Protection and Sustainable Use of Dinaric Karst Aquifer System
Content of the presentation

- Introduction to IGRAC
- Introduction to DIKTAS Project
- (Internationally) Shared Groundwater Resources
  - Introduction to TBA
  - Hydrogeological Characterisation
  - Information Management
- Concluding remarks

"You're not allowed to use the sprinkler system to keep your audience awake."
What is IGRAC?

- A non-profit centre that facilitates and promotes global sharing of information and knowledge required for sustainable groundwater resources development and management.

- Launched at WWF3 in Kyoto in Spring 2003

- Works under auspices of UNESCO and WMO

- Receives financial support from the government of The Netherlands

- Hosted by the DELTARES in Utrecht, The Netherlands.
What is DIKTAS?

- A project proposal ‘Protection and Sustainable Use of the Dinaric Karst Aquifer System’
- Initiative of GEF and UNESCO at the Petersberg Roundtable (Berlin 2005), Expert meeting (Belgrade 2006), Ljubljana Roundtable (2007)
- Proposal submitted to GEF (Global Environment Facility) at the end of February 2008
- Project partners: Croatia, Bosnia & Herzegovina, Montenegro, Albania (and Italy, Slovenia and Greece as non GEF recipient countries)
- Project duration: four years (2009-2013), 2008-preparation
- Proposed budget: circa 7M$ (GEF 3M$)
DIKTAS Objectives

- At the **global** level the project aims to **increase attention of the international community** on the huge but vulnerable water resources contained in karst aquifers, which are widespread globally, but poorly understood.

- At the **regional** level the project’s objectives are to:
  - facilitate the **equitable and sustainable utilization** of the transboundary water resources of the Dinaric Karst Aquifer System, and
  - protect the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan peninsula.
DIKTAS Activities

Objectives are expected to be achieved through a concerted international effort involving:

- improvement in understanding of the Resource and its environmental status
- building of political consensus and facilitating harmonisation around key reforms and new policies,
- enhanced and sustainable coordination among countries, donors, projects and agencies,
Introduction to TBA

- The fact: many aquifers cross the political borders

- Potential cross-boundary problems: changes in groundwater flows, levels, volumes (quantity) and dissolved substances (quality).

- Actions: TBA characterisation and an appropriate management.

- Benefits: eliminating potential sources of conflict and improving the overall benefit from groundwater.
ISARM Programme

- UNESCO and IAH global initiative for the identification, assessment and sound management of internationally shared groundwater resources.

- Hydrogeological aspect

- Legal aspect

- Socio-economic aspect

- Institutional aspect

- Environmental aspect
ISARM Portal: www.isarm.net

Welcome to

International Shared Aquifer Resource Management

a global initiative for identification, assessment and sound management of transboundary aquifers

ISARM contact

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Introduction to TBA

- **Aquifer** means a permeable water-bearing underground geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation;
Introduction to TBA

- Transboundary aquifer or transboundary aquifer system means, respectively, an aquifer or aquifer system, parts of which are situated in different States;
TBA Activities at IGRAC

- ISARM Core Group participation (development of the new strategic plan)
- ISARM Portal development & maintenance ([www.isarm.net](http://www.isarm.net))
- UN ILC assistance in development of an International Legal Agreement on groundwater
- WHYMAP assistance in development of Transboundary Aquifer Systems map
- ISARM transboundary aquifers Course Material
- GEF IW-LEARN: Lesson Learned from TBA projects
- ISARM Regional Activities (Americas, Africa, Europe, Asia..)
Global Overview of TBA activities

- TBA characterisation and improvement of info accessibility
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Standardised TBA Delineation

(TBA Activities Americas)
Standardised TBA Description

(TBA Activities Americas)

- Physiography, Demography & Water Use
- Geological Setting of Aquifer
- Water Quantity & Quality
- Importance and need for TBA
- TBA cooperation
- References
- Authors
TBA Classification and Prioritisation

1. State border follows surface water catchment and groundwater divide, little transboundary groundwater flow.

2. Surface water and groundwater divides separate from state border, recharge in one country, discharge in adjacent.

3. State border follows major river or lake, alluvial aquifer connected to river, little transboundary flow.

4. Large deep aquifer, recharged far from border, not connected to local surface water and groundwater.
To overview and compare...by browsing & searching
TBA Information Management

EU Water Framework Directive

- Characterisation:
  - *Groundwater bodies* as managerial units (quite loose guidelines provided)
  - A set of basic *groundwater variables* (quite low density and frequency of monitoring)

- Information management
  - *WISE* (Water Information System Europe) – currently a reporting mechanism
TBA Information Management

[Images of various maps and data visualizations showing geographical data and analytics.]
Concluding remarks

- Importance of karst groundwaters (more than 25% of the world's population either lives on or obtains its water from karst aquifers)
- Importance of cooperation regarding shared groundwaters (also regional and intersectoral)

We have to be aware of:
- externalities (side effects on a third party)
- voiceless groundwater users (ecosystems and future generations)
- interdependencies (socio-economical, political)
- Perceptions, scales, etc.

How to trigger TBA management action: awareness, motivation, institutional framework and operation means (therefore DIKTAS)
www.igrac.nl

- Thank you for your attention