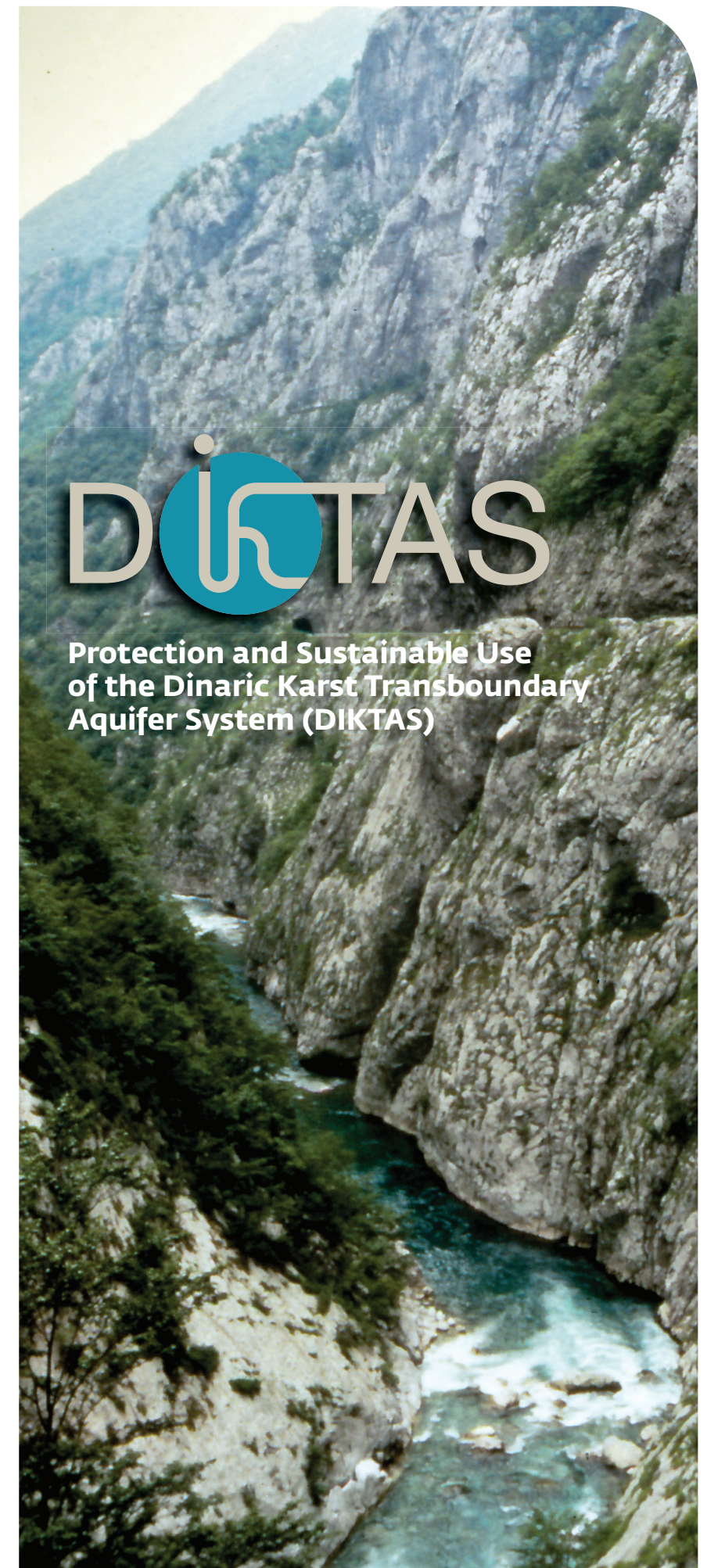


## DRAFT HYDROGEOLOGICAL MAP



# DIKTAS

Protection and Sustainable Use  
of the Dinaric Karst Transboundary  
Aquifer System (DIKTAS)



C O N T A C T

DIKTAS Project Coordinating Unit | +387 (0) 59 245 510 | <http://dinaric.iwlearn.org/>



**The DIKTAS Project (2010 – 2014)** is a full-size GEF ([www.gef.org](http://www.gef.org)) regional project, implemented by UNDP ([www.undp.org](http://www.undp.org)) and executed by UNESCO ([www.unesco.org](http://www.unesco.org)). The activities of the project focus on Albania, Bosnia-Herzegovina, Croatia and Montenegro. Several other countries and international organizations have also joined this challenging project and provide valuable contribution to realisation of its objectives.





Karst is a special type of geologic environment that is formed when soluble rocks, such as limestone and dolomite, are corroded and dissolved by percolating water. Karst hydrogeology is characterized by high fracture controlled permeability, almost total absence of surface water, high infiltration rates and rapid underground flows of groundwater.



### ➤ **Aquifer system of the Dinaric Karst - the main in Southeastern Europe...**

Groundwaters of the Dinaric Karst form some of the world's largest karst aquifer systems. The system extends from NE Italy through Slovenia, Croatia, Bosnia & Herzegovina, Montenegro to Albania. Karst formations connected with the Dinaric carbonate chain outcrop also in Serbia, FYR Macedonia, and possibly in NW Greece. For the most part, this region is still pristine characterised by a variety of geo-morphological environments.

The dominant flow of the groundwaters contained in the Dinaric Karst is towards the Adriatic Sea, eventually through rivers (such as Neretva, Cetina and Trebisnjica) and through submarine springs that characterize the coastal areas of Eastern Adriatic. Further to the East, the Dinaric karst groundwaters drain mainly to the Sava River Basin.



Karst aquifers are widespread globally and often internationally shared. They can be found all over the world from Central America, to

East Asia and the Mediterranean region. However, their potential and characteristics are little known and there is a general lack of understanding of their vulnerability.

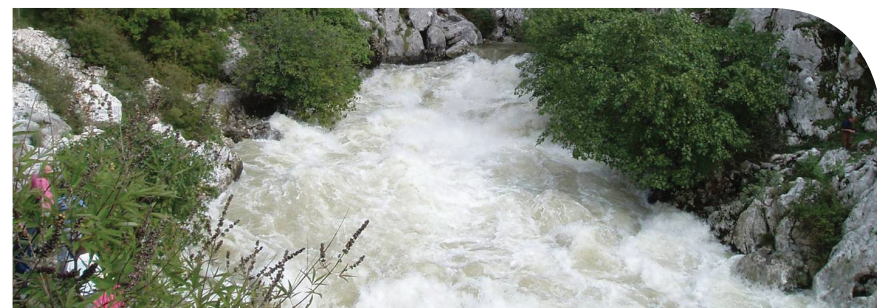
### ➤ **...supports livelihoods and ecosystems**

The Dinaric region contains huge amounts of high quality groundwater; it is one of the major contributors of freshwater entering the Adriatic Sea. This groundwater

- is **essential for the sustainability of rich freshwater ecosystems and coastal habitats, and**
- it supports hydropower production, agriculture, industry, and tourism, the last one especially along the coast. In most of the countries of the area, karst groundwater is the main source of drinking water.



In Croatia alone, karst related ecosystems host 3,500 species of flora, 12 species of amphibians, 36 species of reptiles, 200 species of birds, 79 species of mammals, and 64 species of freshwater fish.



### ➤ **...and is highly vulnerable and managed in an unsustainable way**

Karst aquifers are very vulnerable to pollution coming from various sources; they are threatened by most of the human activities they support. Consequently, the quality of karst groundwaters is easily compromised and so does the potential for their equitable use by various users and various countries. The integrity and the values of groundwater dependent ecosystems are also jeopardized by deterioration of water quality.

Insufficient governance of groundwater resources at both national and transboundary level and uncoordinated developmental choices have led in general to unsustainable management of Dinaric Karst aquifers.



Karst landscapes as whole, represent the recharge areas of aquifers, where rain water infiltrates rapidly through sinkholes and fractures - often densely covered with vegetation.

Given the general absence of top soil cover, any change in land use or in rainfall pattern rapidly impacts water quality, quantity, and sometimes even a direction of subterranean flows.

### ➤ **The DIKTAS project**

The DIKTAS Project, initiated by the aquifer-sharing states and supported by Global Environment Facility (GEF), is **addressing the issue of sustainable management of karst groundwater and ecosystems**. It is the first ever attempt globally to introduce integrated management principles in a transboundary karst freshwater aquifer of such magnitude.

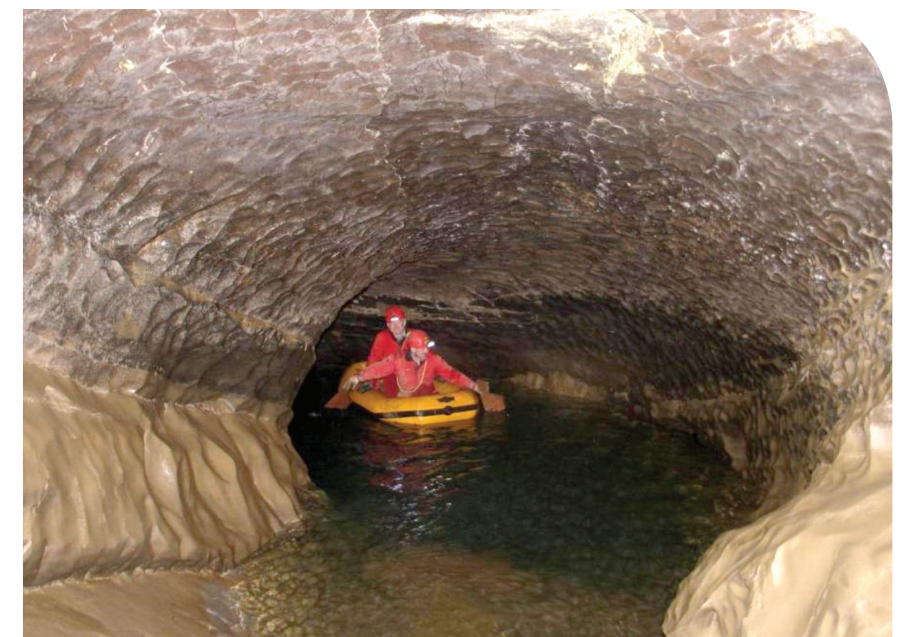
#### ➤ **...is a collective effort to:**

- facilitate the equitable and sustainable utilization of the transboundary water resources of the Dinaric Karst Aquifer Systems,
- protect the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan Peninsula.



The project aims to facilitate:

- (i) Integration of surface and groundwater management approaches;
- (ii) Harmonization of country policies in terms of land-use and physical planning;
- (iii) Balancing (sometimes) conflicting the demands among users/regions/countries;
- (iv) Coordination among relevant ongoing and planned initiatives in the area;
- (v) Incorporation of climate change considerations in the management of the resources.



### ➤ **In this regard, the project is:**

- enhancing knowledge on the resource, including its characteristics and patterns of interaction between surface and groundwater to promote understanding and agreement on the causes of its degradation.
  - enabling the formulation of a consultation mechanism among the countries sharing this huge karst aquifer system in order to facilitate cooperation and formal agreement on corrective actions. This process is taken jointly and includes policy, investments and legal and institutional reforms.
- The undertaken project activities also aim to improve awareness and ensure long-term international support.

### ➤ **...by means of:**

- (i) A Transboundary Diagnostic Analysis.
- (ii) Identification of baseline conditions, agreement and adoption of environmental status indicators.
- (iii) Establishment and operation of a multi-country consultative body.
- (iv) Adoption of water resources and environmental quality targets and establishment of a joint harmonized monitoring program for the environmental status.
- (v) Establishment and operation of a mechanism for coordination and exchanges with other relevant projects and initiatives.
- (vi) Establishment of ad hoc inter-ministerial committees in participating countries, focused on harmonization of existing frameworks, and on priority reforms.
- (vii) The adoption of regional Strategic Action Plan and its reflection in National Action Plans.
- (viii) A partnership conference consolidating international support for the implementation of the priority actions.
- (ix) Stakeholders' Analysis and information and communication activities to highlight project's progress and achievements and support stakeholders' involvement.
- (x) Targeted capacity building programs to encourage replication of new practices, behaviours and techniques.

### ➤ **Activities are structured in 4 Components:**

1. Improving the understanding of the resource and of its environmental status.
2. Establishing cooperation mechanisms among countries.
3. Facilitating the harmonization of policies and priority reforms.
4. Communication, dissemination and replication of activities.