Transboundary issues in flood management
Hungary
Danube River Basin District within the Danube Region
Hungary is located at lower parts of the Carpathian basin
Rate of incoming waters are significant
Inflows and outflows, domestic sources of Hungary
Incoming, sourcing and outgoing in average conditions

Average conditions
INCOMING DISCHARGES: 3602 m³/s
SOURCING DISCHARGES: 180 m³/s
OUTGOING DISCHARGES: 3782 m³/s
Occurrence of water related damages, endangered assets
What we do protect in reality.

Floods:
- Small every 2-3 years
- Significant every 5-6 years
- Extraordinary every 10-12 years

Excess water:
every 2-3 years

Drought:
every 3-5 years
National water services
Location of the Directorates - oriented to (sub-)catchments
Bilateral institutes

Plan potentials and experts are from the local Directorate, Commissioners are from OVF or from the Ministry.

Transboundary Committees based on legal agreements:
- Hungarian-Romanian Water Committee
- Hungarian-Serbian Water Management Committee
- Permanent Hungarian-Croatian Water Management Committee
- Permanent Hungarian-Slovakian Water Management Committee
- Hungarian-Austrian Water Committee
- Hungarian-Slovenian Water Committee
- Hungarian-Ukrainian Transboundary Water Management Committee
Transboundary circumstances, EU Flood Directive discussion forums

International policy platforms:
- European Union: Working Group „F” on floods
- Danube basin: ICPDR FP-EG Flood Protection Expert Group
  Danube Strategy
- Border crossing watersheds: Border Commissions
- International good practices: EU funded projects

Focal points of interest as a downstream country:
- Flood forecasting – the most time advance
- Be aware of the border crossing discharges or flood portion transported on the terrain
- Permanent contacts to have information on upstream operations in case of flood
- Information or involvement in planning the upstream and downstream interventions
- Maintenance of ice conveyance capacity

Danube, Drava and Tisza catchments as used by the Hungarian Hydrological Forecasting Service
Flood risk mapping and development of strategic risk management plan
„ÁKK - Árvízi kockázati térképezés és stratégiai kockázati terv készítése” (KEOP-2.5.0.B)

This is the revision of the Hungarian flood prevention strategy, considering the modern and remarkably changed social- economical demands on strategic and national level

1. Methodology 2008 – 2010
   Determination of **content and formal requirements** of flood hazard and risk planning and risk management planning, **establishment of implementation** and forming its **tool-system** (Methodology)

   Forming of the **preliminary risk assessment** and national strategy, **producing** the necessary **data** for hazard mapping, submission of the national report

   Implementation of hazard and risk **mapping** and **strategic** risk management **planning**

**Main discussion forum for operative data exchange:**
- Border commissions
- EU projects
Flood risk mapping and development of strategic risk management plan

„ÁKK - Árvízi kockázati térképezés és stratégiai kockázati terv készítése” (KEOP-2.5.0.B)

Fundamentals differences with neighbouring countries’ methodology

- Probability of inundation =
  hydrologic situation + dike failure + flood defence work and conditions summarized probability
- 1-1000 year floods and dike failures (full spectrum analysis)
- GIS server based application for hazard and risk mapping, comprehensives tool for calculation of maps and effects of interventions, nation-wide consistent calculation in „ÁKIR” (50x50 m grid)
- Risk calculation for water depths and duration, summary with integral for the full probability matrix
- 30-50 year time horizon (considering development trends)

Results:

- **Digital hazard maps** (digital, summarized probability raster for different events, 1 cell represents total probability matrix for exposure)
- **Digital risk maps** (digital, aggregated value-loss raster, 1 value/cell based on damage functions)
- **Risk management plans** (reduced hazard probability or different decreased damage function in cell/cell group)
Thank You for your attention!

Ministry of Interior
General Directorate of Water Management

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