

**IV INTERNATIONAL SYMPOSIUM ON  
TRANSBOUNDARY WATERS MANAGEMENT**

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**POTENTIAL TRANSBOUNDARY  
GROUNDWATERS IN CROATIA**

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# Republic of Croatia - 2 basins



## **Black Sea basin**

Sava river basin

Drava and Danube river basin

## **Adriatic basin**

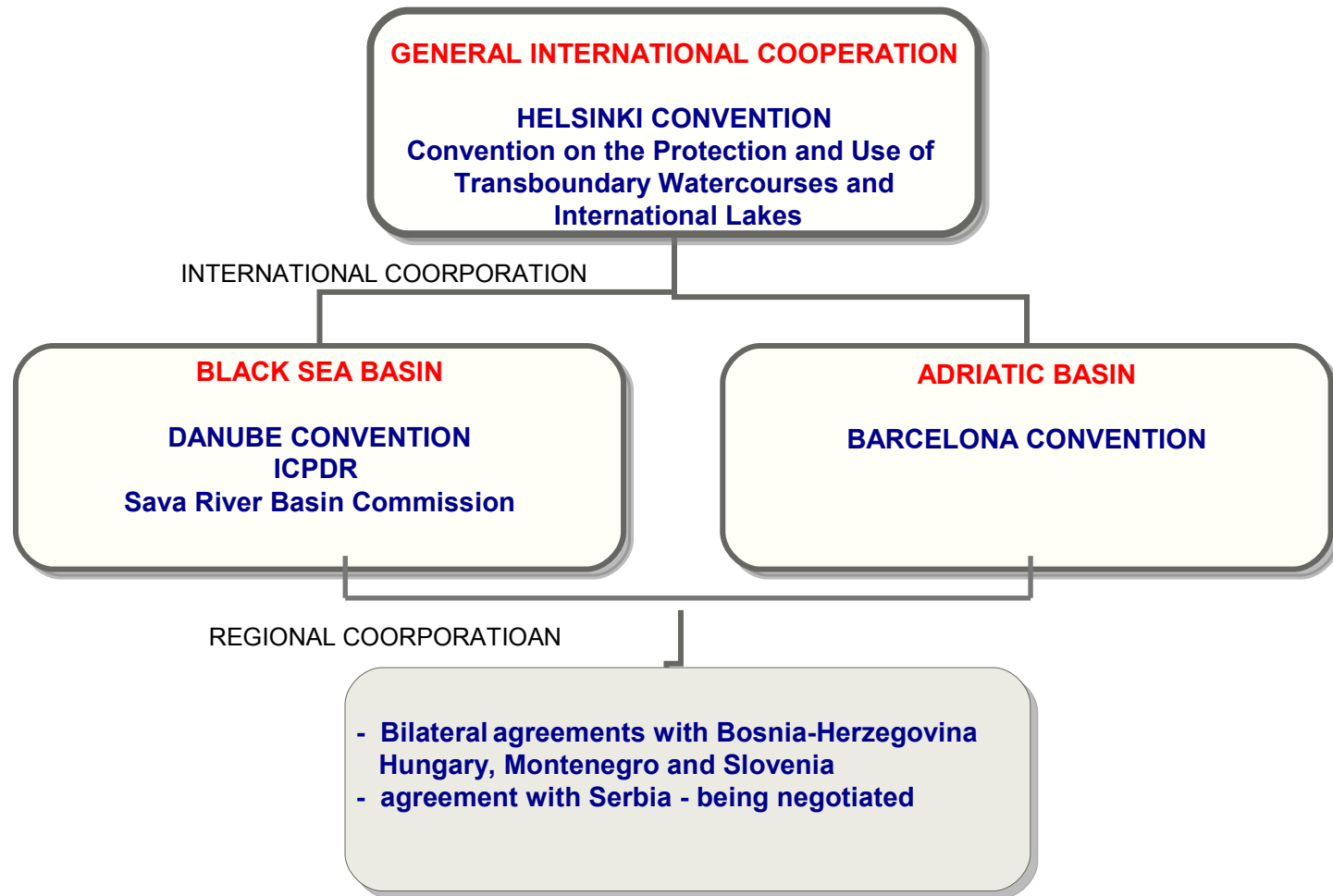
Littoral - Istrian basin

Dalmatian basin

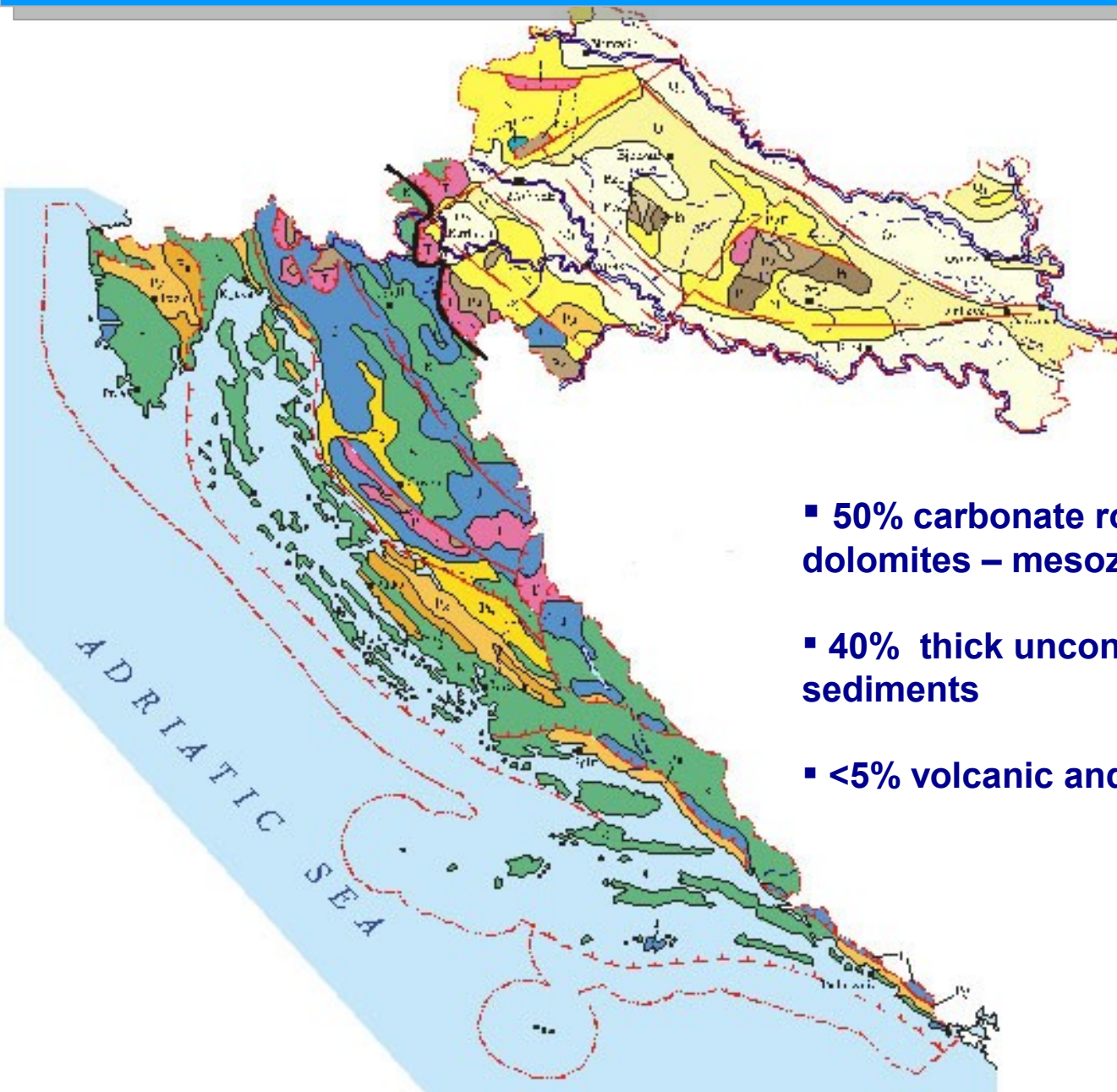
- **Ministry of Regional Development, Forestry and Water Management**
  
- **Croatian Water**
  - national water agency
  - direct responsibility for integrated water management



# International cooperation



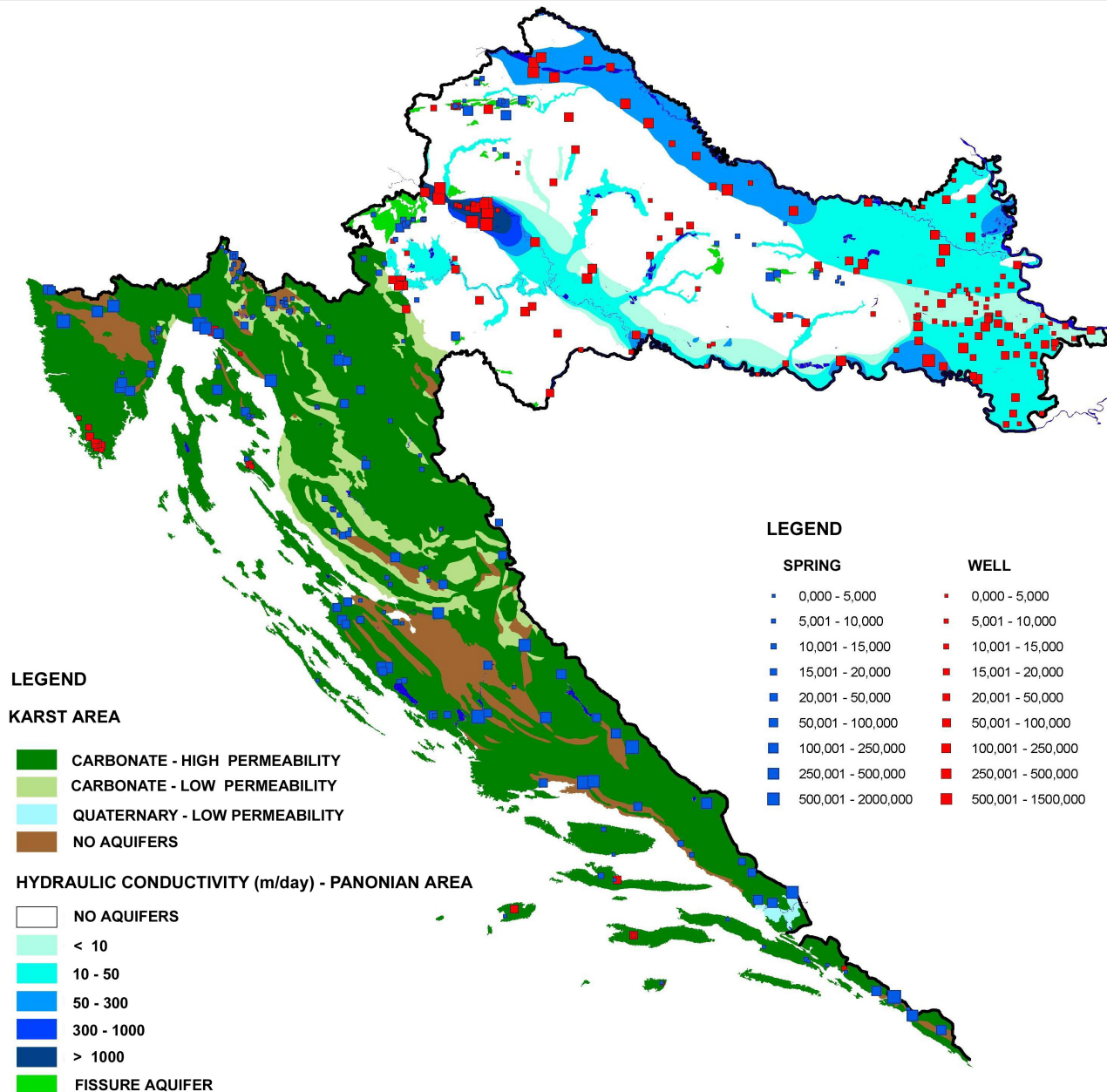
# Croatia : Geologic map



- 50% carbonate rocks (limestones and dolomites – mesozoic - tertiary)
- 40% thick unconsolidated quaternary sediments
- <5% volcanic and metamorphic rocks



# Water supply – groundwater use



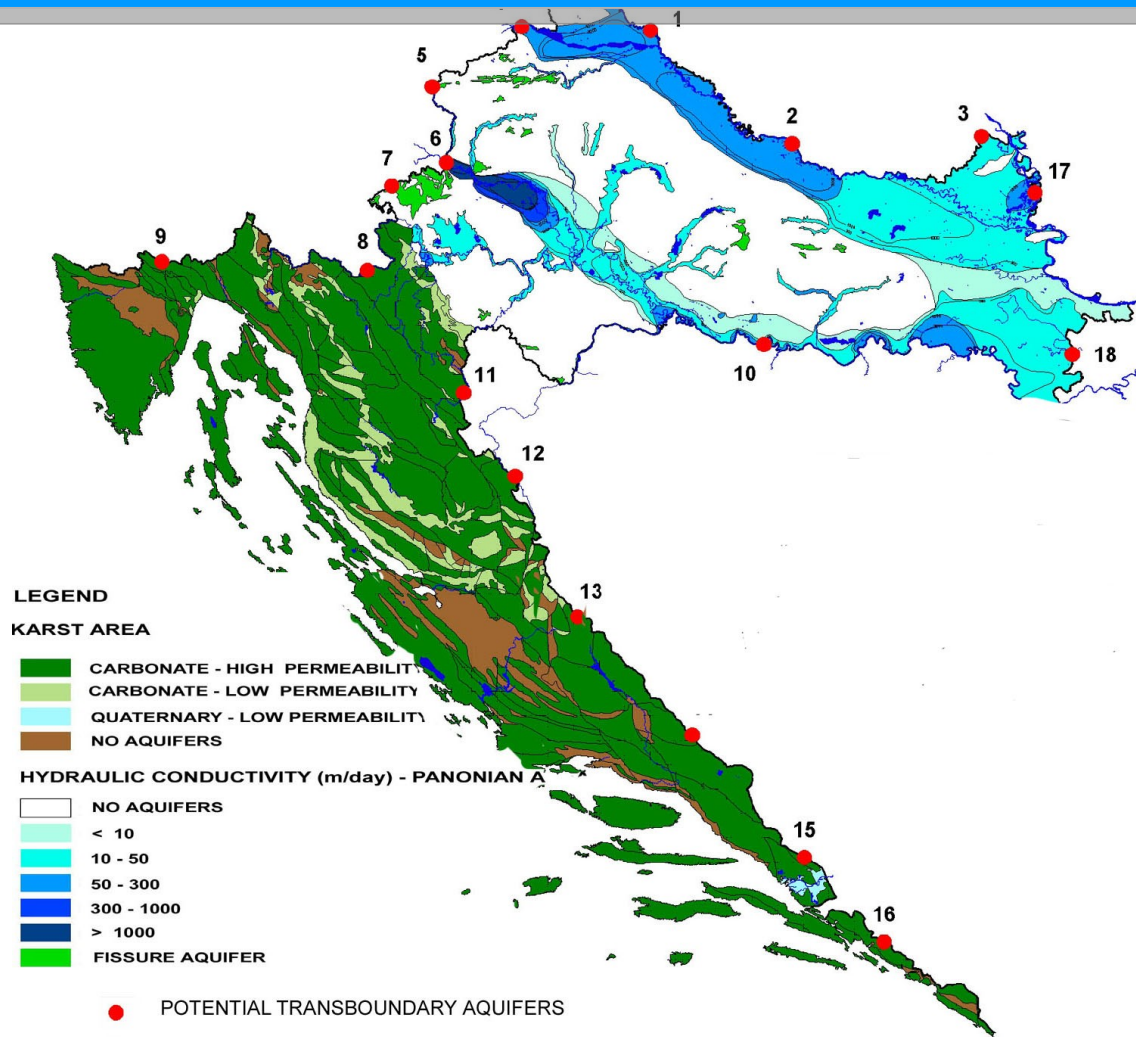
▪ about 90% of all abstracted water quantities for public water supply is groundwater

▪ average population coverage by public water supply systems is 80%

▪ 128 municipal companies with concessions for provision of water supply with 407 abstraction sites

# Potential transboundary aquifer

NUM	AREAS	TRANSBOUNDARY AQUIFERS SHARED WITH
1.	MURA	HUNGARY
2.	DRAVA	HUNGARY
3.	BARANJA	HUNGARY
4.	DRAVA	SLOVENIA
5.	SUTLA	SLOVENIA
6.	SAVA	SLOVENIA
7.	ŽUMBERAK	SLOVENIA
8.	KUPA	SLOVENIA
9.	ISTRA	SLOVENIA
10.	SAVA	BOSNIA AND HERZEGOVINA
11.	KUPA	BOSNIA AND HERZEGOVINA
12.	UNA	BOSNIA AND HERZEGOVINA
13.	KRKA	BOSNIA AND HERZEGOVINA
14.	CETINA	BOSNIA AND HERZEGOVINA
15.	NERETVA (right coast)	BOSNIA AND HERZEGOVINA
16.	NERETVA (left coast)	BOSNIA AND HERZEGOVINA
17.	DUNAV	SERBIA
18.	SAVA	SERBIA



## Preparation of river basin district management plans - underway

- analysis of potential transboundary aquifers,
- definition of transboundary water bodies
- establishment of bilateral cooperation with neighbouring countries for harmonization of data on such aquifers

# Implementation of Water Framework Directive – groundwater bodies



## INITIAL CHARACTERIZATION OF GROUNDWATER BODIES

- according to the WFD - yield of over 0.1 l/s
- different methodologies applied to karstic and alluvial regions
- Black sea basin - 363 groundwater bodies were identified,
- Adriatic basin - 86 groundwater bodies were identified on the mainland and 12 on major islands



# Potential transboundary groundwater bodies

## LEGEND

### POTENTIAL TRANSBOUNDARY WATER BODIES (ADRIATIC SEA)

#### ID\_BODY

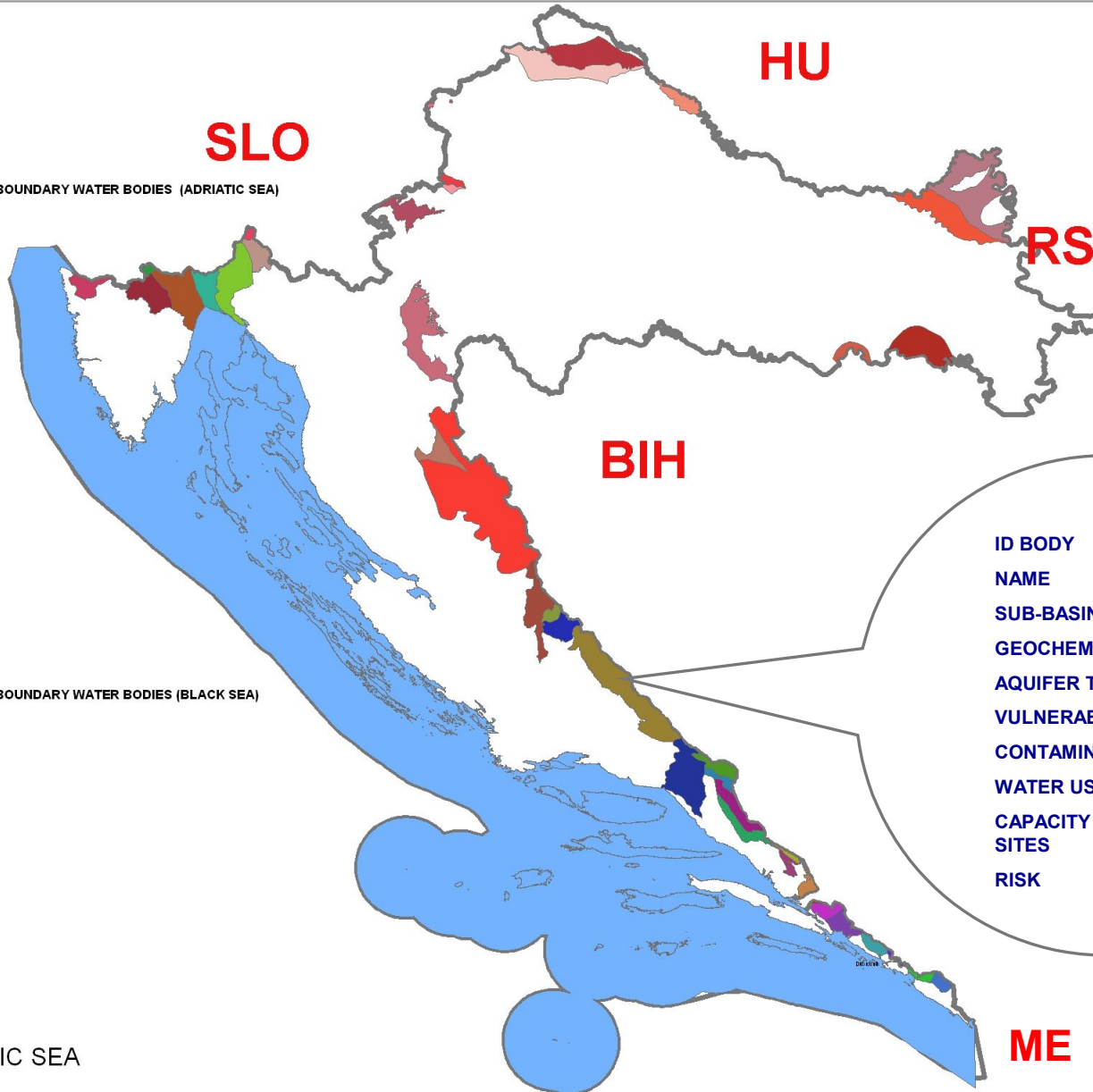
- HR502
- HR507
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- HR546
- HR547
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- HR558
- HR565
- HR566
- HR567
- HR569
- HR573
- HR574
- HR576
- HR576a
- HR577
- HR578
- HR580
- HR581
- HR585
- HR586
- HR598

### POTENTIAL TRANSBOUNDARY WATER BODIES (BLACK SEA)

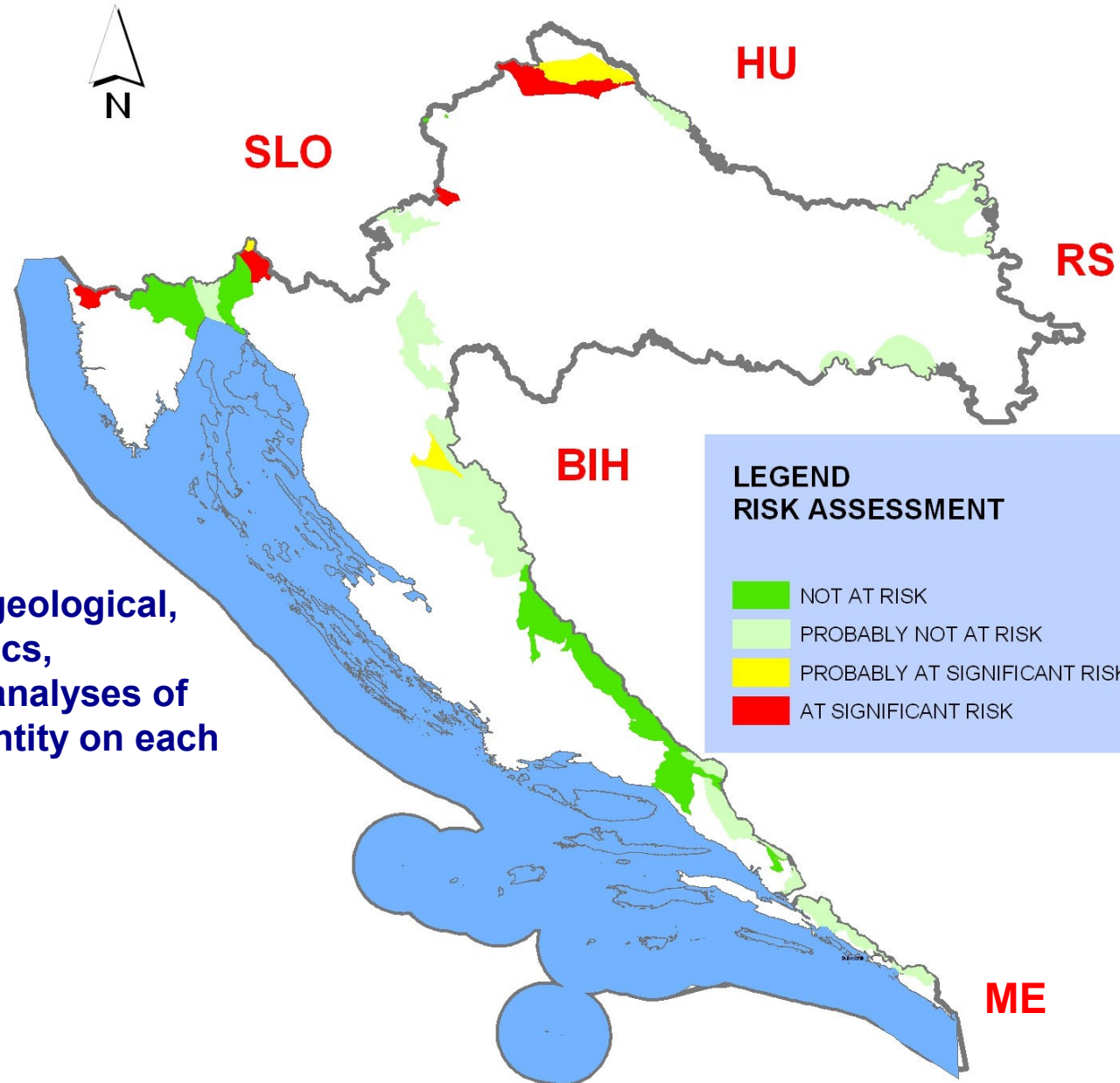
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- HR038
- HR039
- HR042
- HR043
- HR073
- HR078
- HR187
- HR188
- HR243
- HR244
- HR265
- HR343
- HR344
- HR359
- HR360
- HR361

ADRIATIC SEA



# Risk assessment map of transboundary groundwater bodies



▪ risk assessments based on geological, hydrogeological characteristics, vulnerability, pressures and analyses of groundwater quality and quantity on each individual groundwater body

- **preliminary delineation is not yet officially finished and adopted, or considered from the water management viewpoint**
- **analysis of potential aquifers and GW bodies for “transboundary” candidates have not yet been fully identified. Bilateral agreements between neighbouring countries provide mechanisms for harmonization**



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