

# Proposals on cooperation of Slovakia with Central Asia in the field of dam safety

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# Slovakia

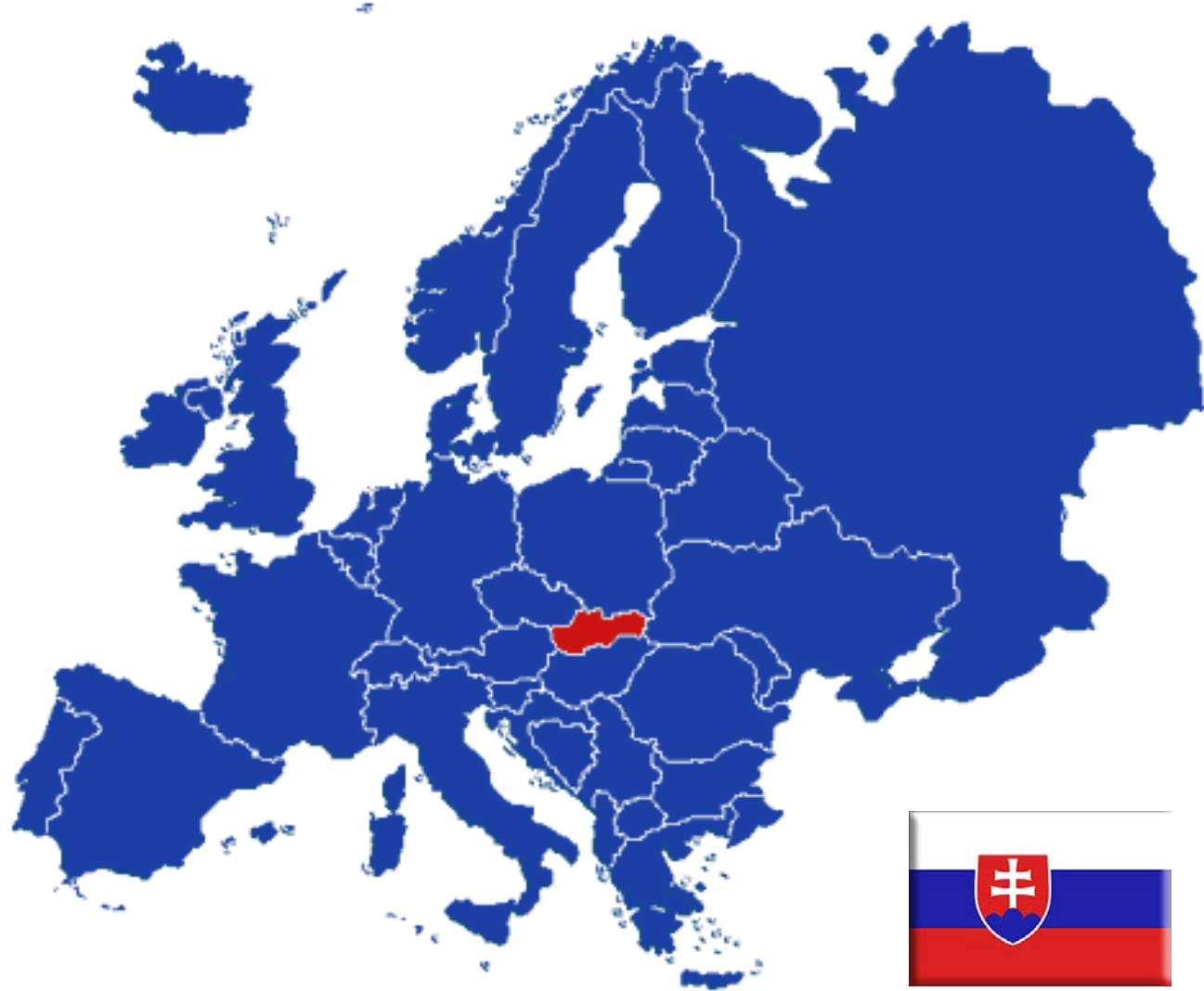
1993 – independence after  
division of Czechoslovakia

49 034 km<sup>2</sup>

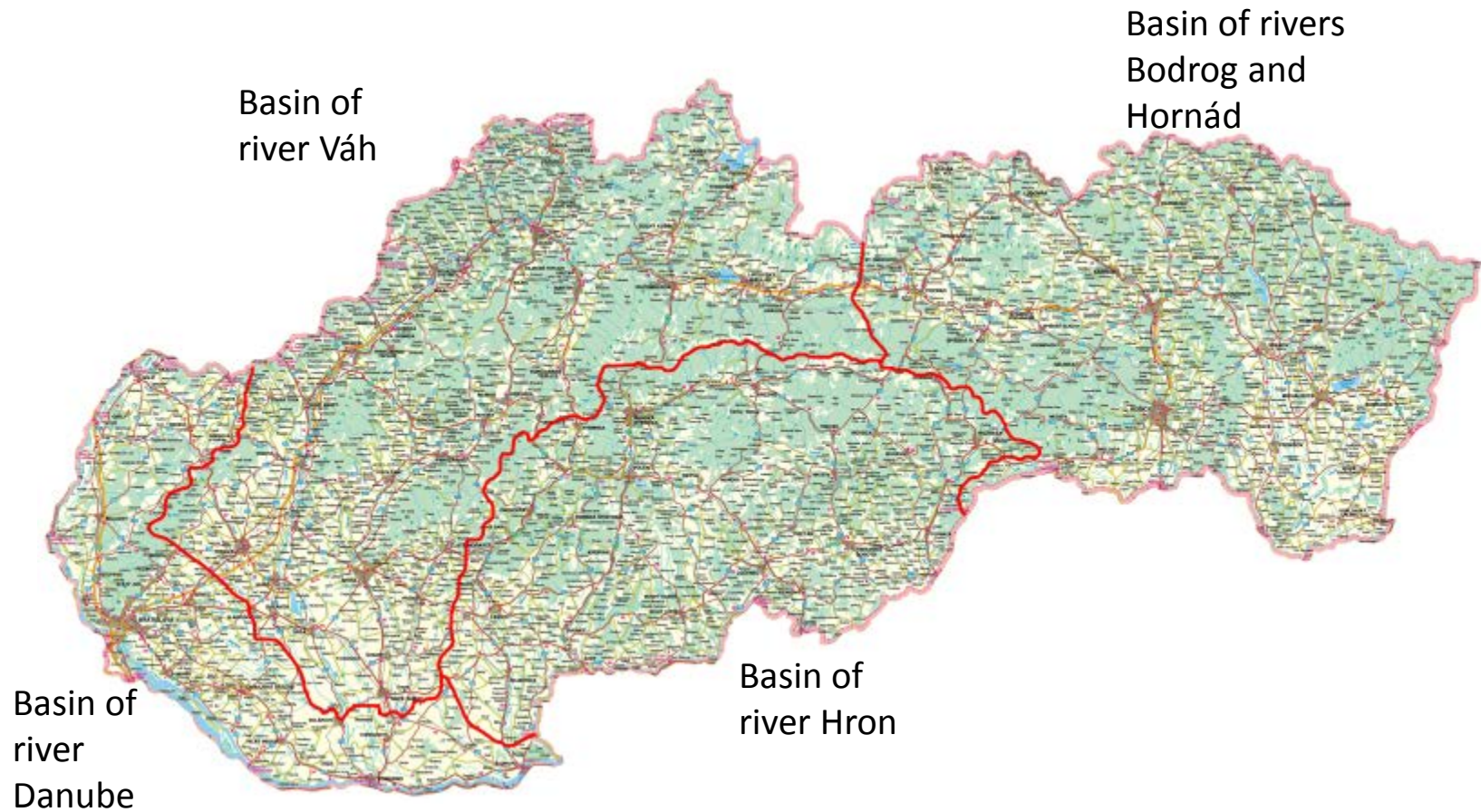
5 379 455 inhabitants

Elevation: 95 - 2 655 m a.s.l.

Capital: Bratislava



## Slovakia – spring region of European rivers



# Dams in Slovakia

Slovakia – one of the first members of ICOLD organization, active membership in technical committees of ICOLD

Approximately 600 dams and other water structures (dikes, tailings dams etc.)

- 50 dams registered in ICOLD Register of Large Dams

  - (5 concrete dams, other are earth-fill or rock-fill dams)

- 430 dams of small water reservoirs

- 130 flood protective dikes

- 64 tailing dams

## **Legislation**

### **Main topics of Decree of the Ministry of the Environment 458/2005:**

- CATEGORIZATION of water structures
- The performance of professional technical and safety supervision of hydraulic structures (SUPERVISION)
- The examinations for acquiring professional qualification in supervision and issuing CERTIFICATES of competency FOR SUPERVISORS
- INSPECTION of the performance of technical and safety surveillance

### **Main principle of dam safety:**

- Responsible for the safety of a hydraulic construction is its owner (owner pays)
- Owner is controlled by the local water authorities and Ministry of Environment and supervised by professionally qualified persons for the technical safety supervision



# The performance of professional technical and safety supervision of hydraulic structures (SUPERVISION)

- In the case of the most important hydraulic constructions (**1<sup>st</sup> and 2<sup>nd</sup>** category) supervision is provided by an independent state owned organization entrusted for technical safety supervision – Vodohospodárska výstavba š.p.
- In the case of hydraulic constructions of **3<sup>rd</sup> and 4<sup>th</sup>** category supervision is provided by professionally certificated persons



# CERTIFICATION OF SUPERVISORS

- Candidates for supervising are examined by commission consisting of experts from Technical university, Ministry of Environment and Vodohospodárska výstavba
- Nowadays 30 persons are certificated in Slovakia





# INSPECTION of the performance of technical and safety supervision

- Is executed by local water authorities (regional, district)
- Inspection consist of controlling of reports, visual and functional control in-situ, in case of need prescription of preventive measures for increasing of the safety
- Owner can be penalized if is not providing surveillance or if is not accepting prescriptions





# Monitoring in water structures consist of:

- basic hydrological and meteorological data (daily)

## **1<sup>st</sup> category and 2<sup>nd</sup> category**

- measurements of filtration parameters – water levels in boreholes, uplifts in the subsoil and seepages (daily or at least twice a week)
- measurement deformation and replacements – inclination of concrete objects and displacement in dilatations (weekly or monthly), geodetic measurement of whole construction (yearly)
- measurements of pore water pressures (monthly)

## **3<sup>rd</sup> category**

- geodetic measurements, water levels in boreholes (if dam is equipped with boreholes)

## **4<sup>th</sup> category**

- if no problem occurs only visual inspection

## Results of measurements

- All of measured values are monthly sent to certificated persons
- Certificated person monthly inform owner about status of dam safety
- Every year is issued annual report for the 1<sup>st</sup> category dams
- Every 2 years is issued report for the 2<sup>nd</sup> category dams
- Every 4 years is issued report for the 3<sup>rd</sup> category dams
- Every 10 years is issued report for the 4<sup>th</sup> category dams

Every 5<sup>th</sup> report is made as overall report

## Possibilities of cooperation with Central Asia countries

- modern history of Central Europe is very similar to history of Central Asia countries
- countries in Central Europe and Central Asia were united in one block with Soviet Union
- most of the water structures were built at the same time during socialistic era
- after disintegration every country goes its own way in legislation and economic development
- we have positive and also negative lessons learned from these processes
- ageing of water structures requires remedial works and improvement of instrumentation for safety monitoring
- experiences in water management in Central Europe countries could be useful for application in Central Asia



## Proposal for next cooperation in dam safety in Central Asia:

- commenting of the documents from Central Asia experts
- study visit of CA experts in Slovakia, discussion on possible lessons learned and transfer of knowledge
- discussion about next steps and about possible support of Slovakia as an added value to existing sources
- common solving problems in CA, pilot cases
- preparation of common projects (preparation and looking for donor/s)

# Proposal for next cooperation with NATO support

## **NATO Science for Peace and Security Program**

- Scientific projects
- Advanced Training Courses
- Advanced Research Workshops
- preparation of common projects (preparation and looking for donor/s)

### **First step**

Workshop in Slovakia – 3-4 participants per country

Tajikistan, Kirgizstan, Uzbekistan, Kazakhstan, Turkmenistan

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# Eastern Europe



-  Areas under environmental stress <sup>1</sup>
-  Areas contaminated by the Chernobyl explosion <sup>2</sup>
-  Strongly polluted coastal areas
-  Important nature: near-border protected areas and transboundary regions of high ecological importance <sup>3</sup>
-  Nuclear power plants (operating / closed)

★ ★ Past / current (frozen) conflicts

Land and territorial disputes

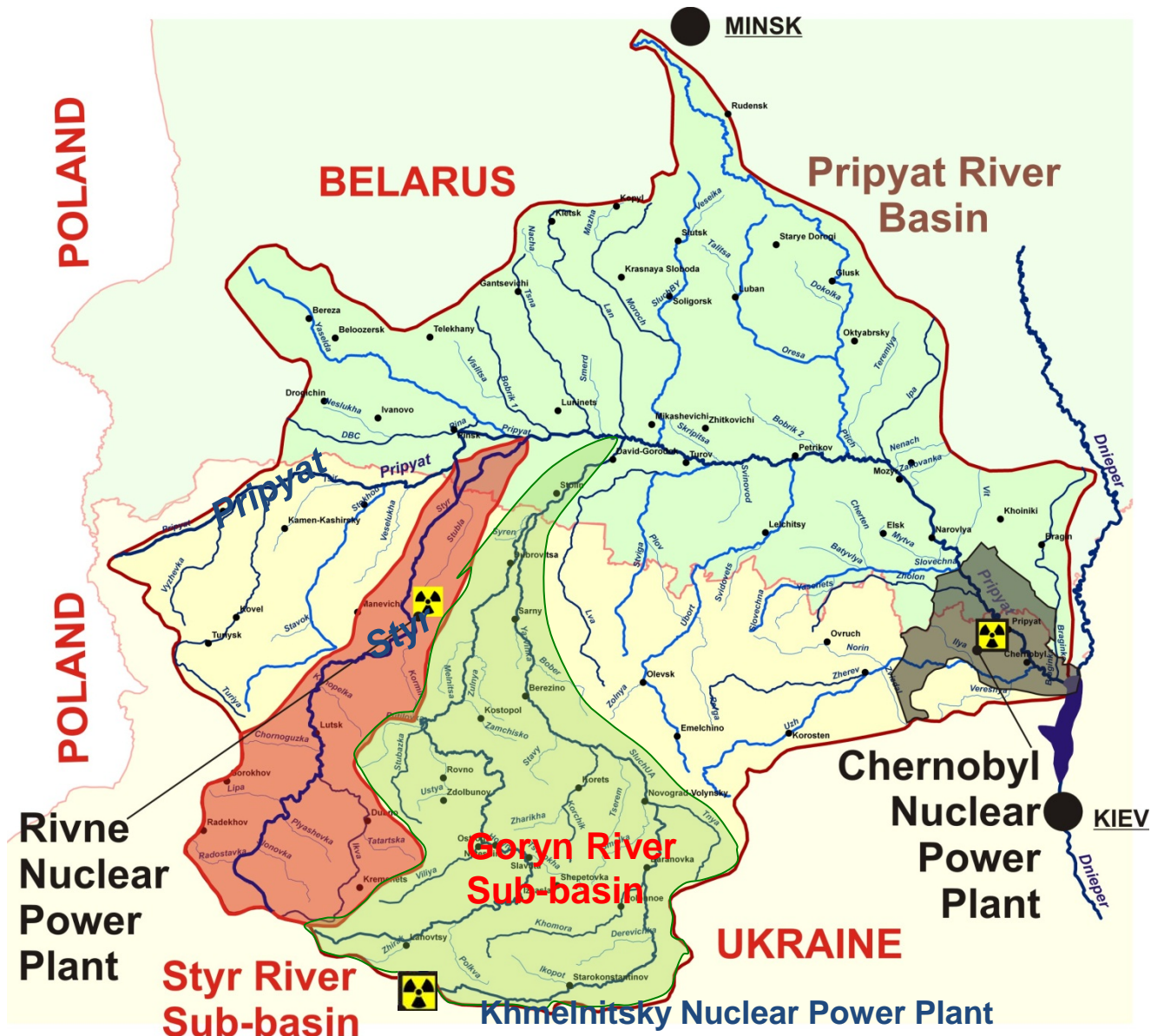
- Inter-state disputes in the process of international or bilateral resolution
- Inter-ethnic disputes

 Environment and security priority areas

The designations employed on this map do not imply the expression of any opinion on the part of the organizations concerning the legal status of any country, territory, city or area of its authority or delineation of its frontiers and boundaries.

0 100 200 km

# NATO Project Pripyat (Slovakia, Ukraine, Belarus)



Спасибо за ваше внимание