BELÜGYMINISZTÉRIUM

Flood and drought management on transboundary river basins – Hungarian experience

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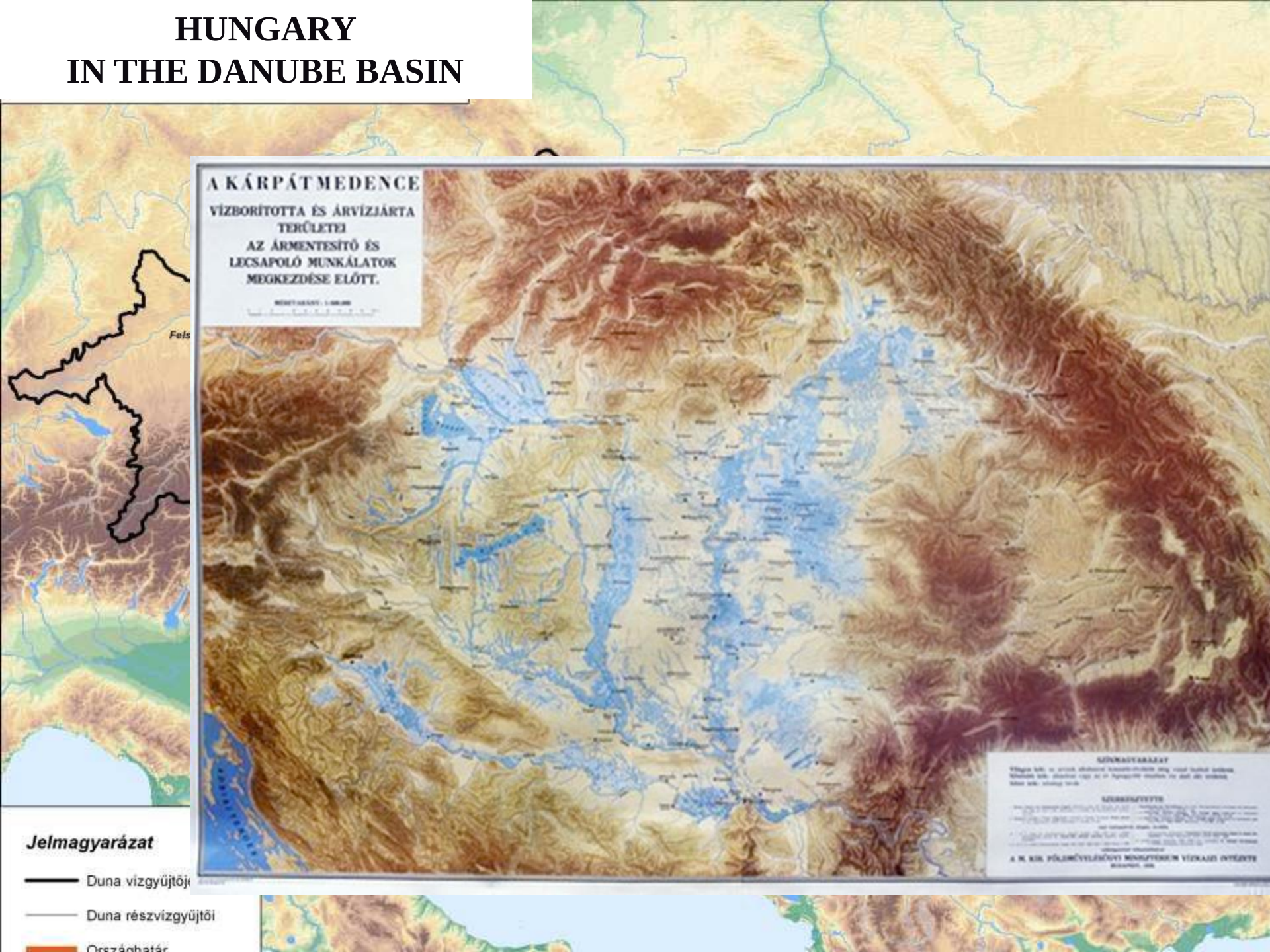
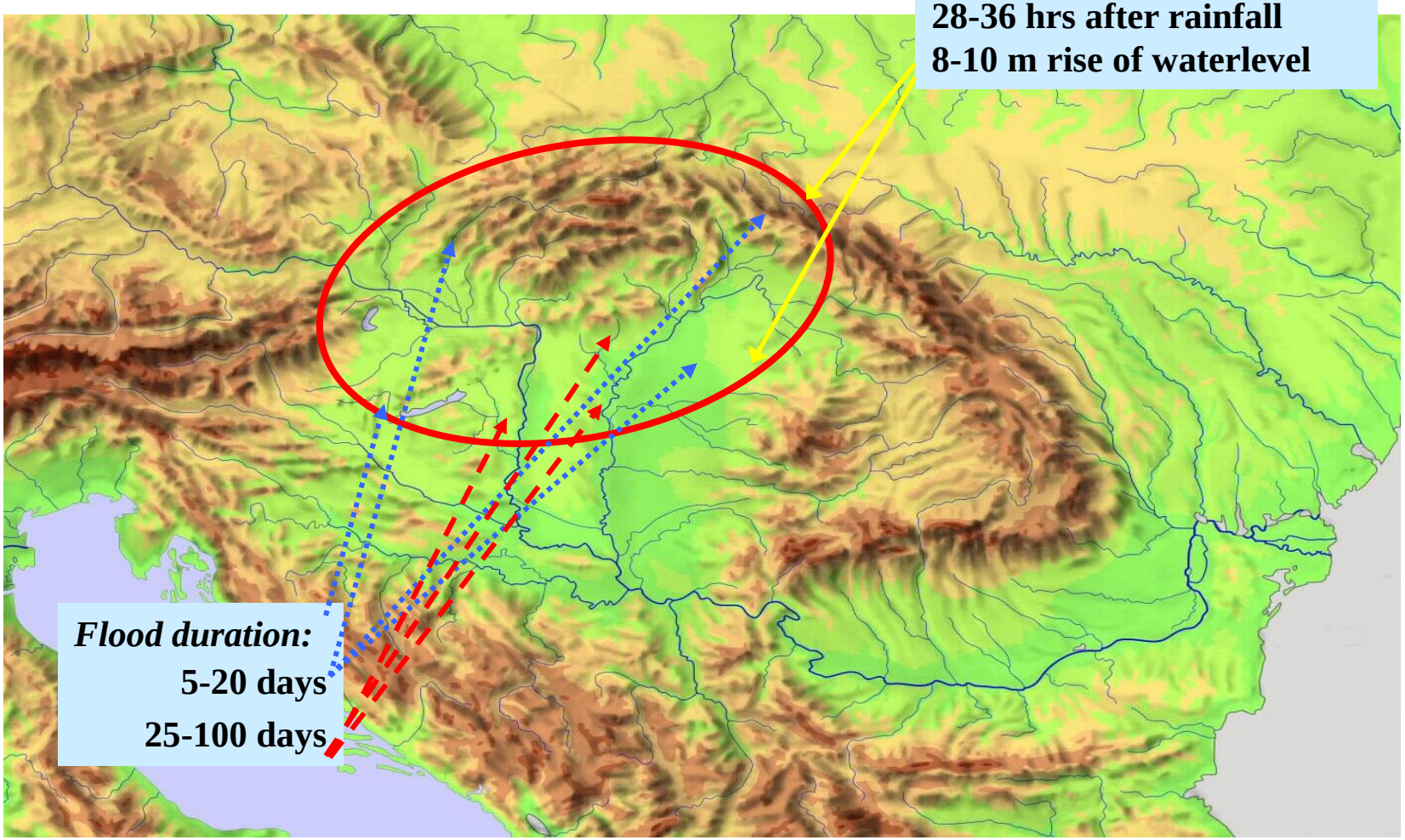
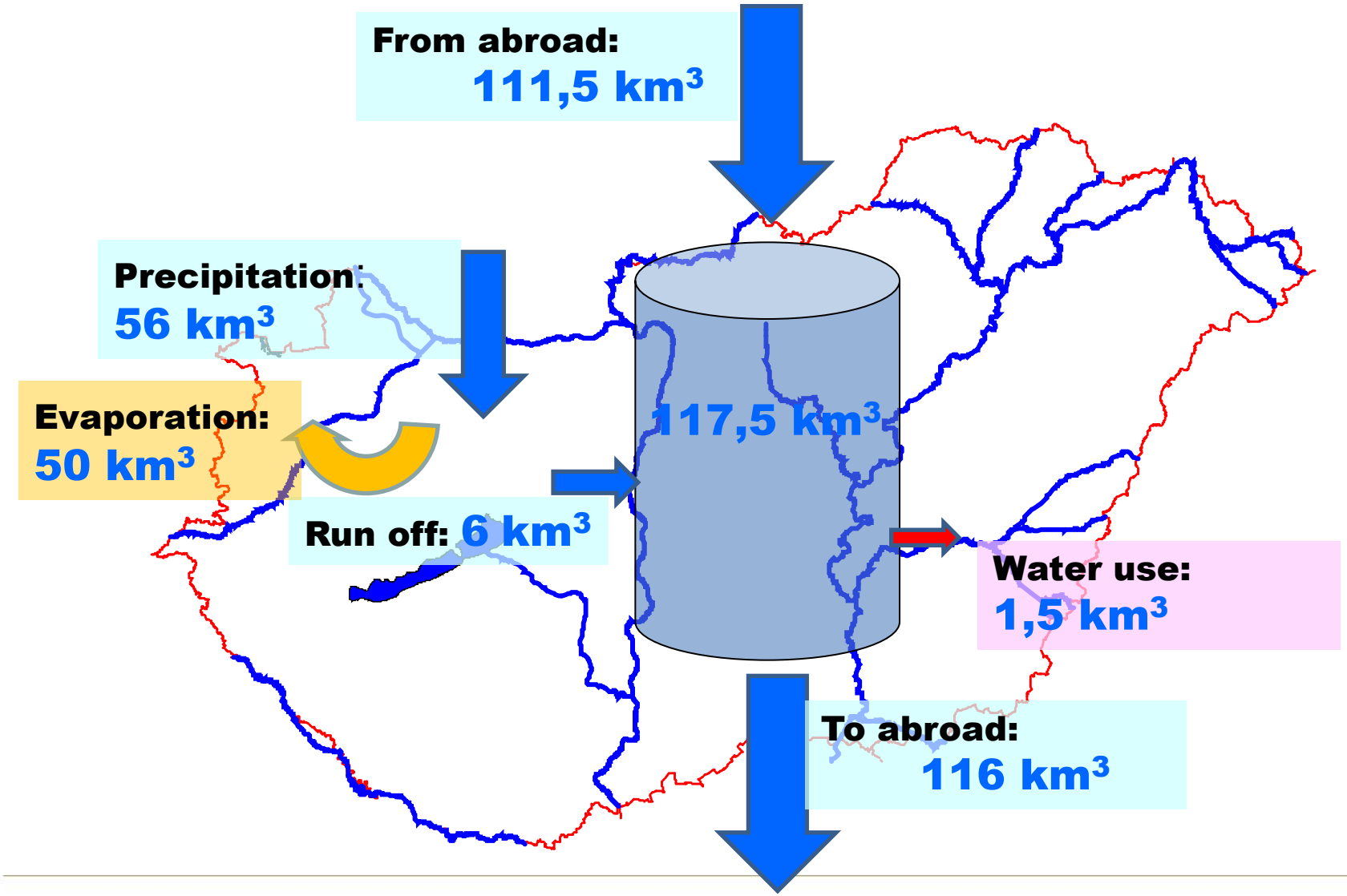
Ministry of Interior

VÍZÜGY

HUNGARY
IN THE DANUBE BASIN




Torrent upstream regimes:
28-36 hrs after rainfall
8-10 m rise of waterlevel
Flood duration:
5-20 days
25-100 days


From abroad:
111,5 km³
Precipitation:
56 km³
Evaporation:
50 km³
Run off: 6 km³
117,5 km³
Water use:
1,5 km³
To abroad:
116 km³

Hungary's climate

- Continental climate
  - hot summers , low overall humidity levels, frequent showers
  - frigid to cold snowy winters.
- AVG temperature: 9.7°C (annual), 27-35°C (summer), 0- −15°C winter
- AVG yearly rainfall: ~600 mm
- Temperature extremes btw 42°C (summer), −29°C (winter).

- Flood

- excess water

- drought

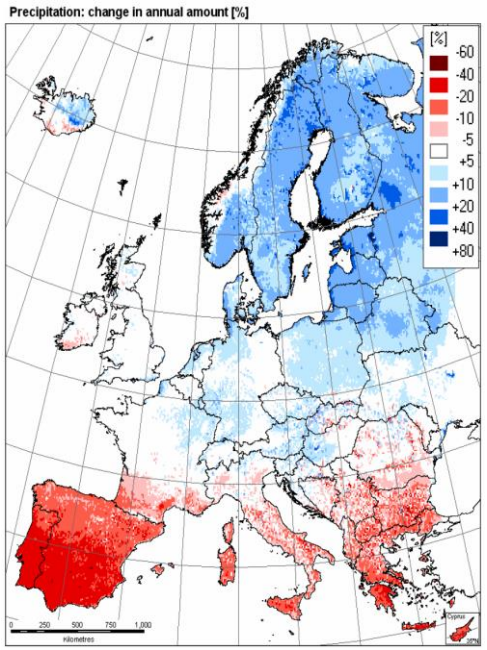
can occur
in the same time and
sometimes in the same location.

- Extremities:
  - 2010: almost 960 mm annual mean precipitation ↔
  - 2011: the driest year since 1901 (400 mm)

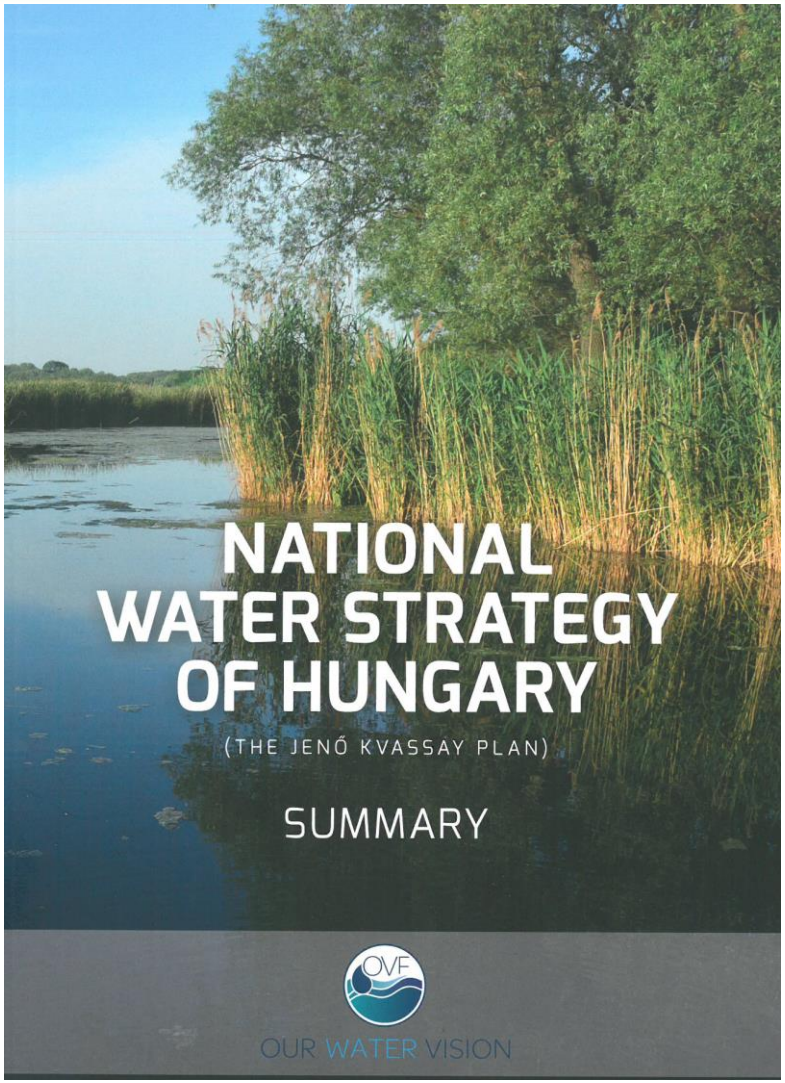
Pressures – water quantity

Floods

Droughts



Climate change



THE NATIONAL WATER STRATEGY OF HUNGARY WAS NAMED AFTER

Jenő Kvassay water engineer

(1850–1919)

He founded and organised the first civil engineering institution in Hungary and was the first head of the National Directorate for Water Construction. He also created the first water legislation of Hungary in 1885). His activities set the frames of a water management that was needed for civic development and launched the first activities towards an integrated water management.

Government Decision no. 1110/2017 (III. 7.) was made on the National Water Strategy and on the acceptance of the relevant implementation plan.

This Government Decision can be found in Hungarian at:
http://njt.hu/cgi_bin/njt_doc.cgi?docid=200914.335971

The full text of the National Water Strategy (the Jenő Kvassay Plan) can be found in Hungarian language at:
http://www.kormany.hu/download/6/55/01000/Nemzeti%20V%C3%ADzstrat%C3%A9gia.pdf#!DocumentBrowse

Flood and inland excess water management

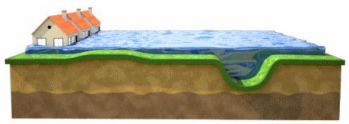
Objectives:

- Increase of **flood safety** - increase of the **responsibility of the State**;
- Improvement of **water retention** capacity;
- **Floodplain management**, increase of discharge capacity;
- Improvement of the status of the **defend structures**;
- **Flood risk mapping** according to the Flood Directive;
- International cooperation on in forecasting;
- Application of **no-structural methods**;



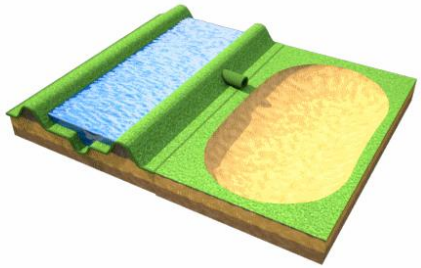
BEFORE 2000

Providing flood safety
Building of flood protection dykes



FROM 2000

Adaptation to water damage caused by climate change
Building flood-peak reducing reservoirs, Flood control reservoirs in Tisza valley (VTT)

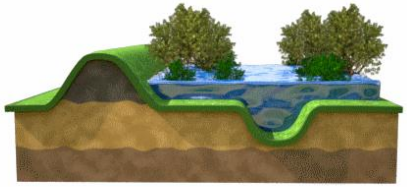


2015

Flood safety deteriorated
Recalculation of Design Flood water level

FROM 2016

The deterioration of flood safety must be stopped
Floodplain (Riverbed) management plans



FROM 2020

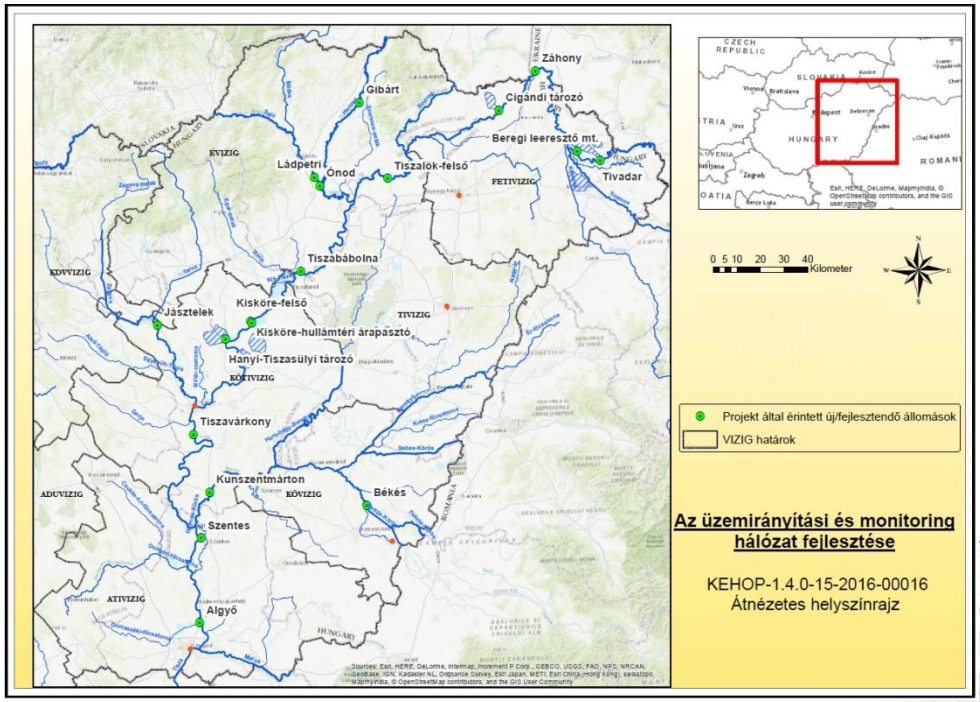
Improving of flood safety
Strategy of differentiated flood safety

Adaptation to water damage caused by climate change
Flood control reservoirs in Tisza valley

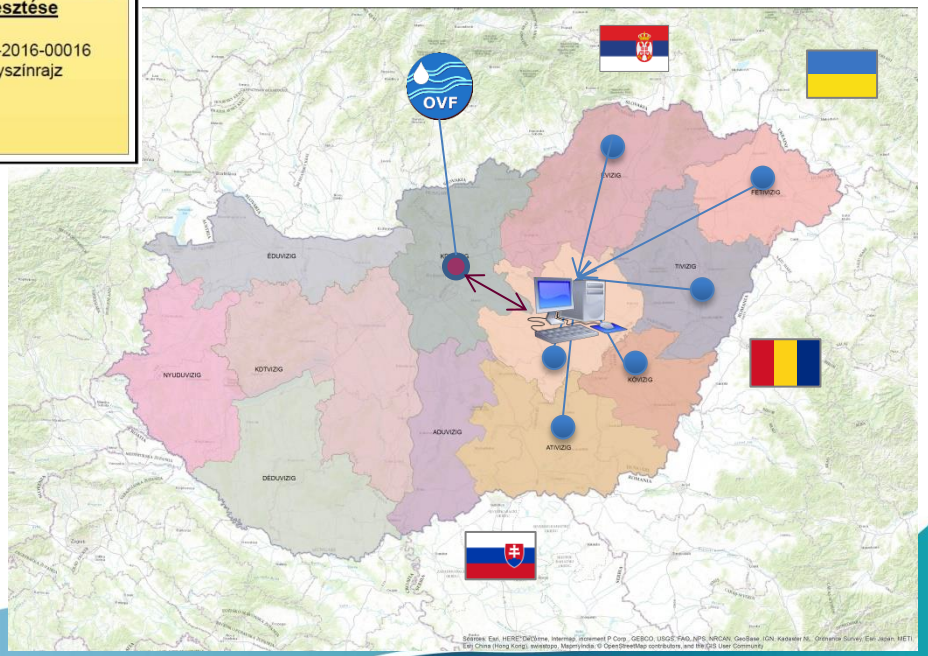
30 flood control reservoirs, 6 of them built in Vasarhelyi programme (721 million m^3). In the Körös valley operating 5 reservoirs with a volume of 386 million m^3. The flood control reservoirs situated along the rivers and the part of the flood control system. Local flood peak reducing effect.

Name of Flood control reservoir	River	Water Directorate	Surface area (km^2)	Capacity (10^6 m^3)	Technical delivery
Cigánd-Tiszakarádi	Tisza	ÉMVIZIG	24,7	94,0	2008
Tiszaroffi	Tisza	KÖTIVIZIG	22,8	97,0	2009
Hanyi-Tiszasülyi	Tisza	KÖTIVIZIG	55,7	246	2012
Nagykunsági	Tisza	KÖTIVIZIG	40,0	99,0	2013
Szamos-Krasznaközi	Szamos bp	FETIVIZIG	51,1	126	2014
Beregi	Tisza jp.	FETIVIZIG	60	58	2015

Tisza Operational System

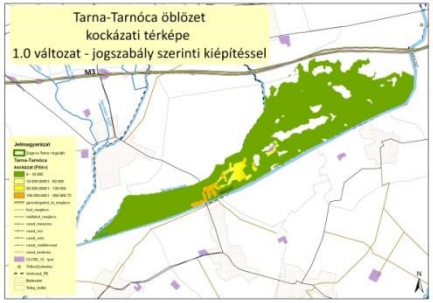


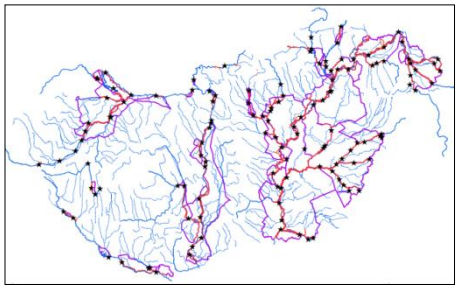
- Developing of water gauge stations and networks, making databases
- Recent forecasting models and its results integrate in the operational system.
- Making a river hydraulic system and river basin level model system which connect with water management's database and supporting decision making process particularly filling of reservoirs, and ordering operational flood protection activities



OUR WATER VISION

Review of 1st Flood Risk and Hazard Maps






18. ábra: Védekezés 2006-ban a Körös-torkolatnál (forrás: OMIT)

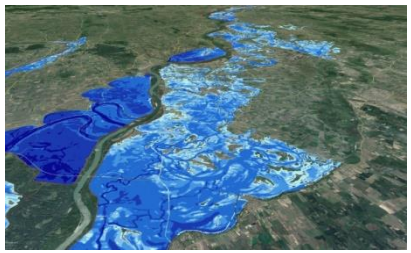
Establishing evaluation(2016-2018)

→

Updating preliminary flood risk assessment and calculating hazard maps (2018-2019)

→

Flood risk assessment, preparation of flood risk maps and making flood risk management(2019-2022)



Review in every 6 years!!

OUR WATER VISION

AGENDA/ MAIN DEADLINES	2016	2017		2018		2019		2020		2021	
Revision of the preliminary flood risk assessments	■	■	■								
Revision of the flood hazard and risk maps				■	■	■	■				
Revision of the flood risk managing plans								■	■	■	■

Inland water management, development of irrigation, drought management

Objectives:

- Quick water **discharge** v. **water retention**
- Mitigation of **climate change effects**, drought management;
- **Improvement of irrigation conditions**;
- **Simplification of a regulatory system**;
- **Local water retention for non drinking water utilization;**
- Implementation of the **Nitrate Directive**, application of Good Agricultural Practice

Inland water management, development of irrigation, drought management

Objectives:

- **Land use**, land management and water management
- **Integration** of water management into other sectorial policy
- **Soil protection**, fight against erosion, deep ploughing, water storage in the soil
- **Water saving** irrigation techniques
- Multi functional irrigation
- Elaboration of a supporting scheme
- **Reuse of treated waste water**
- R&D, education

Drought monitoring system

Detection:

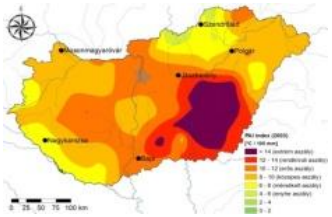
- 79 monitoring stations (2019)
- GPRS remote system
- Database (OVF)
- Web service / queries

Evaluation:

- Hungarian Drought Index (HDI)
- Measured soil moisture
- Evaluation of water shortage (based on measured data)

Intervention practices:

- Create the possibility of government assistance
- Alarm System (I., II., III. levels)
- Preventive water management practices
- Water Control/Water restriction, support of irrigation



Research and Development (analyses)

Transboundary River Commissions

HU – has TRC with all 7 neighboring country – historical form of cooperation – different structures – identical objectives

AT, SK, UA, RO, RS, CR, SL

- **Flood management, river engineering**
- **Hydrological forecast, data exchange**
- **Water quality protection**
- **Water management, protection of water resources (quality & quantity)**
- **Integrated River Basin Management**
- **Drought management, CC mitigation**

Danube River Protection Convention

29 June 1994, Sofia (Bulgaria)

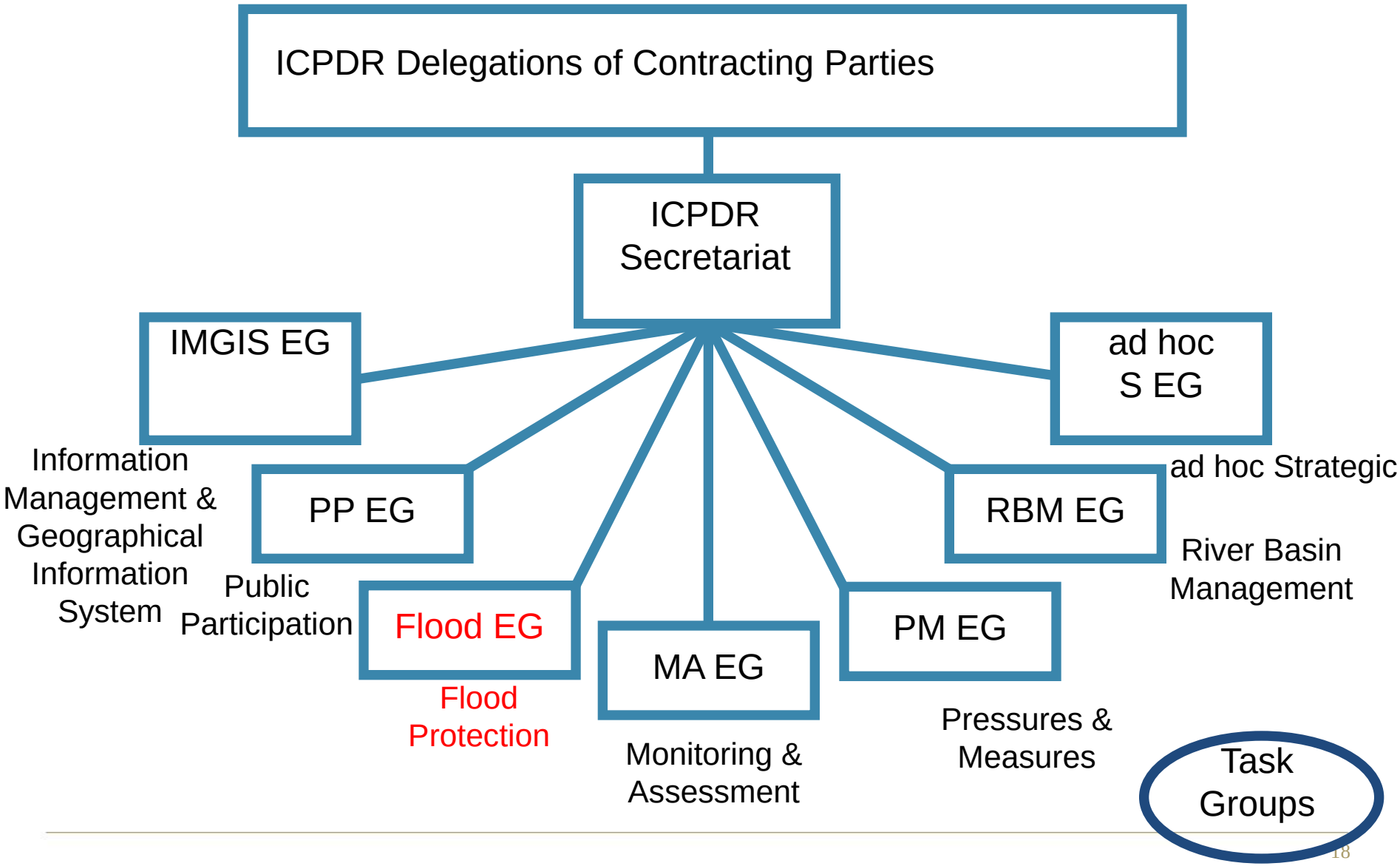
Protection of water & ecological resources

Sustainable use of water

Reduce nutrients & hazardous substances

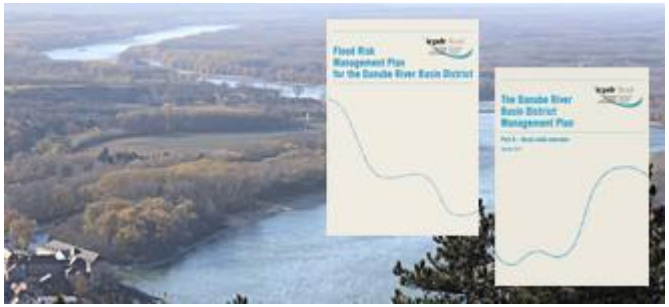
Manage floods & ice hazards

ICPDR coordinates basin-wide implementation of EU Water Framework Directive & EU Floods Directive


ICPDR Delegations of Contracting Parties
ICPDR Secretariat
IMGIS EG
Information Management & Geographical Information System
PP EG
Public Participation
Flood EG
Flood Protection
MA EG
Monitoring & Assessment
PM EG
Pressures & Measures
RBM EG
River Basin Management
ad hoc S EG
ad hoc Strategic
Task Groups

ICPDR coordination

Milestones:

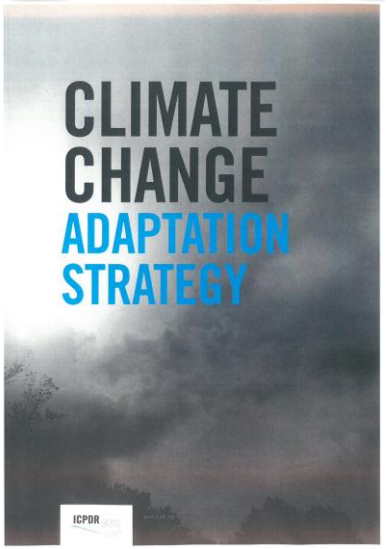


2 nd Danube River Basin District Management Plan

1st Danube Flood Risk Management Plan (2016)

Revision in progress !

Climate Change adaptation Strategy revised in 2019



Climate Chnage Effects (including drought management) becomme Significant Water Management Issues (2019 HU Presidency of ICPDR)


Thank you for your kind attention !
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