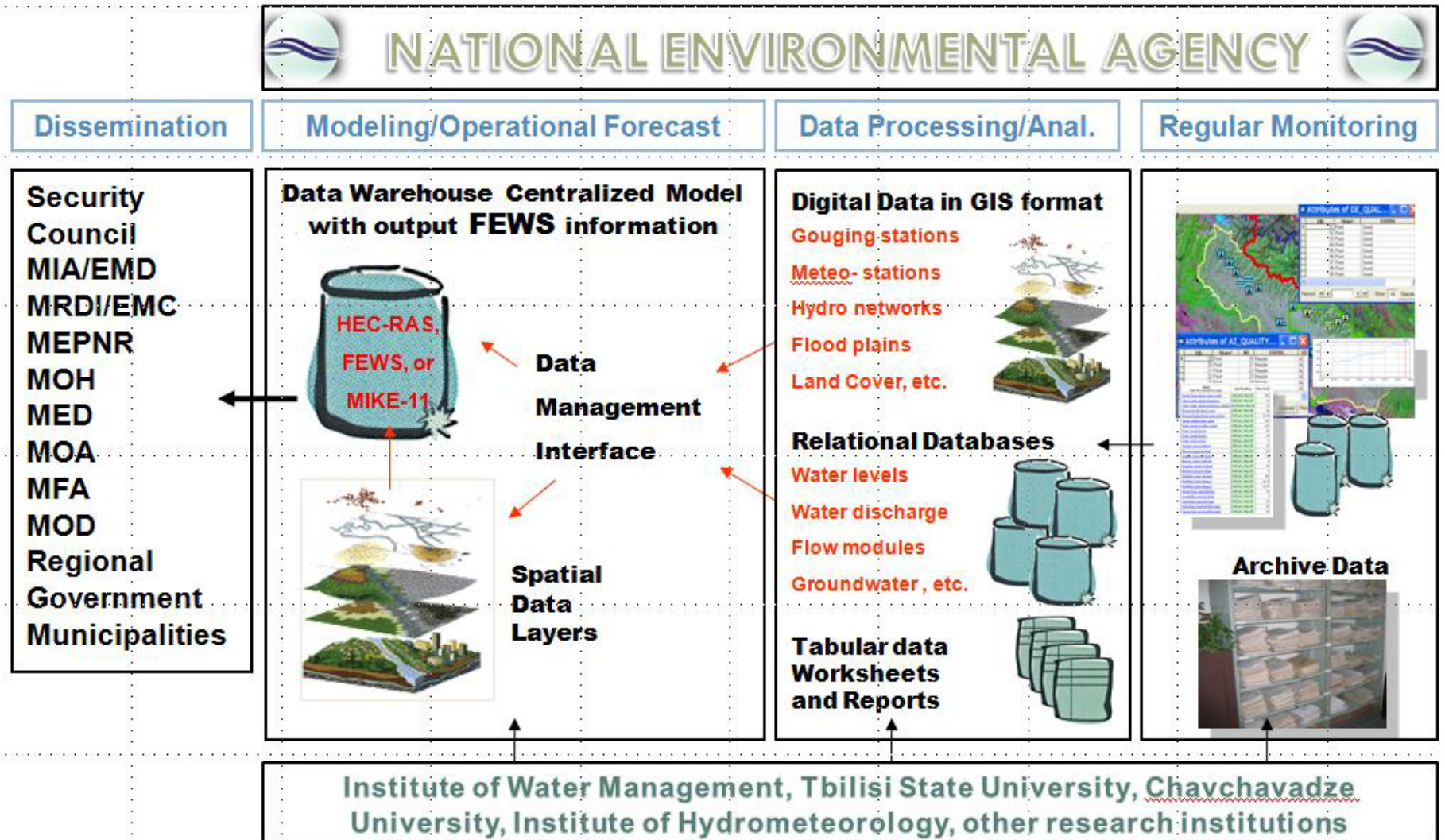


**Legend**

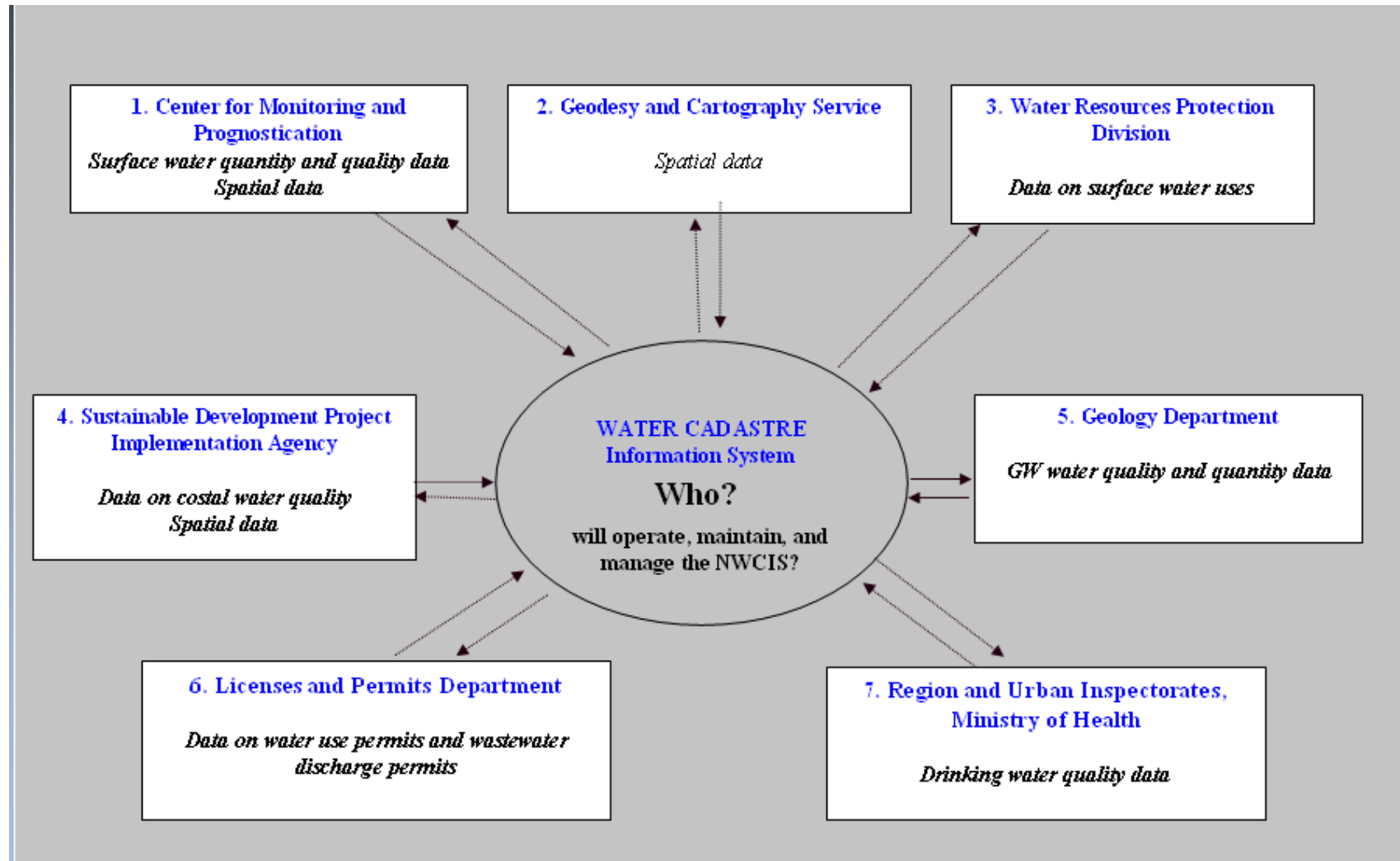
Colour	Risk Zones	Risk Categories
Dark Purple	Very High	100.0
Orange	High	0.000
Light Orange	Big	0.045
Blue	Important	0.500
Light Green	Medium	0.500
Yellow-Green	Limited	0.500
Yellow	Weak	0.00
Light Yellow	Safe	



# Scheme of an Environmental Data Flow and Distribution Network in Case of Flood Early Warning in Georgia



# State Water Cadastre Template - 2008



## Legislative Base

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- The Law of Georgia on Environmental Protection
- The Law of Georgia on Water
- The Law of Georgia on Wildlife
- The Law of Georgia on Pesticides and Agro-chemicals
- The Law of Georgia on Land Melioration
- The Law of Georgia on State Ecological Expertise
- The Law of Georgia on Environmental Permits
- The Law of Georgia on Regulation and Engineering Protection of the Coastal Zones of the Seas and Rivers of Georgia
- The Sanitary Code of Georgia
- The Law of Georgia on International Treaties



## Bilateral Agreements

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- The Agreement between the governments of Georgia and the Republic of Azerbaijan on cooperation in the field of environmental protection (signed on 18.02.1997, effective as of 08.05.1997)
- The Memorandum of Understanding between the Ministry of Environment and Natural Resources of Georgia and the State Committee of Ecology and Natural Resources of the Republic of Azerbaijan on cooperation in the development and implementation of a joint pilot project for monitoring and assessment of the Kura River basin (16.09.1997)
- The Agreement between the governments of Georgia and the Republic of Armenia on cooperation in the field of environmental protection (signed on 19.05.1997, effective as of 30.11.1999)
- The Agreement on scientific cooperation between the Main Department of Hydrometeorology of the Ministry of Environment and Natural Resources of the Republic of Georgia and the Department of Hydrometeorology of the Government of the Republic of Armenia (signed on 24.01.1994, as of 30.11.1999)
- The Agreement on cooperation in the sphere of hydrometeorology between the member-states of CIS (signed on 08.02.1992, joined by Georgia on 23.09.1994)
- The Memorandum of Cooperation between the hydro-meteorological services of the South Caucasian countries (signed on 19.07.1997).



## International Treaties

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- Convention on access to information, public involvement in the process of decision-making and access to tribunal for environmental matters (Aarhus, 1998)
- Framework Convention of UN on climate change (New York, 1992)
- Protocol to the Framework Convention of UN on climate change (Kyoto, 1997)
- Convention on trans-boundary pollution on long distances (Geneva, 1997)
- Convention on stable organic pollutants (Stockholm, 2001)
- Convention on control of trans-boundary shipping of hazardous waste and their elimination (Basel, 1989)
- Convention on biodiversity (Rio de Janeiro, 1992)
- Convention on protection of the Ozone layer (Vienna, 1985)
- Convention on wetlands of international importance (Ramsar, 1971)
- Convention on preservation of migrating wild animals (Bonn, 1979)
- Convention on international trade of the endangered wildlife species (Helsinki, 1992)
- Convention on environmental assessment in the trans-boundary context (Espoo, 1991)
- Protocol to the convention on strategic ecological evaluation of environmental impact in the trans-boundary context (Kiev, 2003)

